International
Design and
Art Journal

IDA: International Design and Art Journal
ISSN: 2687-5373
www.idajournal.com
info@idajournal.com

Volume: 5 Issue: 1 / 2023

Editor in Chief
Assoc. Prof. Nilay ÖZSAVAŞ ULUÇAY

REVIEWER BOARD

About

The purpose of **IDA: International Design and Art Journal,** which started its publication life in 2019, is to ensure that scientific, original and academic studies are evaluated under scientific ethical rules and conveyed to the reader in a qualified environment. Within the scope of the journal, all interdisciplinary articles on design and art fields and related to these subjects can be sent for evaluation. **IDA: International Journal of Design and Art** is an international refereed journal.

Our journal publishes 2 issues per year and the language of the journal is English and Turkish. The blind-review system is used in the evaluation process, for further information please look at the "Evaluation Process". Article submitted for publication in the **IDA: International Design and Art Journal** should not be published elsewhere or waiting in line for publication. The author (s) agree to transfer the publication and copyright of the articles they submit for publication to **IDA: International Design and Art Journal,** and do not charge ant fees. All published articles are open to everyone with reference to journals and authors.

Hakkında

Yayın hayatına 2019 yılında başlayan **IDA: International Design and Art Journal** amacı, bilimsel, özgün ve akademik çalışmaların bilimsel etik kurallara uygun bir biçimde değerlendirilmesini ve nitelikli bir ortamda okuyucuya iletilmesini sağlamaktır. Dergi kapsamında, tasarım ve sanat konularıyla ve bu konular bağlamında yapılmış olan disiplinlerarası tüm makaleler değerlendirilmek üzere gönderilebilmektedir. **IDA: International Design and Art Journal** uluslararası hakemli bir dergidir.

Dergimiz yılda 2 sayı yayınlamaktadır ve derginin dili İngilizce ve Türkçe'dir. Dergimizde kör hakemlik sistemi uygulanmaktadır, değerlendirme süreci ile ilgili detaylı bilgiler "Değerlendirme Süreci" başlığında bulunmaktadır. **IDA: International Design and Art Journal**'a yayınlanmak üzere gönderilmiş olan makalelerin başka bir yerde yayınlanmış ya da yayın için sırada bekliyor olmaması gerekmektedir. Yazar/yazarlar yayınlanmak üzere gönderdikleri makalelerin yayın ve telif hakkını **IDA: International Design and Art Journal**'a devretmeyi ve ücret talep etmemeyi kabul eder. Yayınlanmış tüm makaleler dergi ve yazarlara atıf yapılmak suretiyle herkese açıktır.

Indexes

EBSCOhost™
Index Copernicus International
TR Dizin
DOAJ Directory of Open Access Journals
WorldCat
ERIH Plus
MIAR
BASE
Advanced Science Index (ASI)
Directory of Research Journals Indexing (DRJI)
ASOS Index
Cite Factor Academic Scientific Journals
Scientific Indexing Service
International Institute of Organized Research (I2oR)

Contents / İçindekiler

Preface

Dear Readers,

We are pleased to announce that our journal, which we have set as our primary goal to contribute to academia and science in the fields of design and art since 2019, continues to be included in national and international university databases and leading indexes with our hard work and your support. We continue to achieve the goals of **IDA: International Design and Art Journal**, which we established on a voluntary basis, to evaluate scientific, original, and academic studies in accordance with ethical rules and to convey them to the reader, and we are happy to announce our eighth issue as of June 2023.

As the IDA Journal family, we are grateful to our esteemed Editorial and Advisory Board for supporting us during the preparation for publication and all evaluation processes and to the authors who contributed to the eighth issue with their work. Also, I would like to thank the Section Editors and Reviewer Board, who are a part of our increasing family and contributing to the evaluation process. Finally, I also want to thank our Language Editors, Assistant Editors, and Technical Support Team for their contributions.

Editor-in-Chief
Assoc. Prof. Nilay ÖZSAVAŞ ULUÇAY

Önsöz

Değerli Okuyucular,

2019 yılından beri tasarım ve sanat alanlarında akademiye ve bilime katkı sağlamayı birincil hedef olarak belirlediğimiz dergimizin, yoğun çalışmalarımız ve desteklerinizle ulusal ve uluslararası üniversite veri tabanlarında ve öncü indekslerde yer almaya devam ettiğini duyurmaktan mutluluk duyarız. Gönüllülük esasına dayalı olarak kurduğumuz **IDA: International Design and Art Journal** bilimsel, özgün, akademik çalışmaların etik kurallara uygun bir biçimde değerlendirilmesi ve okuyucuya iletilmesi hedeflerini başarıya ulaştırmaya devam etmekteyiz ve Haziran 2023 itibari ile sekizinci sayımızı yayınlamış olmanın mutluluğunu yaşıyoruz.

Yayına hazırlık ve tüm değerlendirme süreçlerinde desteklerini esirgemeyen değerli Yayın ve Danışma Kurulumuza ve çalışmaları ile dergimiz sekizinci sayısına katkı sağlayan yazarlara IDA Journal ailesi olarak minnettarız. Hazırlık aşamasında bizlere yardımcı olan ve her gün artarak çoğalan ailemizin birer parçası olan Alan Editörü ve Hakem Kurulumuza, Dil Editörlerimiz, Yardımcı Editörlerimiz ve Teknik Destek Ekibimize katkılarından dolayı teşekkürlerimi sunarım.

Baş Editör
Doç. Nilay ÖZSAVAŞ ULUÇAY

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Impact effect of using computer graphics animation in education

Asst. Prof. Dr. Bahaa Mustafa[1*]

[1]Arab Open University – Jordan Branch, Faculty of Computer Studies, Technology of Multimedia and Graphic, Amman, Jordan.
b_mustafa@aou.edu.jo

*Corresponding Author

Received: 02.07.2022
Accepted: 02.09.2022

Citation:
Mustafa, B. (2023). Impact effect of using computer graphics animation in education. *IDA: International Design and Art Journal*, *5*(1), 1-12.

Abstract
Animation development has changed over time, and usage context illustrates phenomena and concepts that are difficult to understand. Animations may not always be useful; however, teachers who use animations need to understand their importance of them. This paper focused on illustrating the potential applications of animations in learning and education. Animation, a form of pictorial presentation, has become the most prominent feature of technology-based learning environments. Educational computer animation has become one of the most elegant tools for presenting multimedia materials for learners, and its significance in helping to understand and remember information has greatly increased since the advent of powerful graphics-oriented computers. This study used data analysis processing to analyze the frequency of responses to each question from the collected survey data. All interviews were transcribed for qualitative analysis of in-depth interview data. This research aims to investigate whether animation aids learners' understanding of dynamic phenomena and has come up with positive, negative, and neutral results.

Keywords: Animation, Education, Computer graphics, Technology

Extended Abstract

Introduction: Animation contributes significantly to education and has a positive impact on the lives of students. It also mentions how animation allows students to demonstrate and adapt their creativity relatively simply. There are multimedia products available in various combinations of text, still images, animation, video, and sound. Few studies identify the principles that can effectively combine these media within instructional materials to maximize their learning potential. Students may become bored with regular lectures, but if provided with something simple and easy to understand, it will help them remember much more. Graphically animated content has the most significant and positive impact on students' lives because it makes concepts more understandable and memorable.

Purpose and scope: The paper discusses how animation in education improves things. The primary purpose of this study is to explore the effectiveness of animations and graphics on student learning. This paper demonstrates the strategy of how computer graphics animation helps in the field of education for students. This study investigated whether animation helps learners understand dynamic phenomena and found positive, negative, and neutral results.

Method: This study designed the empirical study as a survey for statistical processing of the frequency of responses to each question from the 35 survey data collected. All interviews were transcribed for qualitative analysis, and then the contents of the same context, divided by topic questionnaire questions and structured interview questions, for in-depth interview data. Data analysis processing was used to determine the frequency of responses to each question from 35 survey data collected for this study. Transcribing all interviews for qualitative analysis of in-depth interview data. On March 17, 2022, the ethics committee granted permission to begin a research survey titled (Impact effect of using computer graphics animation in education). The quantity of work (15/2022). The study survey was based on samples of students who agreed to use and implement graphic elements and tools.

Findings and conclusion: According to the findings of this study, using computer graphics animation as teaching material has several advantages. However, some restrictions may apply depending on the subject's suitability and the student's background. Teachers play a critical role in determining the best and most appropriate teaching approach to use in class, as well as effective teaching delivery that can help students improve their visualization and comprehension abilities. Several useful discoveries have been made in the context of teaching and learning. Computer animation allows students to visualize content or subjects that would be difficult to see in person. As a result, the teaching and learning process is

no longer limited to a physical space where learning takes place in person and in real-time. However, it occurs in a variety of settings, including virtual spaces. Nowadays, information and communication technologies (ICT) offer a plethora of new communication channels, as well as simple technological tools to assist in this process. Computer animation has proven to be an effective teaching tool in a variety of fields and stages. To assess students' opinions, quantitative data collection techniques, such as questionnaires, are used. It adapted educational content and evaluation strategies to innovative teaching and learning strategies developed specifically for computer animation education. Computer graphics and design provide opportunities for integrated learning and the development of skills for effectively transferring knowledge and understanding across disciplines quantitative. Universities and professors must also understand how to foster interdisciplinary learning and support students in developing their creative potential. The animation can explain materials that are difficult to imagine. Furthermore, using computer animation in language development as an example, many theoretical paradigms can be explained. Computer animation is an intriguing teaching and learning method. Computer animation, as opposed to traditional static pictures and images, is useful in explaining verbs such as reading, writing, and listening. Using computer animation in education has expanded and continues to expand. Technology changes the animation itself, such as from 2D to 3D and low-resolution images to high-resolution images, based on the importance of computer animation. The evolution of animation is being aided by the advancement of software and applications for digital images. The primary purpose of education is to help students face the challenges of life, link science to students' lives, and work to create a scientifically and technically sound environment and a society capable of continuity and survival, by providing students with many opportunities to discover, understand, analyze and evaluate the surrounding problems. It is a prominent educational means characterized by its ability to attract attention and influence behavior and trends.

Keywords: Animation, Education, Computer Graphics, Technology

INTRODUCTION

Animation has been the most visible feature of the technology-based learning environment. According to (Mayer et al., 2002: 7), the animation is a pictorial presentation of motion pictures that shows associations between drawn figures. Things that correspond to this idea are motion, picture, and simulation. As far as videos and illustrations are concerned, these are motion pictures depicting the movement of real objects. Pictorial forms of teaching have been observed to emerge as a counterpart to verbal forms of teaching. Although verbal ways of presentation have long dominated education, the addition of visual forms of presentation has enhanced students' understanding (Mayer et al., 2008: 5). In fact, disciplines are taught in universities that deal with dynamic subjects, and animation or graphic illustration is more favored as a way of addressing the difficulties which arise when presenting such matters verbally or numerically (Lowe, 2004: 11). Even though such multimedia instructional environments hold potential for enhancing people's way of learning (Ainsworth, 2008a: 37), there is still much debate surrounding this area; indeed, animation presentations are less useful for education and training than was expected. Moreover, little is known about the way animation needs to be designed to aid learning (Hasler et al., 2007: 13) and not to act solely as a way to gain aesthetic attraction. For instance, some animators who work in the entertainment industry create animations for the sake of entertainment and they are therefore unlikely to be interested in helping to build a coherent understanding using their work (Barut Tugtekin et al., 2021: 10). In some cases, animation can hold back rather than improve learning and may not promote learning, depending on how they are used (Mayer et al., 2005: 6). Animation may require greater cognitive processing demands than static visuals as the information changes much, especially critical objects, and thus cognitive connections can be lost during the animation. The developers of multimedia learning materials face a lack of principled guidance on how some elements of such materials should be designed to enable comprehension.

They developed seven guidelines for using animation in multimedia instruction. Some of these principles are multimedia principles; students learn more deeply when narration and animation come together than narration or animation alone (Parnis et al., 2020: 24). Learners can easily create mental connections between corresponding words and pictures when both animation and narration are presented. The other principle was coherence; students learn more deeply from animation and narration when irrelevant words, sounds (even music), and clips are absent. This is due to the possibility of the learner having difficulty making mental connections due to a lack of cognitive resources between relevant parts of the narration and animations. (Ayres & Paas, 2007: 5).

Fundamental Principles of Computer Graphics Animation

First traditional animation, basically, this is 2D animation techniques such as in between (Musa et al., 2013: 10-15), keyframe animation (Terra et al., 2004: 7), multiplane background, scan/paint, and storyboarding (Kevoy, 1977: 18). 3D computer animation uses 3D models instead of 2D drawings (Takayama et al., 2011: 6). In addition to that, 3D animations were script-based, with a few spline-interpolated key frame systems. Some large companies such as Abel Image Research, Alias Research Inc., and Wavefront Technologies Inc., arrived at these reliable use possible (Wojtan et al., 2006: 4).

In the late 1920s and 1930s, animation was developed from an innovation to a fine art form by the Walt Disney Studios. They set up drawing classes at the Chouinard art institute in Los Angeles, spearheaded by Don Graham. Here the students/animators learned the standardized formula of old cartoons, which led to the discovery of ways of drawing moving figures and humans (Sultana et al., 2013: 3). With this came a keen investigation of action made through the advancement of animation and its principles (Harrison et al., 2010: 6). Traditional animation is based on 11 fundamental principles, which are as follows: Timing, anticipation, staging, follow through and, overlapping action, straight-ahead action, and pose-to-pose action, show in and out, arcs, exaggeration, secondary action, and appeal are all important.

Using computer graphics animation in education

Nowadays, life in a digital era is inescapable. The advancement of technology and the drastic changes in the surroundings affect our needs and desires, be they psychologically, socially, or emotionally. Similarly, the need for change in education has enormously accelerated as time passes. Students tire of the teacher-centered model and complain that the class is very boring and monotonous, and they want something new and different. Though traditional methods are still used, there is a growing demand for a more competitive tool that will meet the needs of students more effectively. This entails “modifications to both the instructional strategy and the teaching and learning environment” (Vonganusith & Pagram, 2008: 543). Computer animation, specifically educational computer animation, is one of the most important tools available to teachers today for promoting effective learning by assisting students in visualizing something that is difficult to see in the real world (Ainsworth, 2008b: 34). Special effects for transitions between instructional frames, moving symbols or characters, and animated prompts help to clarify relationships through visual means to illustrate events that are not inherently interesting. Animation may be especially useful in supporting students in comprehending the flow of blood through the body (Weiss et al., 2002: 4). And the inner life of the cell. To assist the users with animated agents (Johnson et al., 2000: 17), where lifelike characters are animated to include gesture and movement. The use of computer animation in education has broadened and continues to grow rapidly. Because of the speed of change, teachers need to learn how to adopt new roles, such as facilitator and guide, integrator, researcher, designer, and collaborator need to train teachers capable of dealing with technology. Also, since the new pedagogical paradigms involve more than the mere transmission of knowledge, which was once considered the norm, teachers may need the training to develop the professional expertise that computer animation in education requires. The success of computer-assisted instruction (CAI) has been the subject of continuing examination for over a decade (Vernadakis et al., 2005: 4). The use of CAI as delivery media is expanding, and an understanding of how students learn and benefit from such computer-based instruction is disputable. Appropriate graphics with text has been demonstrated to be effective in learning. However, computers can make static graphics into dynamic animations. This study explores the potential of combining animations with text in a computer-assisted instructional environment. Animation is the computerized simulation of processes using images to form a synthetic motion picture. It is a process of putting still images together in sequences or manner, so they appear one after the other creating the illusion of movement. One can feel or see that the images are moving in the context of learning. Animation assists learners in visualizing a dynamic process, which, otherwise, may be difficult to visualize. The animation might thereby reduce the cognitive load (Wouters et al., 2008: 21). In Kehoe’s (1996) review of studies on animation in education, visual aids are found to have a positive effect on learning if certain conditions (Hanif, 2020: 15). Several positive effects have been widely discussed in the context of teaching and learning based on previous research. Computer animation-based teaching and learning in schools has the potential to transform existing methods such as verbal and traditional instruction. By other means, interactive learning can respond positively to

computer-aided blending techniques (Islam et al., 2014: 5). Today, interactive animations are an excellent learning medium for students.

This is due to the fact that learning how to use animations is not as time-consuming as studying in a classroom, and it can be accomplished simply by paying attention to the teachers who make it clear in the classroom (Utomo et al., 2015: 8). In creative teaching with an interactive learning system, both lecturers and students used interactive learning animation. Multimedia technology can be used to create a teaching tool that incorporates various learning media in various ways, such as text, graphics, animation, audio, and video (Ariyati & Misriati, 2016: 3-4). Animation, which is essentially a visual presentation, is the most visible feature of the technology-based learning environment. It is a computer-generated animation that depicts the movement of a drawn object. In education, computer animation has evolved into one of the most effective tools for presenting multimedia materials to students. Furthermore, animation serves as an engaging learning medium. Learning outcomes differ from oral learning styles, particularly regarding applying Java programming concepts, procedures, and principles (Negara, 2017: 3). Animation is one of the multimedia elements that is used in the teaching and learning process because it can bring a human fantasy to life. Text, graphics, animation, and audio are used in computer graphics animation software to make teaching and learning more interesting, active, and enjoyable (Tsukazaki et al., 2019: 4). People are uninterested in or understand the value of using media in education, particularly computer-based animation applications (Ruiz et al., 2009: 8). When choosing a model, it is critical to use specific learning media. Computer animation is one type of media that can be used. For example, computer animation presents many challenges and constraints during the teaching and learning process (Wang, 2017: 3). To get started, the person should be familiar with animation software such as Adobe After Effects and Adobe Animate.

The visual effects of computer graphics animation on education

The visual outcomes, or student art exhibits, demonstrate concepts related to computer art graphics creation and computer graphics integration with science teaching. Demonstrate some examples of student artwork produced as a result of completing science-related assignments creating computer working habits in students the stimulation of their artistic growth and production is an important goal in computer art graphics instruction. The aesthetics of student computer graphics should probably come first (Kainz et al., 2013: 11). To assist people in developing strong visual and aesthetic values as well as technical and programming skills, as well as to train them to create visually stunning products (Matsuda & Shindo, 2001: 7). A broad understanding and skill set in computer science are required. As a result, students combine technical development with their visual response to create high-quality artwork. With computer art graphics assignments, developed new forms in this visual language. Students should be able to overcome their fear of creating art (Baglama et al., 2018: 5). Educators understand that computer graphics applications use symbols. Using computer graphics in scientific visualization makes it easier to integrate verbal and graphic information (Barron et al., 2002: 38). Visual thinking aids in recognition of mathematical relationships as well as physical interpretations of formulas and graphs. Research advances on mental images in human cognition confirm the importance of mental imagery as a form of nonverbal processing. Cross-disciplinary development programs allow student response to computer-generated feedback and develop new curricula of computer graphics (Kahraman, 2015: 7). Using technology in education has improved image reception, as shown by student achievement because of computer graphics instruction. Building computer art graphics representations of scientific concepts improves student achievement and artistic production (Usui et al., 2017: 6). Following the research line related to computer graphics instruction, one may often notice a teacher’s approach focusing on visualizing ideas in graphical form. The ideas for an integrative approach are presented in the form of a cognitive map, as shown in Figure 1.

Many computer graphics classes base their instructional approach on a structured and skills-oriented method of tracking students' work and assigning tasks. Instruction in computer graphics animation assists students in interpreting and manipulating scientific concepts to represent them by their education -this method of applying newly acquired knowledge about a new educational method. However, students may find it easier to continue creating graphics rather than starting from scratch. The integrative approach to computer graphics should cause significant departures from current practice in computer graphics instruction.

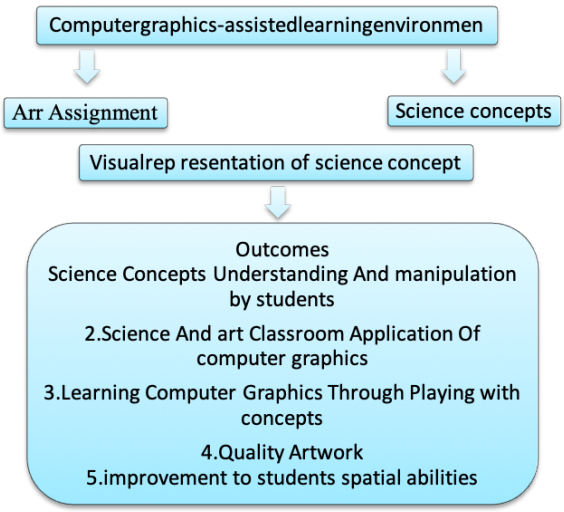


Figure 1. Integrative approach ideas cognitive map

Computer graphics animation's future

Understanding how people learn from pictorial and verbal media to use animation effectively is useful. Multimedia presentations should be designed to promote the cognitive processes required for meaningful learning, such as selecting, organizing, and integrating. In the next millennium, pictorial forms of teaching are likely to expand as a complement to verbal forms of teaching (Cadiero, 2006: 13). Predicting the future is a dangerous business, particularly in high technology, where seers tend to be overly optimistic in the short run (3-5 years) and overly cautious in the long run (10-20 years). Forecasts in computer graphics began about ten years ago, and almost all appear to have been overly optimistic. However, the pace is now quickening, and the next ten years' developments may finally outstrip the visions of ten years ago. At least, that is how it seems to us right now, and so join the optimists, even though they have all been wrong so far. Computer graphics are entering a new era characterized by rapid growth. While using computer graphics in traditional applications will continue to grow, a fundamental structural change occurring in graphics use. This change will make graphics more prevalent in our workplace (Miyai & Yamaguchi, 2015: 6). Computer graphics tools and techniques help to improve computer productivity and human factors: computer users no longer have to rely solely on verbal/linguistic skills, but can combine these with spatial/graphic skills (Takacs, 2005: 44).

In a future marked by rapid and continuing advances in digital technologies, where visual solutions are central to how people use, share, develop, and process information, learners must learn how to use such technologies to solve problems and visually communicate knowledge and ideas (Parent, 2000: 4). Learners will apply their understanding of form and function to develop design solutions within the context of computer graphics. Through developing design thinking and problem-solving skills, computer graphics animation design prepares students for work in the digital age (Leslie & McKim, 2017: 9). While associated with the design and technology strand of learning, computer graphics and design also incorporate and provide rich learning opportunities to embed skills and knowledge from the arts, math, and sciences. As a result, computer graphics and design offer the opportunity to engage in integrated learning opportunities and develop skills to effectively transfer knowledge and understanding across disciplines. Universities and professors must also understand how to foster interdisciplinary learning and support students in developing their creative potential. Computer graphics animation can enable the integration of active pedagogies that foster deep and long-term knowledge. It has the potential to become a democratic factor in education, allowing for global participation on an equal footing that is not limited by geographical boundaries.

METHOD

This study designed the empirical study as a survey for statistical processing of the frequency of responses to each question from the 35 survey data collected. All interviews were transcribed for qualitative analysis, and then the contents of the same context, divided by topic questionnaire questions and structured interview questions, for in-depth interview data. Used data analysis processing to determine the frequency of responses to each question from 35 survey data collected for this study. All interviews were transcribed for qualitative analysis of in-depth interview data. On 17 March 2022, the ethics committee of the Arab Open University permitted to start a research survey titled “Impact effect of using computer graphics animation in education”. The quantity of work (15/2022). The study survey depended on samples of students consenting to using and implementing graphic elements and tools.

FINDINGS

Thirty-five questionnaires were used for this study’s data analysis, and all questions were faithfully answered. Figure 2 depicts the survey respondents’ demographics. The demographics of the faculty members who responded to this survey were as follows: assistant professors had the highest (25%), while research professors had the lowest (6%). Students (27%), in terms of educational experience. Professors from associations (25%) and universities (9%) (Figure 2).

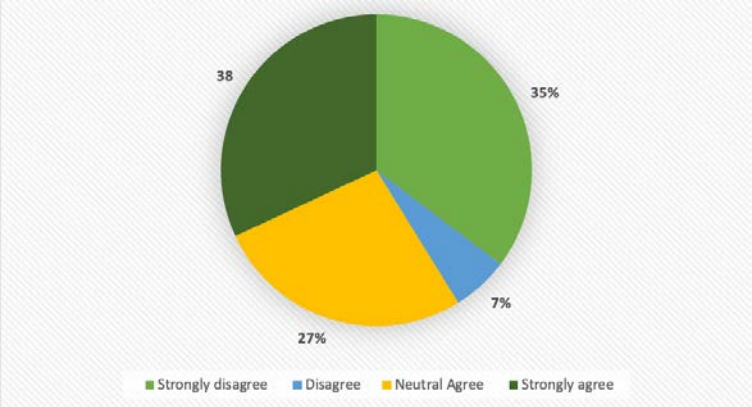


Figure 2. Demographic information about participants

Figure 3 shows that the study participants were aware of the possibility of using computer graphics animation in the educational field and classroom (over 35 people, 77.00%). Participants in the study taught actual classes using computer graphics animation, allowing freedom of movement in the educational field. This is evident in the animation graphics with which students interact, which aids in memorizing and consolidating information in their minds.

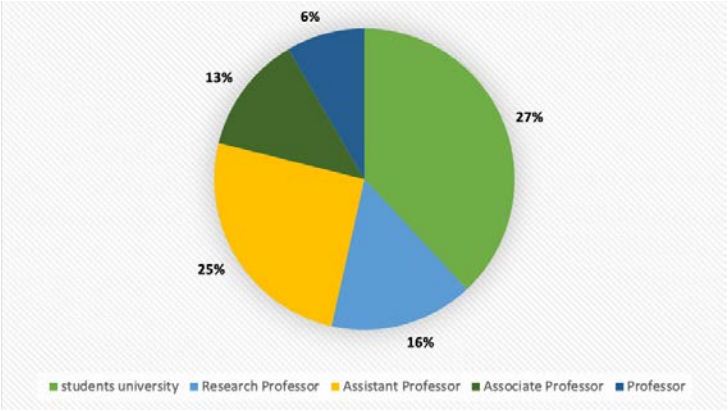


Figure 3. Recognition of computer graphic animation in education

As shown in Figure 4, they expected computer graphics classes to improve study participants' communication ability (27%) and creativity (35%). Participants in the study perceived computer graphics as a space where students can actively communicate with fellow and lecturers expect such communication to improve problem-solving abilities and broaden their perspectives rather than offline teaching and learning sites.

Participants in the interviews predicted that computer graphics, as an educational medium, could relieve the constraints of classes, a universal teaching and learning form in education. They recognized that by allowing learners to interact with other learners and instructors, computer graphics as an educational medium could increase cognitive flexibility related to creativity; it increases the opportunity to express one's thoughts rather than stereotypes. The study hopes to improve learners' creativity by using computer graphics as an educational medium.

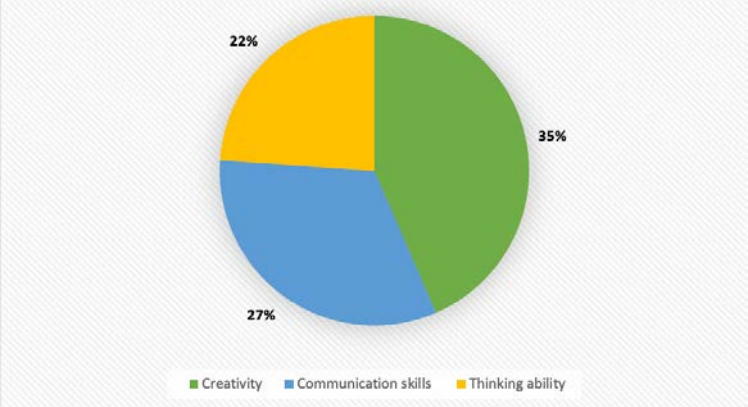


Figure 4. Expectations of improved education abilities by the use of computer graphics

As shown in Figure 5, they did not recognize the difficulties in implementing computer graphics animation in the absence of computer graphics animation experts, and the level of knowledge about computer graphics animation remains at the beginner level. Moreover, the teaching method and instructional design using computer graphics animation continue to apply. It demonstrates the importance of improving teaching competency and computer graphics animation-based teaching/learning methods that can be used in education.

It is difficult for instructors to build the infrastructure and technological environment, and instructors and schools must show active interest and willingness. Computer graphics animation in education will naturally boost creativity, problem-solving skills, and collaboration. To operate the computer graphics animation class, interview participants require assistance from the class operator and the educational environment, which includes providing guidelines for computer graphics animation class design and operation.

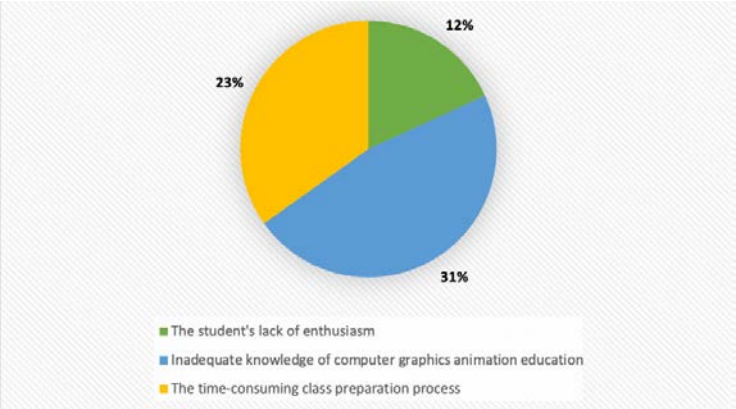


Figure 5. Difficulties to be expected in implementing computer graphics animation in education

As shown in Figure 6, because computer graphics animation is used in classes, active environmental support and incentives within the school and platform education are required. And system support for classes that use computer graphics animation results from investigating the elements and conditions for computer graphics

animation classes that university teachers can support and the Teaching Learning Development Center, as well as the direction of the workshop for computer graphics animation classes.

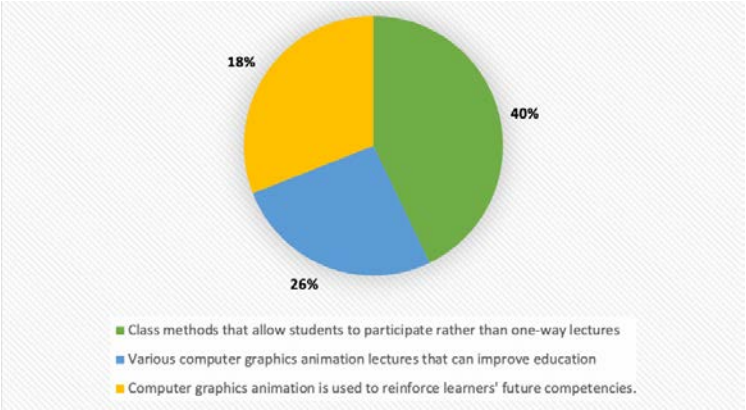


Figure 6. Educational advantages that students can expect when computer graphics animation is used in education

According to Figure 7, study participants identified classroom setting (17%) and class design support (12%) as elements and conditions required for computer animation-based classes. In the order community of teaching (34%), it can be stated that the research participants had higher demands for expert support such as class consulting and the establishment of a class environment such as a platform for classes using computer graphics animation. Interviewees will learn about the appropriate computer graphics animation platform for their classroom environment to use computer graphics animation as a teaching/learning medium. When the questionnaire and interview contents are combined, it is clear that most recognize the need for a customized platform that can reflect the subjects and learned characteristics. This type of education is limited in its ability to provide learners with an experience comparable to the existing classroom teaching/learning environment. However, the class instructor must investigate and conclude the formula to implement and establish computer graphics animation in the classroom. As a result, this study was conducted to ascertain the general perception of computer graphics animation-based education.

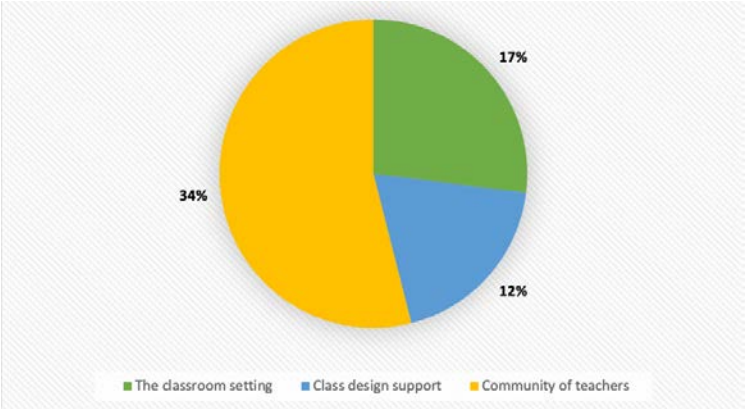


Figure 7. Elements required for applying computer graphics animation to the educational field

CONCLUSION

Based on the above review, this study can conclude that using computer graphics animation as teaching material has several advantages. However, some restrictions may apply depending on the subject's suitability and the student's background. Teachers play an important role in determining the best and most appropriate teaching approach to use in class and effective teaching delivery that can help students improve their visualization skills and understanding. Several useful discoveries in the context of teaching and learning have been made. Computer animation allows students to visualize content or subjects difficult to see in person.

Furthermore, the animation can be explained as difficult-to-imagine materials. Furthermore, many theoretical paradigms can explain using computer animation in language development as an example. Computer animation is an interesting method of teaching and learning. In comparison to traditional static pictures and images, computer animation is useful in explaining verbs, such as reading, writing, and listening. Using computer animation in education has grown and continues to grow. Based on the importance of computer animation, technology changes the animation itself, such as from 2D to 3D and from low-resolution images to high-resolution images. The advancement of software and applications for digital images contributes to the evolution of animation.

Education extends far beyond the infrastructure that defines academic spaces; thus, educational goals must include learning to know, learning to do, learning to live together, and learning to be, as defined by UNESCO. In recent years, the educational system has begun to use innovative learning tools, which has resulted in a shift away from traditional education strategies. And concentrate on new educational technologies for the twenty-first century. Furthermore, the COVID-19 pandemic has heightened the importance of changing educational practices.

As a result, the teaching and learning process is no longer limited to a physical space where learning occurs in person and synchronously but in various settings, including virtual spaces. Nowadays, Information and Communication Technologies provide a plethora of new communication channels as well as simple technological tools to aid in this process. Over the years, computer animation has proven to be a useful teaching tool in various fields and stages. Assessing students' opinions through using quantitative data collection techniques, such as questionnaires. It adapted the content of education and evaluation strategies to innovative teaching and learning strategies designed to apply computer animation education. In that way, universities and students would find broader possibilities to adapt to a constantly changing world.

DISCUSSION

Finally, students discussed better the benefits and challenges of deploying computer education and project-learning strategies online. Before 2015, there was some reluctance on the part of the students to carry out their activities using computer animation. However, after implementing this educational framework in 2020 and 2021, it was discovered that students are much more open and motivated to use computer animation. They have also been engaged and motivated to create their computer animations. Because of recent technological advances in new animation software, these results appear to be promising. This could make incorporating computer animation strategies into online education more natural and easier. Educational animation is one of the most elegant tools for presenting materials to students. Its importance in supporting learners to understand and remember information has grown significantly since the introduction of powerful graphics-oriented computers. It may be very useful for learning about some topics in the natural sciences, where educational modelling and the preparation of learning materials can reduce the amount of time spent in class and increase the efficiency of the educational process. The ability to create animated multimedia books, on the other hand, can benefit the English language and literature. Students develop skills in visual communication, storytelling, observation, and sensory aspects; problem-solving, and innovative aspects, such as concentration, and other cognition, ethics, and aesthetics, using animation.

This work seeks to establish an interdisciplinary field of study focused on increased educational effectiveness. Traditional, with today's high educational demands. Educational methods have fallen short of keeping up with the rapid changes brought about by the digital era. Educational animation materials may be insufficient for learners or fail to meet their needs if many important factors are not considered. This study is likely to have wide benefits in the field of education. Designing educational materials with the aid of computer animation software while considering students' temperament types is a promising avenue to improve the learning process. Teachers will be able to feel more confident in the presentation of their lessons. Additionally, they will become more competitive and professional.

Authors' Contributions

1st author contributed conceived of the presented idea 100%, developing the theory and performing the computations 100% writing the paper 100% drafting the manuscript and designed the figures100% designed and implementation of the research100%.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval dated 17.03.2022 and numbered 15/2022 was obtained for the study titled "Impact effect of using computer graphics animation in education" from Arab Open University.

REFERENCES

Ainsworth, S. (2008a). How do animations influence learning? *Current perspectives on cognition, learning, and instruction: Recent innovations in educational technology that facilitate student learning*, 37-67.

Ainsworth, S. (2008b). The educational value of multiple representations when learning complex scientific concepts. In *Visualization: Theory and practice in science education* (pp. 191-208). Springer, Dordrecht.

Ariyati, S., & Misriati, T. (2016). Perancangan animasi interaktif pembelajaran asmaul husna. *Jurnal Teknik Komputer AMIK BSI*, *2*(1), 116-121.

Ayres, P., & Paas, F. (2007). Making instructional animations more effective: A cognitive load approach. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition*, *21*(6), 695-700.

Baglama, B., Yucesoy, Y., & Yikmis, A. (2018). Using animation as a means of enhancing the learning of individuals with special needs. *TEM Journal*, *7*(3), 670.

Barron, A. E., Orwig, G. W., Ivers, K. S., & Lilavois, N. (2002). *Technologies for education: A practical guide*. Libraries Unlimited.

Barut Tugtekin, E., & Dursun, O. O. (2021). Effect of animated and interactive video variations on learners' motivation in distance education. *Education and Information Technologies*, 1-30. https://doi.org/10.1007/s10639-021-10735-5

Cadiero-Kaplan, K. (2006). Teachers and technology: Engaging pedagogy and practice. In *Handbook of Research on Literacy in Technology at the K-12 Level* (pp. 452-468). IGI Global.

Hanif, M. (2020). The development and effectiveness of motion graphic animation videos to improve primary school students' sciences learning outcomes. *International Journal of Instruction*, *13*(3), 247-266. https://doi.org/10.4018/978-1-59140-494-1.ch026

Harrison, H. L. H., & Hummell, L. J. (2010). Incorporating animation concepts and principles in STEM education. *Technology and Engineering Teacher*, *69*(8), 20. https://www.learntechlib.org/p/107140/

Hasler, B. S., Kersten, B., & Sweller, J. (2007). Learner control, cognitive load, and instructional animation. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition*, *21*(6), 713-729. https://doi.org/10.1002/acp.1345

Islam, M. B., Ahmed, A., Islam, M. K., & Shamsuddin, A. K. (2014). Child education through animation: An experimental study. *arXiv*, 1411.1897. https://doi.org/10.48550/arXiv.1411.1897

Johnson, W. L., Rickel, J. W., & Lester, J. C. (2000). Animated pedagogical agents: Face-to-face interaction in interactive learning environments. *International Journal of Artificial intelligence in education*, *11*(1), 47-78.

Kahraman, A. D. (2015). Animation is used as educational material and animation techniques. *Online Journal of Art and Design*, *3*(1), 1-12.

Kainz, O., Jakab, F., & Kardoš, S. (2013, October). Computer animation in education. In *2013 IEEE 11th International Conference on Emerging ELearning Technologies and Applications (ICETA)* (pp. 201-206). IEEE.

Kevoy, M. (1977). A color animation system based on the multi-plane technique. SIGGRAPH 77. *Computer Graphics*, *11*(2), 64-71. https://doi.org/10.1109/ICETA.2013.6674428

Leslie, E., & McKim, J. (2017). Life remade: Critical animation in the digital age. *Animation*, *12*(3), 207-213. https://doi.org/10.1177/1746847717740841

Lowe, D. G. (2004). Distinctive image features from scale-invariant key points. *International journal of computer vision*, *60*(2), 91-110.

Matsuda, H., & Shindo, Y. (2001, August). Effect of using computer graphics animation in programming education. In *Proceedings IEEE International Conference on Advanced Learning Technologies* (pp. 164-165). IEEE. https://doi.org/10.1109/ICALT.2001.943889

Mayer, R. E., & Johnson, C. I. (2008). Revising the redundancy principle in multimedia learning. *Journal of Educational Psychology*, *100*(2), 380.

Mayer, R. E., & Moreno, R. (2002). Aids to computer-based multimedia learning. *Learning and instruction*, *12*(1), 107-119. https://doi.org/10.1016/S0959-4752(01)00018-4

Mayer, R. E., Hegarty, M., Mayer, S., & Campbell, J. (2005). When Static Media Promote Active Learning: Annotated Illustrations Versus Narrated Animations in Multimedia Instruction. *Journal of Experimental Psychology: Applied, 11*(4), 256-265. https://doi.org/10.1037/1076-898X.11.4.256

Miyai, A., & Yamaguchi, Y. (2015, November). Development and evaluation of educational materials for stereoscopic 3D computer graphics animation. In *SIGGRAPH Asia 2015 Symposium on Education* (pp. 1-8). https://doi.org/10.1145/2818498.2818510

Musa, S., Ziatdinov, R., & Griffiths, C. (2013). Introduction to computer animation and its possible educational applications. *arXiv*, 1312.1824.

Negara, I. K. R. Y. (2017). The effect of animation in multimedia computer-based learning and learning style on the learning results. *Turkish Online Journal of Distance Education*, *18*(4), 177-190. https://doi.org/10.17718/tojde.340409

Parent, R. (2000, May). Computer animation: algorithms and techniques-a historical review. In *Proceedings Computer Animation 2000* (pp. 86-90). IEEE. https://doi.org/10.1109/CA.2000.889049

Parnis, J. M., & Mackay, D. (2020). *Multimedia environmental models: The fugacity approach.* CRC press. https://doi.org/10.1201/9780367809829

Ruiz, J. G., Cook, D. A., & Levinson, A. J. (2009). Computer animations in medical education: a critical literature review. *Medical Education*, *43*(9), 838-846. https://doi.org/10.1111/j.1365-2923.2009.03429.x

Sultana, N., Peng, L. Y., & Meissner, N. (2013, September). Exploring believable character animation based on principles of animation and acting. In *2013 International Conference on Informatics and Creative Multimedia* (pp. 321-324). IEEE. https://doi.org/10.1109/ICICM.2013.69

Takacs, B. (2005). Special education and rehabilitation: teaching and healing with interactive graphics. *IEEE Computer Graphics and Applications*, *25*(5), 40-48. https://doi.org/10.1109/MCG.2005.113

Takayama, L., Dooley, D., & Ju, W. (2011, March). Expressing thought: Improving robot readability with animation principles. In *Proceedings of the 6th international conference on Human-robot interaction* (pp. 69-76).

Terra, S. C. L., & Metoyer, R. A. (2004, August). Performance timing for keyframe animation. In *Proceedings of the 2004 ACM SIGGRAPH/Eurographics symposium on Computer animation* (pp. 253-258). https://doi.org/10.1145/1028523.1028556

Tsukazaki, K., Shintoku, T., & Fukuzoe, T. (2019, August). Teaching ICT skills to children and the empowerment of female college students in stem in Japan. In *IOP Conference Series: Materials Science and Engineering*, *551*(1), 012036. IOP Publishing.

Usui, Y., Sato, K., & Watabe, S. (2017). Computer graphics animation for objective self-evaluation. *IEEE Computer Graphics and Applications*, *37*(6), 5-9. https://doi.org/10.1109/MCG.2017.4031074

Utomo, Y. B., & Sihombing, E. G. (2015). Animasi Interaktif Pengenalan Pakaian Adat Tradisional Pada Smp Pgri 1 Bekasi. *Jurnal Teknik Komputer AMIK BSI*, *1*(1), 114-122.

Vernadakis, N., Avgerinos, A., Tsitskari, E., & Zachopoulou, E. (2005). The use of computer-assisted instruction in preschool education: Making teaching meaningful. *Early Childhood Education Journal*, *33*(2), 99-104. https://doi.org/10.1007/s10643-005-0026-2

Vonganusith, V., & Pagram, J. (2008). Reflections on the development of a web-based course to support EFL learning for pre-service teachers in Thai Rajabhat University: A case study. *Science Mathematics and Technology Education: Beyond Cultural Boundaries*, 543.

Wang, Y. (2017, March). Advantages and disadvantages of computer assisted instruction in chemistry teaching. In *2017 7th International Conference on Education, Management, Computer and Society* (EMCS 2017) (pp. 1231-1235). Atlantis Press. https://doi.org/10.2991/emcs-17.2017.237

Weiss, R. E., Knowlton, D. S., & Morrison, G. R. (2002). Principles for using animation in computer-based instruction: Theoretical heuristics for effective design. *Computers in Human Behavior, 18*(4), 465-477. https://doi.org/10.1016/S0747-5632(01)00049-8

Wojtan, C., Mucha, P. J., & Turk, G. (2006, September). Keyframe control of complex particle systems using the adjoint method. In *Proceedings of the 2006 ACM SIGGRAPH/Eurographics symposium on Computer animation* (pp. 15-23).

Wouters, P., Paas, F., & van Merriënboer, J. J. (2008). How to optimize learning from animated models: A review of guidelines based on cognitive load. *Review of Educational Research, 78*(3), 645-675. https://doi.org/10.3102/0034654308320320

Author's Biography

Bahaa Mustafa is an assistant professor, Technology of Multimedia and Graphic, Faculty of Computer Studies at Arab Open University-Jordan Branch. He holds a Ph.D. in Graphic design and multimedia.

International Design and Art Journal

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Perception and evaluation of interior space: Experimental study on color and pattern

Assoc. Prof. Dr. Emina Zejnilovic[1*], Assoc. Prof. Dr. Erna Husukic[2], M.A. Dino Licina[3]

[1]International Burch University, Faculty of Engineering and Natural Sciences, Department of Architecture, Sarajevo, BiH.
emina.zejnilovic@gmail.com

[2]International Burch University, Faculty of Engineering and Natural Sciences, Department of Architecture, Sarajevo, BiH.
erna.husukic@gmail.com

[3]Upbiro, Bar, Montenegro.
Desk792@live.com

*Corresponding Author

Received: 03.10.2022
Accepted: 07.01.2023

Citation:
Zejnilovic, E., Husukic, E., Licina, D. (2023). Perception and evaluation of interior space: Experimental study on color and pattern. *IDA: International Design and Art Journal*, *5*(1), 13-30.

Abstract
The phenomenon of perception and visual illusion in interior space is a topic that attracts multidisciplinary interest. From the perspective of architecture and design, the complexity of the subject gains momentum, as it is also associated with experiencing the influence of design elements and tools on the quality of indoor environments, which subsequently involves subjective, individual and emotional concepts that play all together an important role as intermediating variables. Aiming to evaluate the experience of interior architectural space, how its properties and visual weight is perceived, a descriptive type of survey research was used to conduct an experimental assessment, with involvement of 93 participants who rated 27 spaces/rooms in eight experiential categories. For the exploratory purposes of this study, a methodology presented by Gerald Franz (2006) was used, who evaluated the perception of space and color, and perceived surface qualities of indoor environments. To achieve an approximative descriptive visual response in this model, the semantic differential was employed as a simple and widely used method. In order to detect the three primary dimensions of emotion as occurring in affective appraisals (pleasure/valence, excitement, and dominance), the combination of pairs of oppositional adjectives with a Likert scale are applied. In addition, ratings of openness and spaciousness were included to detect possible interactions between selected parameters, surface characteristics and experienced space proportions, and ambience.

Keywords: Color, Pattern, Order, Perception, Interior design

Extended Abstract

Introduction: When trying to understand how spatial layout of a room is perceived, interior designers and educators primarily address issues of surface treatment, scale, and proportion. There is a wide consensus that by introducing certain colors or geometrical patterns, physical spatial properties can be visually altered (Stamps, 2005: 736). In specific, color and its influence on space perception and emotions has been identified as a major characteristic, a strong design tool that can add perceived weight to surfaces, alter the basic proportions of a room, and distinctly be a calming or exciting factor. Similarly, pattern as one of the primary characteristics of surfaces, has been greatly studied because it can influence the perception through altered proportional readings of a space (Meyer, 1957: 7-20). Large-scale repeats with complex patterns and contrasting colors may be appealing in a large room but can also create overwhelming emotions in a small one. Patterns with vertical lines may add visual height to a room with low ceilings. Conversely, patterns with horizontal lines can make a room or a piece of furniture look wider (Kilmer & Kilmer, 2014: 128). Castell et al. (2019: 29) on the other hand argue that object-based texture effects cannot be generalized to interior space perception, stating that pattern density impacts visual perception more than pattern orientation. However, there is a limited number of empirical studies that examined the specific ways in which the interior environments are perceived and evaluated.

Purpose and scope: In addition to limited empirical research, it is also difficult to record how interior features of a space impact the perception of users in a systematic way. Therefore, attempting to understand the interaction of color, patterns,

and surface qualities with space, the study presents an experiment conducted by using a 3D modelled virtual room. Spatial models presented to the respondents are all dimensionally equal, with the same position of opening, with dimensions of the room being 4.3m x 5m and height of 2.8m. The opening is 1.5m x 2.2m and the height is positioned at the center of the adjacent wall. In all scenes, the surface of the floor is covered with light wood parquet. The position of the camera is fixed and equal for all scenes and its height was set at the eyelevel, or to 1.6m, which is accepted as the average height. By treating the vertical and horizontal surface of the ceiling with color and/or pattern, a total of 27 scene variations are obtained. 93 respondents were asked to evaluate their perception on the space in four dimensions: valence, excitement, dominance, and spatiality, and eight categories: pleasantness, harmony, excitement, interestingness, obtrusiveness, gravity, spaciousness, and enclosure.

Method: Evaluation of spatial perception is performed by analyzing the effects of advancing and receding colors, large- and small-scale patterns, reflectiveness and refractiveness of surfaces. For the exploratory purposes of this study, the semantic differential as a simple and widely used method for the approximative quantification of emotional responses is chosen (Franz, 2006: 4) conducted with the involvement of 93 participants who rated 27 spaces/rooms in eight experiential categories. The combination of pairs of oppositional adjectives with a Likert scale are used for the three primary dimensions (pleasure, arousal, and dominance) of emotion that occur in affective appraisals (Mehrabian & Russell, 1974: 18) are presented in Figure 1 and Table 1 respectively. It has been argued that such a framework allows effective quantification of affective responses using introspective verbal scale setting. In addition, ratings of dominance and spatiality or openness were collected to detect possible interactions between room color and experienced room dimensions.

Findings and conclusion: The findings confirm that it is challenging to analyze how interior space is perceived from an architectural perspective. An additional challenge is how to record the impact of selected spatial features on the users in a systematical way. The results of the study confirm that color selection is the primary factor impacting perception, particularly valence and spatiality, while the size of pattern was related mostly with spatial proportions and affected perception of dominance and spatiality. Additionally, patterns with strong color contrasts and angular geometry are perceived more as unpleasant and obtrusive, in comparison to small scale patterns, as well as patterns with lower color contrast. Interestingly, there were no significant differences in perception, related to selective coloring of space surfaces in all categories evaluated. Additionally, the study confirms that virtual reality simulations are an extremely useful and effective tool for basic architectural research that enables novel empirical methods to be used in research and results in faster acquisition of findings. In a broader sense, the results of the study also confirm that aspects of perception and spatial experience are analytically investigable and have detectable correspondents in the physical environment and that selected spatial properties greatly influence spatial perception as well.

Keywords: Color, Pattern, Order, Perception, Interior Design

INTRODUCTION

Investigation into how to experience space and evaluate its visual and aesthetic quality in architecture, a rational, technical, and engineering function serving artistic science, has never been a straightforward topic. Throughout history, spatial quality has been associated with universal values of truth, love, and reason, been explained in scientific punctuality of proportion, rationalized through concept of order, and equalized with mathematical lawfulness but it has never been quite fully explained. Contemporary researches have shifted the scholarly focus from scientific rationalization trials to an argument which claims that spatial cognition is not universal, it is rather influenced by multiple social factors such as culture, customs, gender, age, or even professional expertise (Levinson, 2003: 62; Levinson & Wilkins, 2006: 26).

Therefore, understanding the multilayered nature of the subject this study argues that the users respond to physical properties of space with a particular visual and emotional reaction to the environment. Through recent investigations made in virtual environments, researches on the correlation between a physical structure and perception or emotional experience have gained momentum. This virtual experience allows easy simulation and facilitates effortlessly controllable, fast variations of spatial properties, allowing quick evaluations of spatial qualities through individual experiences. Attempting to make reliable predictions on how visual perception can change the understanding and interpretation of an ambiance and space, several factors involved in establishing the composition, which leads to a distinct experience, are parallel presented.

This is done by using both individual and interactive effects of surface characteristics, color, pattern, and finishing properties (reflection and refraction), aiming to assess the experience of interior architectural space

and its visual weight. Selected criteria have been designated because they are the fundamental qualities of our visual perception, which has a straightforward impact on the viewer, spatial quality, and human consciousness, in general. The primary goal is to test the association of spatial properties with visual perception and analyze if and in what way the visual quality of interior space can be improved through the appropriate use of design tools and elements. To achieve that, the study experiments with establishing interrelations between parameters from the simplified component-based spatial model and attributed experiential qualities of interior spaces. In specific, the explorative questions aim to examine the influence of applications of different color categories, pattern and surface finishes on the visual experience, and to understand how design parameters could be considered when attempting to correct the proportions of interior spaces.

Perception and Interpretation in Architecture

"… one was to experiment in the here and now: thus, life was a perceptual experience."
Dan Graham, 1999

In architecture, three-dimensional space is the primary medium, and creation of spatial compositions is the fundamental task. However, its definition as well as the way it is perceived is extremely diverse. The lack of learned or scholarly defined appraisal parameters, units of values, or simply insufficient information and knowledge on the subject of spatial relationships, may restrict the ability to certainly predict the users' respond to a particular space.

Perception is a remarkably personalized and individual experience that is both instinctive and intellectual in character and is tackled from various perspectives, and by numerous professionals. In common terminology, perception is defined as the way one thinks about something and the idea of what it is like the way one notices things as sensory information, or the natural ability to understand or notice things quickly. However, in philosophy, psychology, and cognitive science, perception is viewed as a process that -aside from gaining sensory information- encompasses its interpretation, and how it is evaluated or subjected to a form of judgment (Qiong, 2017: 18). When associating perception with a place, two concepts are identified: emotional perception which involves recording of data and actions that have been attained through senses; and cognitive perception which in addition to sensory stimuli is concerned with the process, the factors that influence how the information is organized and the judgment is formed as an interpretation of the stimuli (Downs & Stea, 1973: 10). Some theories argue that perceptual experiences happen long before "the soul takes notice." (D'Annunzio, 1912: 119). However, the nature of perceptive experience in architecture is immediate, emotive, and even subconscious (Dewey, 1934: 29). The significance of emotional character of space perception is claimed to be biologically derived and largely unconsciously and instinctively determined through evolutionary programming (Pallasmaa, 2014: 233). Emotional sensibility is additionally associated with the concept of "atmosphere" as a form of perception that happens very fast (Zumthor, 2006: 6) and cannot be invalidated as it is a spontaneous reaction of everyone. It is also seen as an immediate and synthetically grasped response to complex multi-sensory stimuli of numerous factors, and interpreted as an overall atmosphere, ambience, feeling or mood (Pallasmaa, 2014: 230).

Contemporary research is focused on the interactions of spatial factors on perception from numerous aspects. Architectural forms and elements have been identified as one of the primary factors impacting perceptive experience, studied through an academic field of environmental or architectural psychology (Hall, 1969; Gifford 2002). Findings of the detailed study on emotional reactions to architectural space geometry suggest that even criteria such as protrusion, curvature, scale and proportion of space influence the use's emotional state and perceptive experience (Shemesh et. al., 2022: 1). Furthermore, planning for senses and experience, has come forward as one of the key considerations to be made by architects in the designing process (Li, 2019: 195). The focus has also been put on the essential role that sensory stimulus in an architectural space has, raising awareness of this complex and somewhat neglected design aspect. A study on participants' visual, auditory, olfactory, and tactile and kinesthesia perceptions in terms of preference and emotion, shows significant differences among participants' levels of sensitivity to different sensory domains, identifying color as the highest of all stimuli (Chen et. al., 2022: 14). In particular, it has been argued that as a single changing sensory stimulus, a dynamically colored light can lead to significant mood fluctuations and changes in the preference level. Interestingly, yellow color has been identified as the favorite color of light (Chen et. al., 2022: 14).

However, perception in architecture is not viewed as a single moment but rather as a process that interprets the logic behind the systems formed in architectural compositions. It deals with how and to what level the viewer is able to organize selected visual information, elements of architecture, into meaningful patterns, which would correlate with the level of achieved visual order, and thus the level of visual quality. “Order” on the other hand is too abstract and a broad term to be successfully defined with a single statement. It is defined as the degree and kind of lawfulness governing the relations among the parts of an entity (Lorand, 2000: 9). The level of order will depend on the degree of conformity and on the level of unity reached in the organization of a variety of architectural elements. The greater the order, the more comprehensive the perception and judgment is. It is claimed that order is achieved when our vision can perceive similarities and differences within a design composition (Bohm & Peat, 1987: 111). Interestingly, Aristotle made a similar claim regarding the definition of beauty, “beauty lies in the recognition of similars within dissimilars” (Smith, 2003: 24). Contemporary research on cognitive perception is more concerned with factors that shape judgment. Culture has been identified as the primary factor influencing sensory information interpretation. Cultural factors provide some of the meaning involved in perception. They are, therefore, intimately implicated with that process (Samovar et al., 1981: 11). In fact, contemporary research puts culture into the center stage as an important parameter in evaluating perception in the architectural arena and achieving long-lasting and socially responsible architectural design. Associating culture with how to perceive and evaluate space seems like a logical connection since perception, as an experience, is never isolated from positive or negative understandings, familiarities, ideas, beliefs, views, and opinions. Such “valued” perception does not deny the role of senses in forming a judgment on the visual quality but attempts to understand how much of it has to do with what people have learned through situations that societies or individuals have been and are exposed to.

The difficulty in defining how space is perceived and reacted to, or if it is an innate of attained skill, has always been a universal debate, addressed by numerous theoreticians, philosophers, anthropologists, visual artists, linguistics and even theologists. Though modern researchers have proclaimed that a single model of positive experience in architecture is a utopian concept, this idea has taken a turn from defining a universal “beautiful form” or positive perceptual response into discovering universal socio-cultural values, leading researchers to the path of comparative cultural analysis (Gonzales, 2003; Gonzales, 2001; Berleant, 2004). In “The Anthropology of Art” Morphy and Perkins (2009: 333) describe a person’s perceptive reaction to an object as being comprised of two parts: the fairly objective perception of the physical characteristics of an object, defining it as noticeable but meaningless; and the relation of those characteristics to a subjective set of cultural connotations; claiming that only upon being processed through their incorporated systems of value and meaning, physical properties of an object take upon aesthetic properties.

Perception of Color and Pattern

Spatial properties undeniably have great emotional potential, particularly those associated with space dimension and size as well as enclosure (Stamps, 2005: 735). In general, rooms that create a sense of spaciousness but still offer sufficient enclosure for protection (Newman, 1996: 18) and privacy purpose, as well as those that provide pleasant vistas, are preferred by the users. But, out of all spatial elements, color and its influence on space perception and emotions has been studied the most. It is a strong design tool, as color can add perceived weight to surfaces, alter the basic proportions of a room, and diversely be a calming or exciting factor. Interestingly, color is defined as a nonphysical property of things but is, in fact, a specific spectrum of light that bounces off or through an object (Gordon, 2003: 56). Color has several properties, such as saturation, hue, and value that have numerous variations of a single color through tints, tones, and shades. Studies on color and its properties are mainly concerned with how it influences affective space dimensions, excitement, and dominance (Riley, 1996: 321; Yildirim et al., 2011: 509-524; Curcic et al. 2019: 866-877). The theory defines light, warm, and saturated colors as more arousing; they increase the apparent size of space or object, while deep, cool, dull, or muted colors have the opposite effect and appear to contract the space. Opposingly, light values, cool hues, and grayed colors are used to enhance the spaciousness of a room and increase its apparent width, length, or ceiling height. Dark values and saturated colors suggest nearness. These traits can be used to diminish the scale of a space or, in an illusory way, to shorten a room’s various dimensions. If receding colors with low contrast are applied, it will create a feeling of spaciousness, while strong color

contrasts and/or advancing colors will reduce it (Kilmer & Kilmer, 2014: 166-175; Dodsworth, 2009: 130; Love & Grimley, 2007: 78).

There is a significant research body on the impact of color on space perception. Specifically, a study on the emotional reactions to red, green, blue, and gray colors introduced in the living room states that the most recorded emotions associated for the red room were disgust and happiness, while the least stated emotions were sadness, fear, anger, and surprise; for the green room, neutral and happiness were the most stated emotions, and anger, surprise, fear, and sadness were the least stated ones; for the blue room, neutral was the most stated emotion, while the least stated emotions were anger and surprise. Neutral, disgust, and sadness were the most stated emotions for the gray room. Gender differences were not found in human emotional reactions to living rooms with different wall colors (Günes and Olgunturk, 2020: 139). Similarly, research on the investigation of the effects of colors and spatial-architectural dimension in the work environment, argues that the variations in space perception were significantly associated with the difference in color, area, and height. In this research, it is argued that neutral colors were had the most positive response in all considered factors of space perception (Savavibool and Moorapun, 2017: 357).

Correspondingly, pattern as one of the primary characteristics of surfaces, has been greatly studied because they can influence the perception through altered proportional readings of a space. Large-scale repeats with complex patterns and contrasting colors can be appealing in a large room but can create overwhelming emotions in a small room. Patterns with vertical lines can add visual height to a room with low ceilings. Conversely, patterns with horizontal lines can make a room or a piece of furniture look wider (Kilmer & Kilmer, 2014: 128). Castell et al. (2020: 50) on the other hand argue that object-based texture effects cannot be generalized to interior space perception, stating that pattern density impacts visual perception more than pattern orientation. However, despite the large academic body, it is still difficult to form a single solid framework that associates, quantifies, and defines the interaction between color and pattern with space perception. Though existing theories that analyze the impact of individual factors and their interaction with space and subsequent perceptive response are not realistic, as spatial assessment is always resulting from multiple factors; they form a solid base for future research.

METHOD

This study aims to evaluate perception and experience of interior architectural space, spatial properties, and visual weight, attempting to understand interaction of color, patterns, and surface qualities with space. In particular, it evaluates the effect of advancing and receding colors, large- and small-scale patterns, reflectiveness and refractiveness of surfaces. For the exploratory purposes of this study, the semantic differential as simple and widely used method for the approximatively quantification of emotional responses is chosen (Franz, 2006: 4). The combination of pairs of oppositional adjectives with a Likert scale are used for the three primary dimensions (pleasure, arousal, and dominance) of emotion as occurring in affective appraisals (Mehrabian & Russell, 1974 :18), and are presented in Figure 1 and Table 1 respectively. It has been argued that such a framework allows effective quantification of affective responses using introspective verbal scale setting. In addition, ratings of dominance and spatiality or openness were collected to detect possible interactions between room color and experienced room dimensions.

Table 1. Semantic differential rating categories used in the experiment

Dimension	Category	English high extreme	English low extreme
Valence	Pleasantness Harmony	Pleasant Positive	Unpleasant Negative
Arousal	Excitement Interestingness	Calming Interesting	Exciting Boring
Dominance	Obtrusiveness Gravity	Inobtrusive Light	Obtrusive Oppressive
Spatiality	Spaciousness Enclosure	Narrow Open	Spacious Enclosed

PLEASE RATE YOUR EXPERIENCE OF THE SPACE PRESENTED BELOW *

	1	2	3	4	5
1 - unpleasant; 5 - pleasant	○	○	○	○	○
1 - positive; 5 - negative	○	○	○	○	○
1 -exciting; 5 - calming	○	○	○	○	○
1 - interesting; 5 - borring	○	○	○	○	○
1 - inobtrusive; 5 - obtrusive	○	○	○	○	○
1 - light; 5 - opressive	○	○	○	○	○
1 - narrow; 5 - spaciouss	○	○	○	○	○
1 - open; 5 - enclosed	○	○	○	○	○

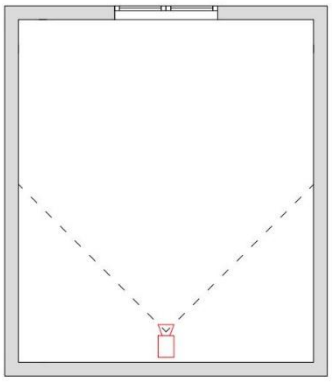


Figure 1a. Questionnaire used in survey

1b. Layout of room with camera and opening position

Research Model

The experiment is conducted using a 3D modelled virtual room. This study recruited 93 participants in total, out of whom forty-two mail and fifty-one female respondents, with average age 38.6, evaluated the presented spatial models. Presented spaces were dimensionally equal (being 4.3mx5m and height of 2.8m), with a 1.5mx2.2m opening positioned at the center of the adjacent wall. In all scenes the surface of the floor is covered with light wood parquet. The position of the camera is fixed and equal for all scenes and its height was set at the eyelevel, or to 1.6m, being accepted as the average height (Figure 1b). By treating the vertical and horizontal surface of the ceiling fully and partially with advancing or receding color, floral and geometrical pattern of larger and smaller scale a total of 27 scene variations are obtained.

93 respondents were asked to evaluate their perception on the space in four dimensions: valence, excitement, dominance, and spatiality, and eight categories: pleasantness, harmony, excitement, interestingness, obtrusiveness, gravity, spaciousness and enclosure. Using web-based questionnaire form, the survey was distributed online (e-mail and social media), together with a description of the experiment and brief instructions, by which they were introduced to the experimental activity and its general purpose. In order to obtain the most sincere reaction, the participant were asked to respond quickly and in accordance to their first impression. The survey conducted has been revised and approved by the Ethics Committee, document no.: 01-400/22, date 10/11/2022.

Different variations of the scenes were made through manipulation of vertical surfaces and different color applications. Two advancing and two receding colors were applied, on different positions. First all surfaces were painted in one color (receding or advancing), next the whole room but the ceiling stayed white, then only the wall with the opening was painted in given color, after that ceiling and wall with the opening were painted and finally only two side walls were painted. After the application of color, pattern was used - two floral and three geometrical. At the end, walls were treated with mirror and transparent material. Total of 27 different scenes were created.

FINDINGS

The following tables present the high values of perception evaluation by participants in the indicated dimensions and categories.

Colors

Receiding	VALENCE		AROUSAL		DOMINANCE		SPATIALITY	
	PLEASINGNESS	HARMONY	EXCITEMENT	INTERESTINGNESS	OBTRUSIVENESS	GRAVITY	SPACIOUSNESS	ENCLOSURE
	26.88% neutral	23.65% positive	25.80% neutral	25.80% neutral	30.10% inobtrusive	23.65% light	27.95% neutral	25.80% enclosed
	41.93% unpleasant	26.88% negative	30.10% exciting	29.03% borring	37.63% inobtrusive	27.95% neutral	37.63% neutral	24.73% neutral
Advancing								
	51.61% unpleasant	31.18% negative	45.16% exciting	35.48% borring	48.38% obtrusive	52.68% heavy	29.03% narrow	47.31% enclosed
	43.01% unpleasant	25.80% negative	36.55% exciting	26.88% borring	26.88% obtrusive	36.55% neutralno	30.10% narrow	26.88% enclosed

Figure 2. Survey results of the application of colors on all walls

Colors

Receiding	VALENCE		AROUSAL		DOMINANCE		SPATIALITY	
	PLEASINGNESS	HARMONY	EXCITEMENT	INTERESTINGNESS	OBTRUSIVENESS	GRAVITY	SPACIOUSNESS	ENCLOSURE
	37.63% neutral	37.63% neutral	29.03% neutral	35.48% neutral	34.40% neutral	26.88% neutral	27.95% spaciouss	27.95% neutral
	44.08% neutral	45.16% neutral	45.16% neutral	44.08% neutral	31.18% neutral	44.08% neutral	37.63% neutral	41.93% neutral
Advancing								
	32.25% neutral	36.55% neutral	34.40% exciting	33.33% neutral	32.25% neutral	29.03% neutral	36.55% narrow	31.18% neutral
	33.33% neutral	39.78% neutral	35.48% neutral	30.10% neutralno	37.63% neutral	41.93% neutral	34.40% neutral	35.48% neutral

Figure 3. Survey results when ceiling is white

Colors

Receiding	VALENCE		AROUSAL		DOMINANCE		SPATIALITY	
	PLEASINGNESS	HARMONY	EXCITEMENT	INTERESTINGNESS	OBTRUSIVENESS	GRAVITY	SPACIOUSNESS	ENCLOSURE
	25.80% pleasant	37.63% neutral	29.03% neutral	30.10% neutral	32.25% neutral	30.10% neutral	27.95% neutral	32.25% neutral
	36.55% neutral	31.18% neutral	32.25% neutral	27.95% neutral	27.95% neutral	31.18% light	32.25% spaciouss	27.95% open
Advancing								
	39.78% neutral	36.55% neutral	37.63% neutral	33.33% neutral	32.25% neutral	33.33% light	32.25% neutral	30.10% neutral
	32.25% neutral	32.25% neutral	32.25% neutral	31.18% neutral	32.25% neutral	33.33% light	34.40% neutral	33.33% open

Figure 4. Survey results when color is applied only on the back wall

Colors

Receiding	VALENCE		AROUSAL		DOMINANCE		SPATIALITY	
	PLEASINGNESS	HARMONY	EXCITEMENT	INTERESTINGNESS	OBTRUSIVENESS	GRAVITY	SPACIOUSNESS	ENCLOSURE
	36.55% neutral	30.10% neutral	40.86% neutral	32.25% neutral	38.70% neutral	32.25% neutral	35.48% neutral	33.33% neutral
	31.18% neutral	33.33% neutral	37.63% neutral	47.31% neutral	44.08% neutral	36.55% neutral	32.25% neutral	30.10% neutral
Advancing								
	32.25% neutral	36.55% neutral	41.93% neutral	35.48% neutral	35.48% neutral	35.48% neutral	40.86% neutral	41.93% neutral
	29.03% neutral	31.18% neutral	43.01% neutral	32.25% neutral	39.78% neutral	38.70% neutral	32.25% neutral	34.40% neutral

Figure 5. Survey results when same color is applied both on the back wall and on the ceiling

Colors

Receiding	VALENCE		AROUSAL		DOMINANCE		SPATIALITY	
	PLEASINGNESS	HARMONY	EXCITEMENT	INTERESTINGNESS	OBTRUSIVENESS	GRAVITY	SPACIOUSNESS	ENCLOSURE
	32.25% neutral	32.25% neutral	35.48% neutral	32.25% neutral	32.25% neutral	27.95% light	35.48% neutral	29.03% neutral
	31.18% neutral	34.40% neutral	35.48% neutral	30.10% neutral	37.63% neutral	36.55% neutral	41.93% neutral	32.25% neutral
Advancing								
	33.33% neutral	31.18% neutral	41.93% neutral	37.63% neutral	27.95% neutral	31.18% light	31.18% neutral	35.48% neutral
	27.95% neutral	35.48% neutral	36.55% neutral	27.95% neutral	29.03% neutral	33.33% neutral	31.18% neutral	33.33% neutral

Figure 6. Survey results when color is applied on opposing walls

Pattern

	VALENCE		AROUSAL		DOMINANCE		SPATIALITY	
	PLEASINGNESS	HARMONY	EXCITEMENT	INTERESTINGNESS	OBTRUSIVENESS	GRAVITY	SPACIOUSNESS	ENCLOSURE
	26.88% pleasant	23.65% positive	27.95% neutral	34.40% interesting	24.73% obtrusive	26.88% light	31.18% neutral	30.10% neutral
	22.58% unpleasant	24.73% positive	26.88% neutral	29.03% interesting	27.95% neutral	29.03% neutral	34.40% neutral	29.03% neutral
	38.70% pleasant	33.33% positive	35.48% neutral	39.78% interesting	31.18% inobtrusive	35.48% light	30.10% neutral	34.40% open
	34.40% unpleasant	29.03% neutral	31.18% exciting	27.95% interesting	30.10% obtrusive	32.25% neutral	37.63% neutral	38.70% neutral
	26.88% neutral	35.48% neutral	30.10% neutral	33.33% neutral	35.48% neutral	34.40% neutral	40.86% neutral	43.01% neutral

Figure 7. Survey results when pattern is used

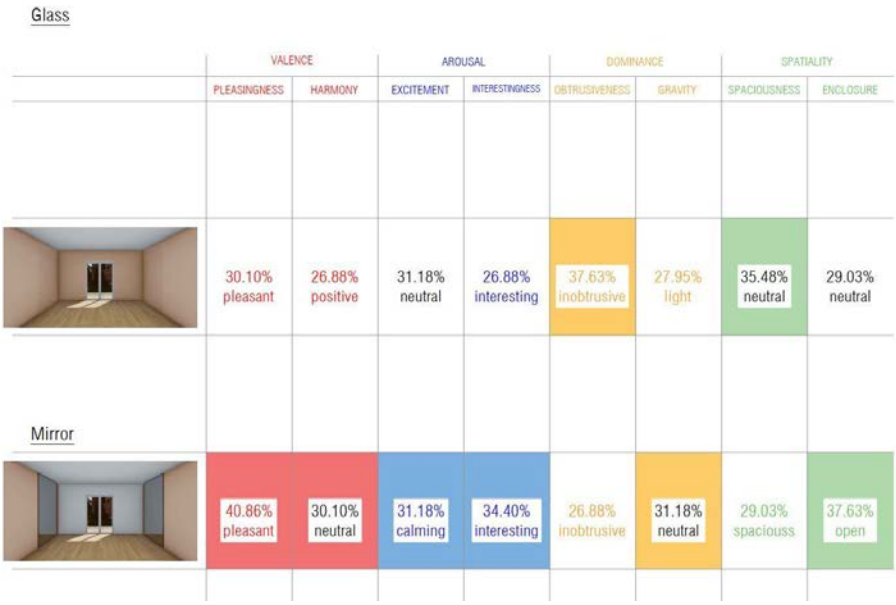


Figure 8. Survey results when glass and mirror are introduced to the room

A chart of complete results of each model is presented as follows:

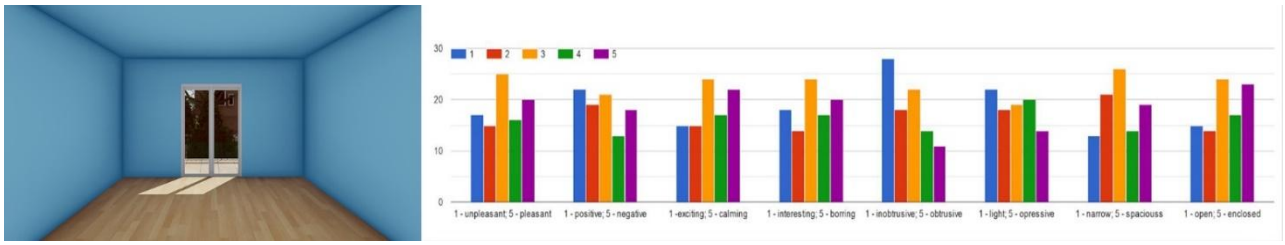


Figure 9. Survey results on question 1

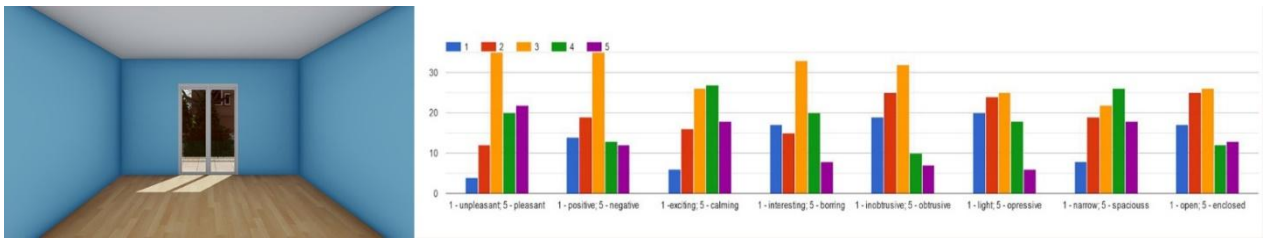


Figure 10. Survey results on question 2

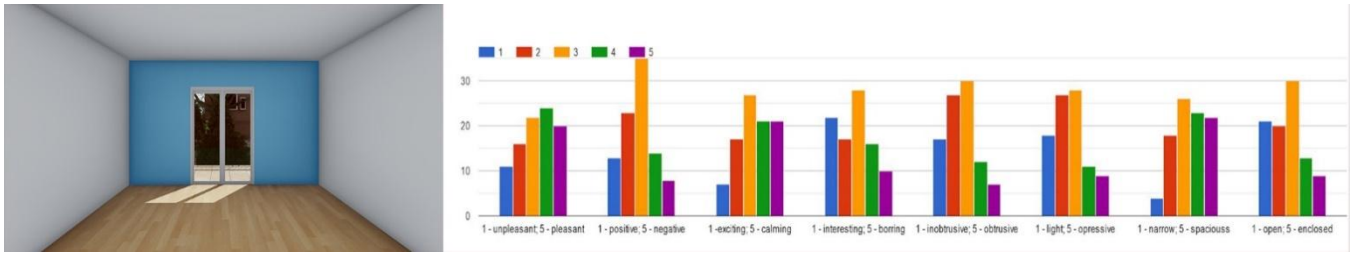


Figure 11. Survey results on question 3

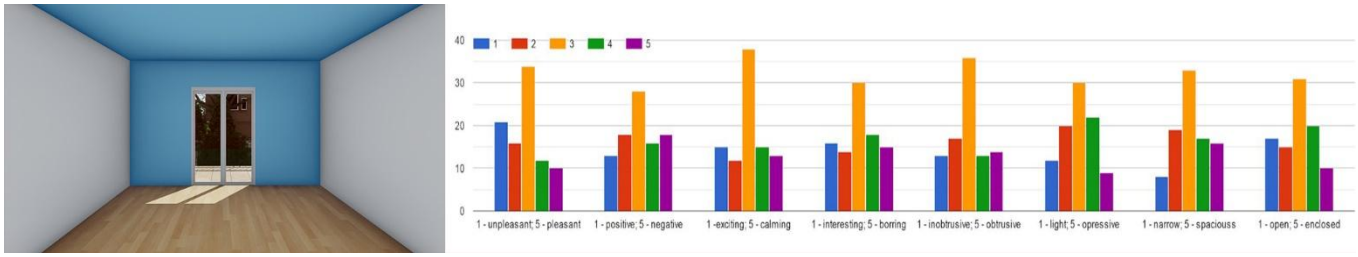


Figure 12. Survey results on question 4

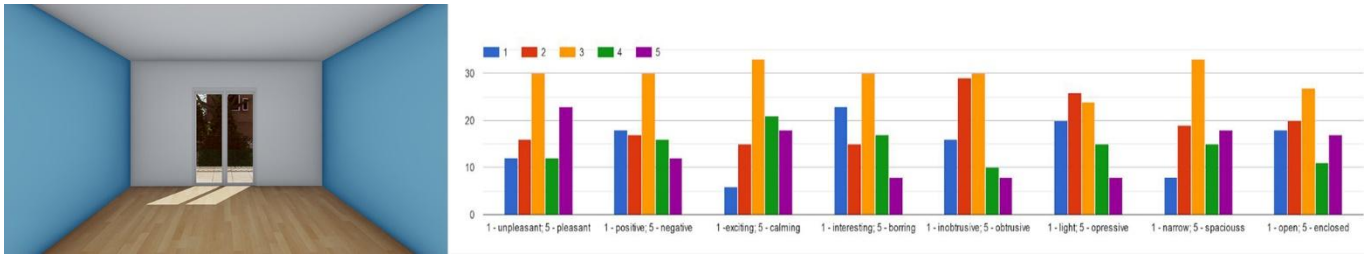


Figure 13. Survey results on question 5

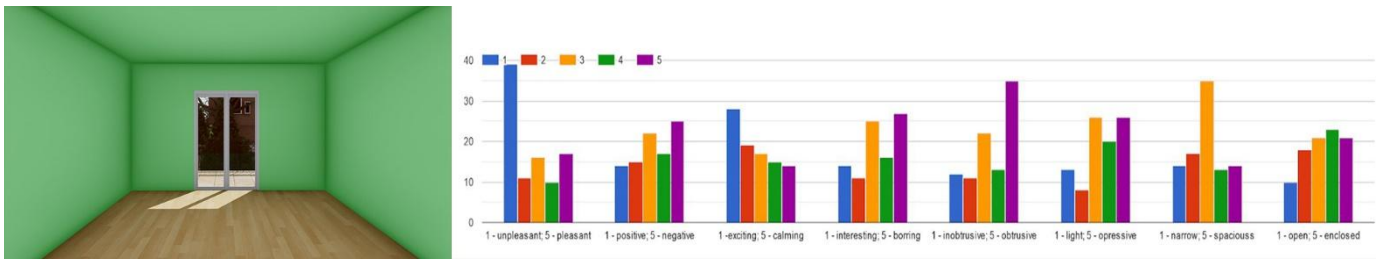


Figure 14. Survey results on question 6

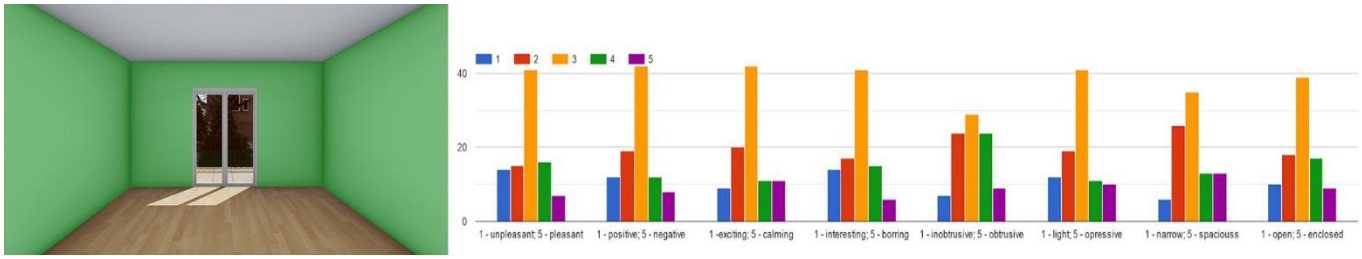


Figure 15. Survey results on question 7

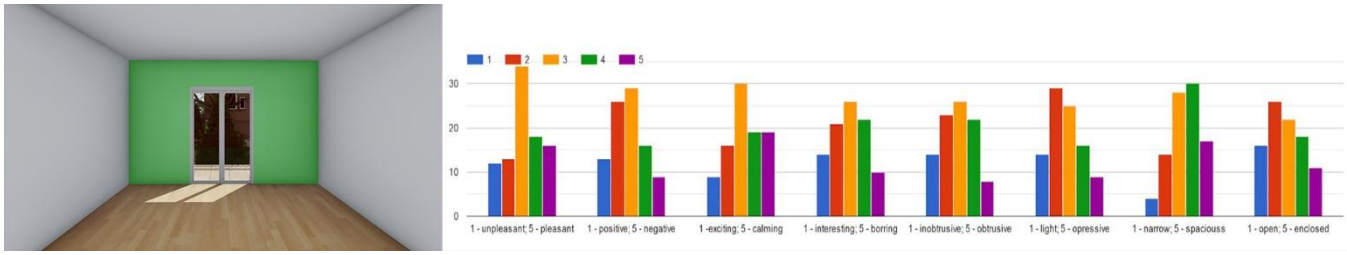


Figure 16. Survey results on question 8

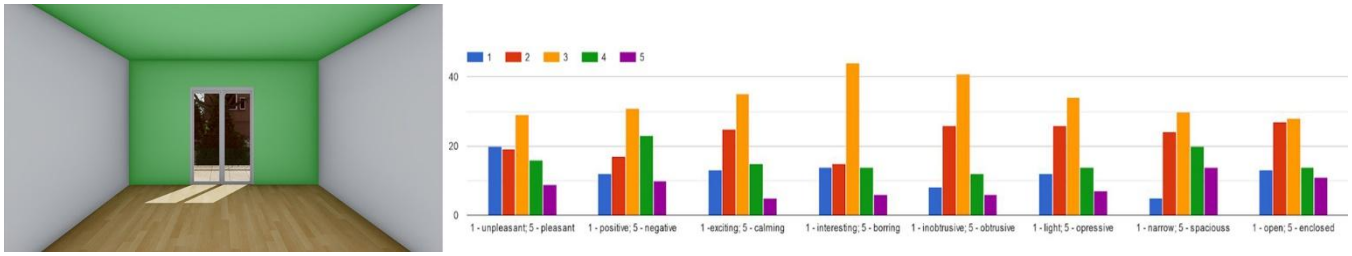


Figure 17. Survey results on question 9

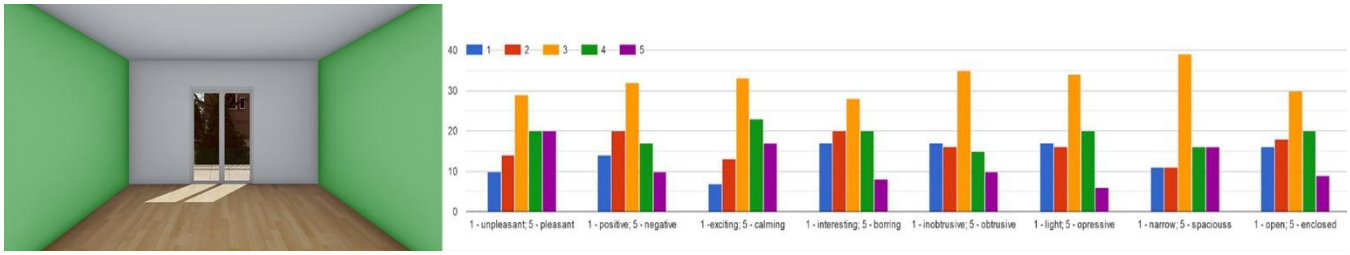


Figure 18. Survey results on question 10

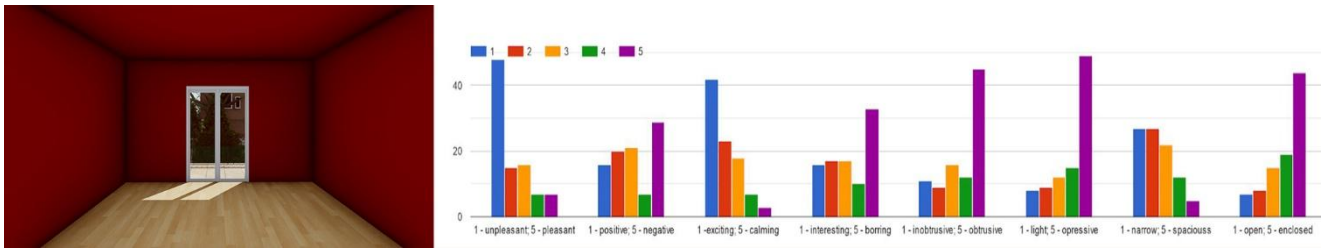


Figure 19. Survey results on question 11

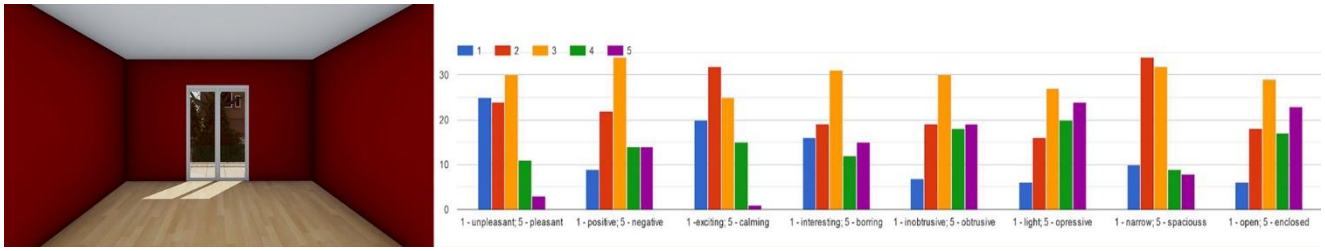


Figure 20. Survey results on question 12

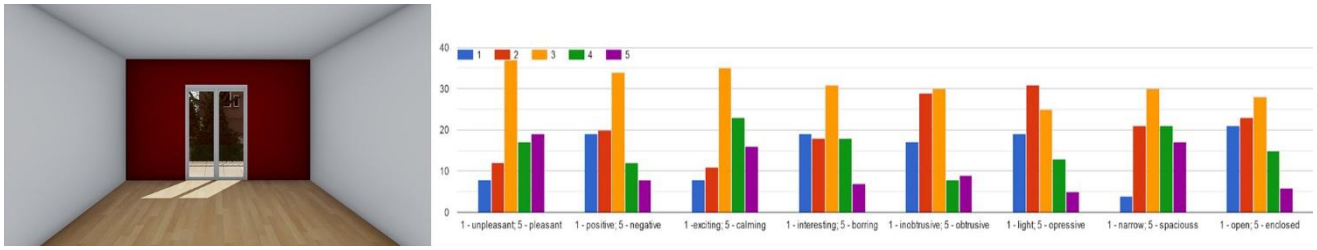


Figure 21. Survey results on question 13

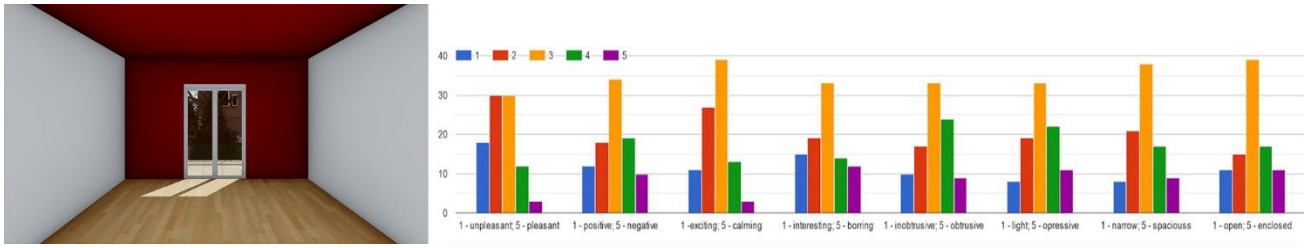


Figure 22. Survey results on question 14

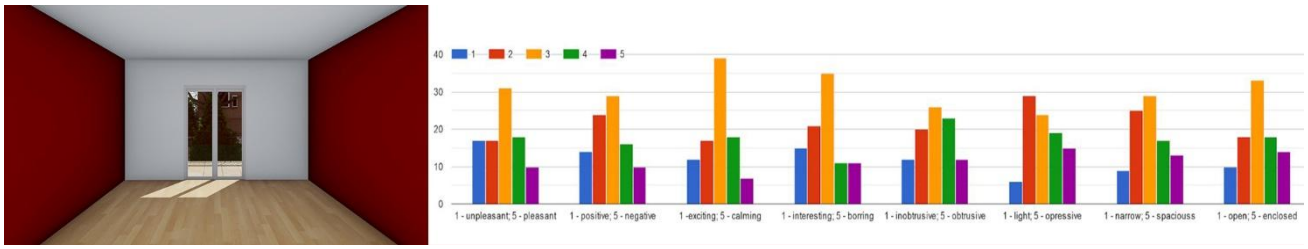


Figure 23. Survey results on question 15

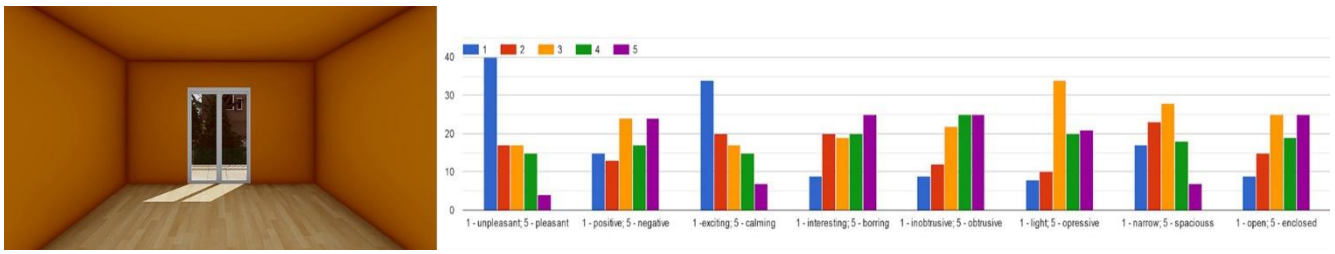


Figure 24. Survey results on question 16

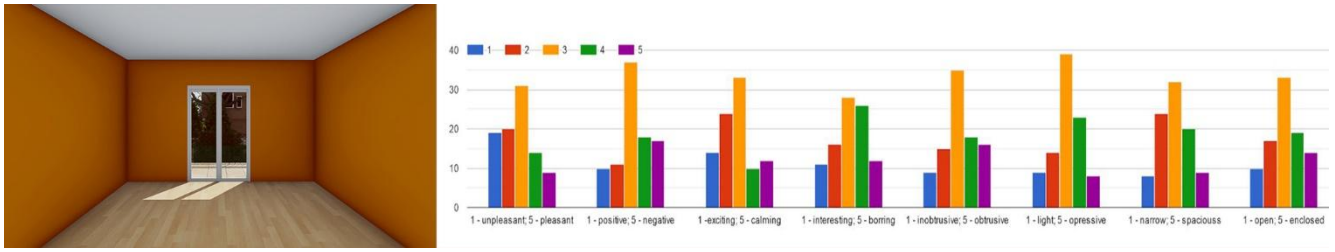


Figure 25. Survey results on question 17

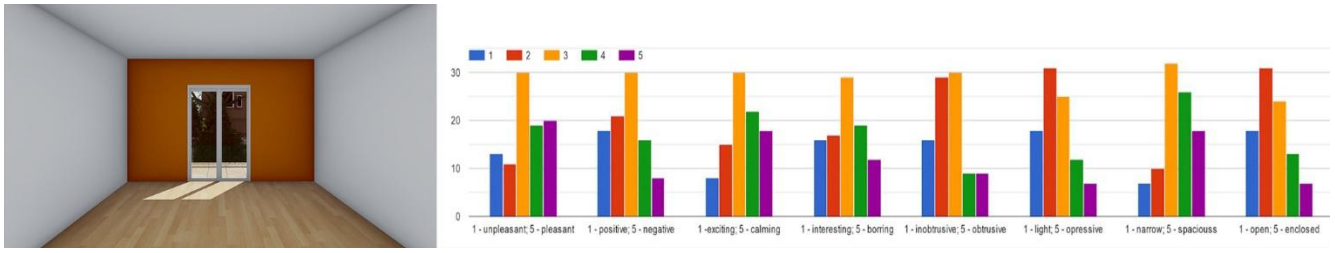


Figure 26. Survey results on question 18

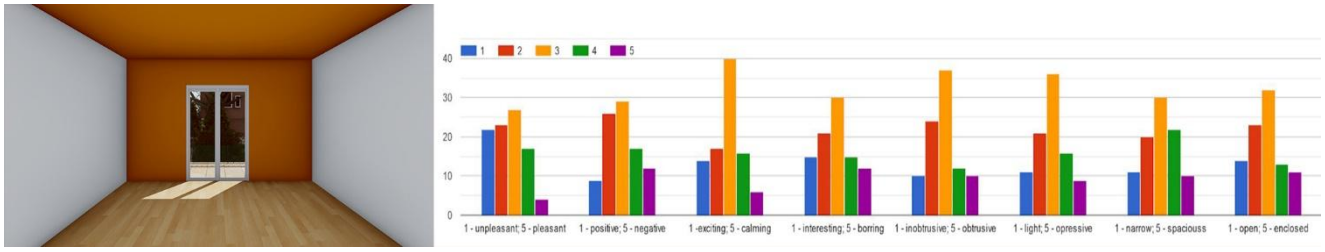


Figure 27. Survey results on question 19

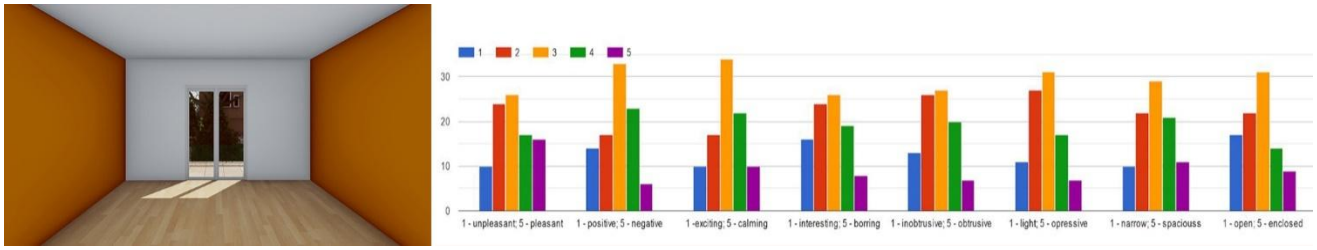


Figure 28. Survey results on question 20

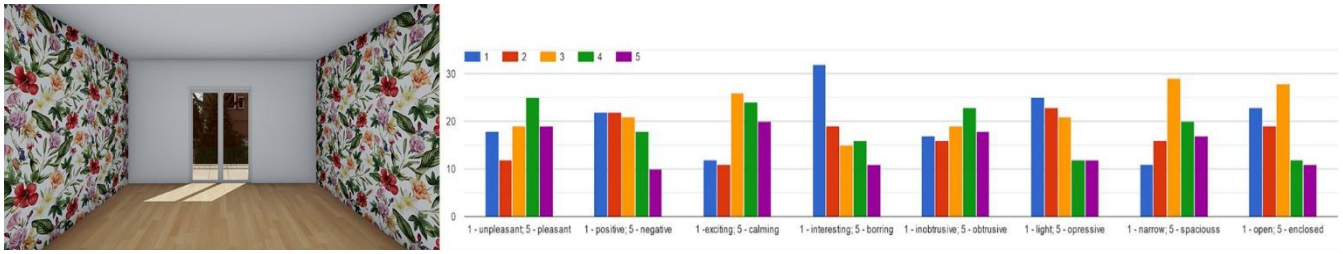


Figure 29. Survey results on question 21

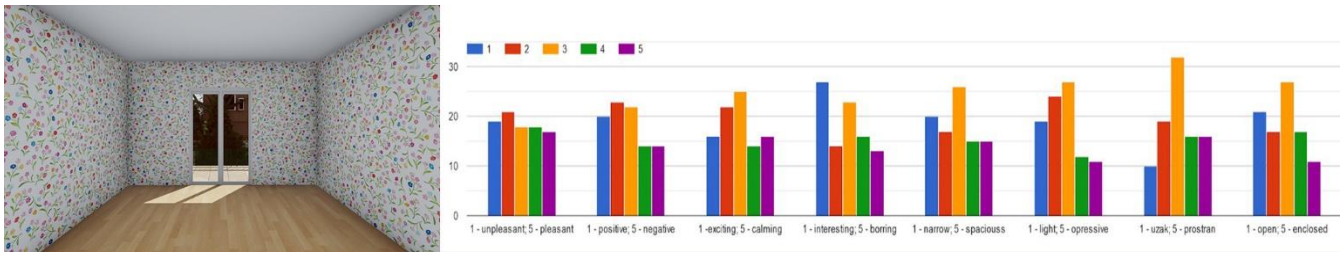


Figure 30. Survey results on question 22

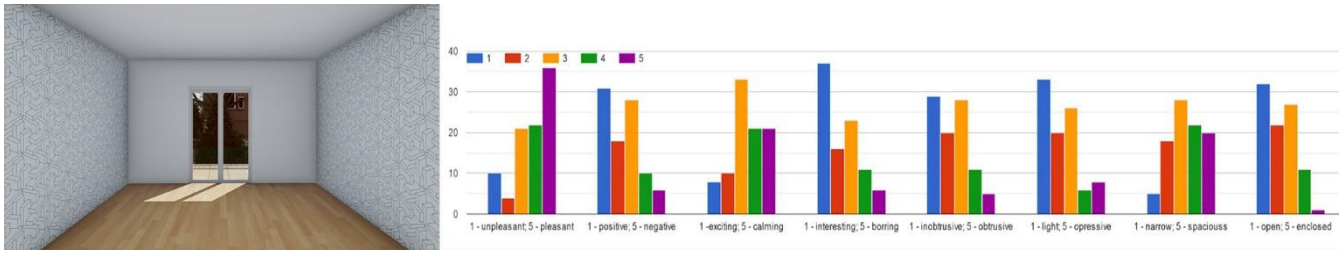


Figure 31. Survey results on question 23

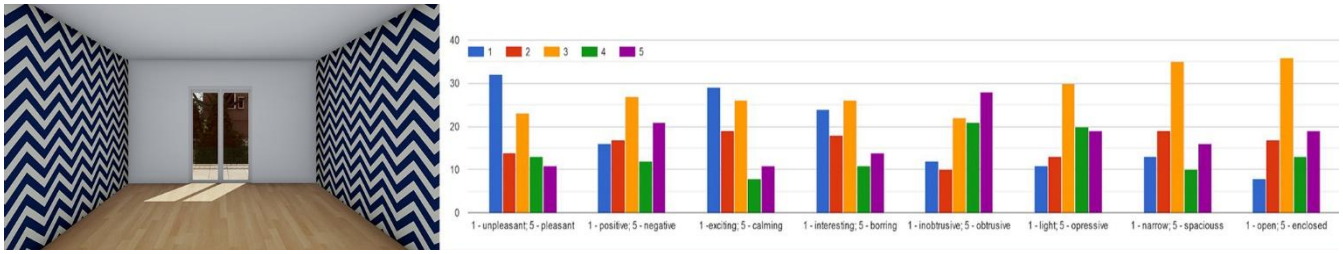


Figure 32. Survey results on question 24

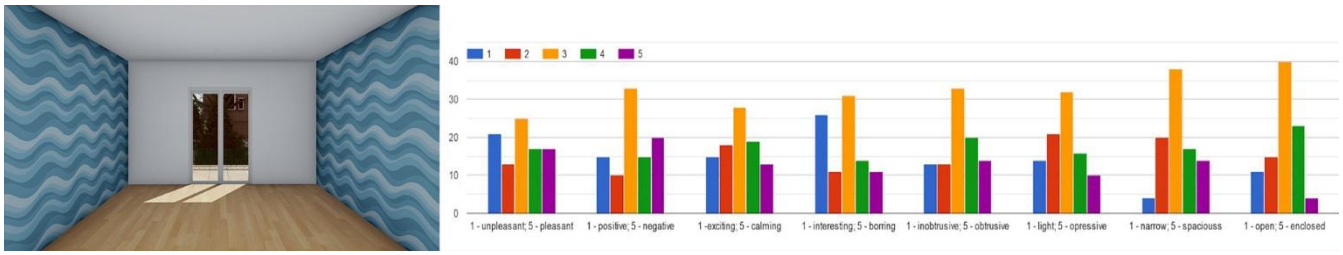


Figure 33. Survey results on question 25

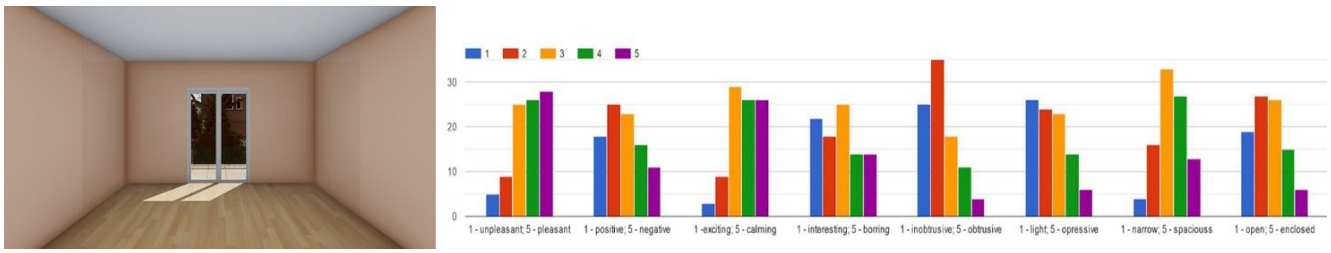


Figure 34. Survey results on question 26

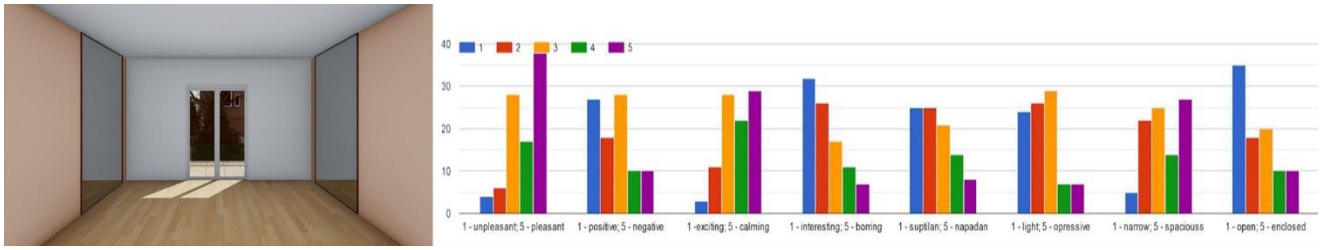


Figure 35. Survey results on question 27

In total 93 participants contributed to the experiment of this exploratory study, which aims to quantify the perception and the relationship between the experience of architectural indoor space with spatial dimensions and selected architectural elements. The experiment confirms that the application of color in interiors has a great impact on how the observers perceive space, significantly affecting the ratings in all the 4 dimensions evaluated.

The analysis presents that in the model where all surfaces are treated with receding colors, most of the participants' responses were neutral in regards to the evaluation and perception of pleasantness, dominance and spatiality, while they perceive it as highly harmonious and unobtrusive. The model with dominant advancing color was perceived as unpleasant with a high level of arousal, dominant and enclosed. Namely more than 51% of respondents perceived these colors as unpleasant, 45% rated them as exciting, 48% as obtrusive and 47% as enclosed. When colors were not applied on all the walls, most of the results were neutral so it can be said that it had no significant impact on visual perception. Regarding correlations between advancing and receding colors, in terms of spatiality and dominance, the opposite tendencies have been

recorded. If a space was perceived as obtrusive and enclosed when using advancing colors, results are showing that when receding colors are used, the same space seems to be more open and lighter.

Models with vertical surfaces that were treated with patterns have been perceived as more interesting than the others, with the mean of 32.7%. Interestingly, a model with a geometrical, large scale, highly contrasting linear pattern was defined as the least interesting but exciting, obtrusive, and unpleasant. Opposingly respondents perceived the space with less contrasting linear geometrical patterns, pleasant and unobtrusive. Remarkably, it has been noted that models which were treated with floral patterns were perceived as if they don't make the space more pleasant than the geometrical pattern. Eventually, 22.5% of the respondents found floral patterns to be pleasant compared to 38.7% that responded positively in the same category for the geometrical pattern. Regarding spatiality, application of pattern had no significant effect on visual perception of the space.

As for the use of highly reflective treatment of surfaces or mirrors in interior space, most respondents perceived the model to be spacious (29.3%) and open (37.6%). Furthermore, the results show the impact of mirrors in pleasingness and excitement, as 40.8% of respondents found the space to be pleasant and 31.18% rated it as calming. When it comes to the use of highly refractive or transparent materials, usage of glass in the interior was evaluated positively in all dimensions and categories presented.

CONCLUSION

The fundamental challenge in understanding how interior space is perceived, is the difficulty of systematically recording the impact of spatial features on the users. There is a very small number of empirical studies, and it is acknowledged that dealing with it through quantitative analysis, is not sufficiently flexible to apply it to a variety of spaces, nor is it sufficiently comprehensive to capture all the relevant features that might be found in a space. The aim is not only to attempt to quantify the correlation between the elements and positive response, but also to provide useful information on the influence of surface characteristics on visual perception, which could potentially be used to improve indoor environment quality. The study confirms that virtual reality simulations are an extremely useful and effective tool for basic architectural research that enables the application of novel empirical methods in researches, thus resulting in faster acquisition of findings. In broadest terms, the results of the study also confirm that aspects of perception and spatial experience are analytically investigable and have detectable correspondents in the physical environment, as well as that selected spatial properties greatly influence spatial perception. Among the investigated properties, color selection has demonstrated to be the primary factor impacting perception, particularly valence and spatiality, while the size of pattern was related mostly with spatial proportions and affected the perception of dominance and spatiality. Additionally, patterns with strong color contrasts and angular geometry are perceived more as unpleasant and obtrusive, in comparison to small scale patterns, as well as patterns with lower color contrast. Interestingly, there were no significant differences in perception, related to selective coloring of space surfaces in all categories evaluated. It must be noted that the virtual conditions of the modeled environment may have impacted results to a certain level. Also, to be able to obtain more solid conclusions to the raised questions, the research should be expanded in the future, by associating responses not only to different color typology, but also to tones and tints, and to the influence of natural and artificial light, and other elements of interior design compositions, such as furniture, proportions, sizes, etc.

However, the study confirms that the systematic investigation of correlation between physical properties of indoor spaces and the evaluation of their affective qualities is possible. It also acknowledges that regardless of the limitations, they have the potential to result in qualified predictions for design. Such investigations are beneficial not only for professionals but also for the users, as reliable quantification methods for experiential qualities can help create spatial compositions of high order, and thus greater visual and spatial quality. Furthermore, the study contributes to the research body associated with environmental perception, as well as emotional and cognitive spatial perception. Continuation of studies along these lines, expansion and variables, may contribute to developing a more apprehensive methodological framework, which may lead designers in responding more appropriately to perceptual, and therefore comfort level and needs in general. Ultimately such a framework would be useful for the increase in the level of conformity of spatial compositions and quality of indoor environments.

Authors' Contributions

All authors contributed equally to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Based on the Statute of the Higher Education Institution International Burch University, and pursuant to Article 169 of the Law on Administrative Procedure of the Federation Bosnia and Herzegovina ("FB&H Official Gazette", No. 2/98, 48/99), the Ethics Committee certifies that the research manuscript *Perception and evaluation of interior space: experimental study on color and pattern* has been reviewed and approved by the University's Ethics Committee. (Ref. No.: 01-400/22 Sarajevo, 10/11/2022).

REFERENCES

Berleant, A. (2004). *Notes for a cultural aesthetics.* Semantic Scholar. https://www.semanticscholar.org/paper/NOTES-FOR-A-CULTURAL-AESTHETIC-Berleant/927f75f299c0808df3dd035f509a828c98a755ab (29.08.2022).

Bohm, D., & Peat, D. (1987). *Science, order and creativity.* Routledge.

Castell, C., Hecht. H., Oberfeld, D. (2020). Wall patterns influence the perception of interior space. *Quarterly Journal of Experimental Psychology*, *73*(I), 29-54. https://doi.org/10.1177/1747021819876637

Chen, X., Liu, Y., Li, S., & Sun, W. (2022). Sensory perception mechanism for preparing the combinations of stimuli operation in the architectural experience. *Sustainibility*, 14, (7885). https://doi.org/10.3390/su14137885

Ćurčić, A. A., Keković, A., Ranđelović, D., & Momčilović, A. (2019). Effects of color in interior design. *Contemporary achievements in civil engineering*, 867-877. https://doi.org/10.14415/konferencijaGFS2019.080

D'Annunzio, G. (1912). *Contemplazioni della morte.* Fratelli Treves.

Dewey, J. (1934). *Art as experience.* Perigee Trade.

Dodsworth, S. (2009). *The fundamentals of interior design.* Ava Publishing.

Downs, R. M., & Stea, D. (1973). *Image and environment: Cognitive mapping and spatial behavior.* Aldine.

Franz, G. (2006). *Space, color, and perceived qualities of indoor environments.* Max Planck Institute for Biological Cybernetics.

Gifford, R. (2002). *Environmental psychology: Principles and practices* (3rd ed.). Optimal Books.

Gonzales, V. (2001). *Beauty and Islam: Aesthetics in Islamic art and architecture.* I. B. Tauris Publishers.

Gonzales, V. (2003). Ahambra and James Turrell's "space that sees": A comparison of aesthetic phenomenology. *Muqarnas, 20*, 253-278. https://doi.org/10.2307/1523335

Gordon, G. (2003). *Interior lighting for designers.* John Wiley & Sons, Inc.

Güneş, E., & Olguntürk, N. (2020). Color-emotion associations in interiors. *Color Research and Application*, *45*(1), 129-141. https://doi.org/10.1002/col.22443

Hall, E. (1969). *The hidden dimension.* Doubleday.

Kilmer, R., & Kilmer, W. (2014). *Designing interiors.* Wiley.

Levinson, S. C. (2003). *Space in language and cognition.* Cambridge University Press.

Levinson, S., & Wilkins, D. (2006). *Grammars of space: Explorations in cognitive diversity.* Cambridge University Press.

Li, G. (2019). The dynamics of architectural form: Space, emotion and memory. *Art and Design Review, 7*(4), 187-205. http://doi.org/10.4236/adr.2019.74016

Lorand, R. (2000). *Aesthetic order a philosophy of order, beauty and art.* Taylor & Francis.

Love, M., & Grimley, C. (2007). *Color, space, and style: All the details interior designers need to know but can never find.* Rockport Publishers.

Mehrabian, A., & Russell, J. (1974). *An approach to environmental psychology*. MIT Press.

Meyer, F. S. (1957). *Handbook of ornament.* Dover Publications.

Morphy, H., & Perkins, M. (2009). *The anthropology of art.* Blackwell Publishing Ltd.

Newman, O. (1996). *Creating defensible space.* Diane Publishing.

Pallasmaa, J. (2014). Space, place and atmosphere. Emotion and peripherical perception in architectural experience. *Lebenswelt*, *4*(1), 230-245. https://doi.org/10.13130/2240-9599/4202

Qiong, O. (2017). A brief introduction to perception. *Studies in Literature and Language*, *15*(4), 18-28. https://doi.org/10.3968/10055

Riley, C. A. (1996). *Color codes: Modern theories of color in philosophy, painting and architecture, literature, music and psychology.* University Press of New England.

Samovar, L. A., Porter, R. E., & Jain, N. C. (1981). *Understanding intercultural communication.* Wadsworth Pub. Co.

Savavibool, N., & Moorapun, C. (2017). Effects of colour, area, and height on space perception. *Enviromental Behaviour Proceedings Journal*, 351-359. https://doi.org/10.21834/e-bpj.v2i6.978

Shemesh, A., Leisman, G., Bare, M., & Grobmana, Y. (2022). The emotional influence of different geometries in virtual spaces: A neurocognitive examination. *Journal of Environmental Psychology*, *81*, 101802. https://doi.org/10.1016/j.jenvp.2022.101802

Smith, P. F. (2003). *The dynamics of delight: Architecture and aesthetics.* Routledge.

Stamps, A. (2005). Isovists, enclosure, and permeability theory. *Environment and Planning B Planning and Design*, *32*(5), 735-762. https://doi.org/10.1068/b31138

Yildirim, K., & Hidayetoglu, M. L., Capanoglu, A. (2011). Effects of interior colors on mood and preference: Comparisons of two living rooms. *Perceptual and Motor Skills*, *112*(2), 509-524. http://dx.doi.org/10.2466/24.27.PMS.112.2.509-524

Zumthor, P. (2006). *Atmospheres-Architectural environments-Surrounding objects.* Birkhäuser.

Figure References

Table 1: Franz, G. (2006). *Space, color, and perceived qualities of indoor environments.* Max Planck Institute for Biological Cybernetics.

Authors' Biographies

Emina Zejnilovic is a graduate of the Faculty of Architecture, Eastern Mediterranean University – North Cyprus, with a PhD in cultural aesthetics, or socio-cultural influence of perception, evaluation and creation in architecture, obtained from International Burch University, Sarajevo where she is currently working as an Associate Professor at the Department of Architecture, teaching courses of interior, furniture and landscape design. Her research interests concentrate on exploring socio-cultural impacts on architecture in broadest sense, with attention to visual expression through perception, spatial memory, and identity. She is teaching courses of interior and furniture design.

Erna Husukić graduated from the Faculty of Architecture, University of Sarajevo in 2011, Bosnia and Herzegovina. She has obtained PhD Degree at the International Burch University, Sarajevo, in September 2015. Since 2011 employed at the International Burch University where she currently holds the position of Associate Professor Doctor at the Department of Architecture teaching courses in urban and architectural design. Erna's research interests revolve around contemporary urban milieu and urban studies with an interest in urban transformations, city regeneration, urban memory, including aspects of environmental aesthetics.

Dino Licina is an architect with a master's degree in architecture on the topic of perception and illusion in interior space. He is currently practicing architecture in Bar, Montenegro, and working on preparation and execution of interior design projects.

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Time-light-space: Olafur Eliasson's agency manipulates embodied biological experience of architectural space

Dr. Niall O'Hare[1*]

[1]Ulster University, Belfast School of Architecture, Belfast, United Kingdom.
n.ohare@ulster.ac.uk

*Corresponding Author

Received: 19.08.2022
Accepted: 20.02.2023

Citation:
O'Hare, N. (2023). Time-light-space: Olafur Eliasson's agency manipulates embodied biological experience of architectural space. *IDA: International Design and Art Journal*, *5*(1), 31-41.

Abstract
The use of artificial brightness as a material form within "Big Bang Fountain" by Olafur Eliasson in 2015, provides insight into how the perception of time articulates subjective meaning and understanding of architectural space. This work outlines the relationship between the human ecological experience of time and the transitory, elemental ambiances of perceptual light cues used by the artist. This fundamental correspondence within Eliasson's work is founded upon exploring the interstice between perception and experience. This paper argues the interstitial moment of brightness/darkness experienced which tempers the illusionary occurrence of holding time still. The examination of this work seeks to broaden the understanding of how the experience of the phenomenological flux of architectural space subject to light occurs. As such continual incremental changes in perception draw attention to the ecological mechanism which shapes innate the relationship with architectural space. The exploitation of characteristics within perceptual ecology, known to humankind innately, but perhaps not explicitly, informs and elucidates consciousness of the diurnal experience of architectural space. The basis of how and why this work causes a response is a result of the exploitation of evolved phenomenological sensory experience rather than recognition of Euclidian spatial geometries.

Keywords: Architecture, Space, Time, Light, Perception

Extended Abstract

Introduction: This text outlines the relationship between the human ecological experience of time, and the transitory, elemental ambiances of perceptual light cues used by the installation artist, Olafur Eliasson. It is anticipated that the usefulness of this research paper will engender relevance to sense experience and the transitional sense of the changing presence of light within architectural space.

Purpose and scope: By nature, the daylight in architectural spaces is a naturally transient element, which is limited by visual perception or a negligible reference to the sequential manifestation of light form. Experience of the differences and changes of light in space is affected by the qualities of the space itself. However, the nuanced changing of light in spaces happens overtime despite the space. "Big Bang Fountain" for instance, provides a useful insight to the nature of light's reflection within architectural spaces. It also offers valuable information necessary to understand how the perception of light and shadow in space occurs. This fundamental correspondence between Eliasson's work, and the experience of space, is founded upon this text's exploration of the interstice between perception and experience. The experience of this work propagates specific environmental qualities which are useful topics for practical and pedagogical investigations. The aim of this paper is twofold. There is a lack of methodologies in architecture for the investigation of light, specifically daylight, in relation to human biological heritage, which make it an underdeveloped area of study. Thus, this text seeks primarily to advance alternative rationales to question the innate human responses to light. Secondly, teaching experience suggests that the architectural pedagogy of light requires a more nuanced approach, which may allow the students to question their ideas on architectural space more deeply. This text aims to investigate the end user's experience provided by "light" in architectural spaces. Thus, it presents an unorthodox glance to practitioners and students to spur individual curiosity.

Method: This paper argues, the interstitial moment of brightness/darkness experienced within the work, instigates a shared response which tempers the illusionary occurrence of time held still. The primary purpose upon which this text

reflects is change. Change takes place within a controlled and specific environmental experience. These changing moments of light in time are necessary to develop a greater understanding of why knowledge of space occurs as it does. Alongside this, it may be possible to understand better how this experience occurs as a phenomenological attachment to space. As both a practitioner in architecture and an educator in architecture, part of this paper's scope is its ability to reach out to architects and students alike and to help practitioners to question sensorial experiences and what may be happening to their visual perception when they experience an architectural space. Furthermore, this research aims to enable students to begin questioning why they encounter light in architectural space as they do. This text draws attention to the underlying principles of what connections that a student of architecture can begin to create for themselves when they experience light and darkness in architectural spaces. Providing scope for a student to create a "notional dialogue" between an encountered space and the sensorial mechanisms manifesting to them, services a broader understanding of experience. Acknowledging and becoming open to how and in what ways perception is biologically tuned to space be a consideration which is much needed within the architectural practice debate.

The methodology utilizes reflection as a tool to formulate understanding. Reflection and reflective practice provide scope to consider why the experience of architectural space occurs in the way it has. Reflection as a tool to discover insight from experiential teaching is a skill that appears less available to student cohorts. The text's reliance upon reflection over time combined with insightful reading has been the method to which a frame to hang the perspective of this paper upon was constructed. Technological advances are at the forefront of practice and pedagogy which arguably sows seeds of embodied detachment driven by constructed digital environments. "Big Bang Fountain", for instance, relies upon technology to exist yet connects the viewer to an embodied experience. These are the biological mechanisms of embodiment that are triggered by this work. The sensation of the work is overwhelming - it is instantaneous - and penetrates our visual perception to its core. Arguably reflective practice is the best-suited method to gain insight from the experience of the work. The article should be read as a recollection of the original experience, thus its method is reflective.

Findings and conclusion: The continual incremental changes in perception that this work utilizes draw attention to the ecological mechanism which shapes innate perceptual relationships with architectural space. This paper's method of examining these incremental changes is in detail. Moment after moment helps unlock the flux of light change, shadow change, and sound change. This is an important methodology in understanding architectural space-time-light and light awareness. The exploitation of characteristics within perceptual ecology, known innately but perhaps not explicitly through this work, informs and elucidates consciousness of the diurnal experience of architectural space. The findings of this paper and the manner it concludes suggest that biological connection to architectural space, endowed with daylight, experienced within the diurnal sequence of time, is a critically crucial element in making sense of the contextual experience of architectural space. "Big Bang Fountain" exhibited in 2015 at Tate Modern, London, is a work that has resonated with this writer over a considerable time. Over an extended period, the historical experience of the work has enabled the formulation of arguments put forward. Only through this reflection in time could this paper evolve as a reflection on the use of artificial light and water as tools that can provide a clearer and better understanding of how the experience of daylight and the changing nature of light interlinks. To conclude, this research might appear to be counterintuitive. However, using the experience of artificial light within an enclosed art gallery environment, can and does inform understanding of sequential daylight through visual perception.

Keywords: Architecture, Space, Time, Light, Perception

INTRODUCTION

Olafur Eliasson's work, "Big Bang Fountain" (2015), part of his exhibition "In Real Life" at Tate Modern, London 2019/2020, combined sound, artificial brightness, and time to investigate the conditions of how experience manifests. This reflective text explores and considers how the human body interprets uncertain visual complexity caused by a work which creates "a conjoint phenomenality" (Bayne, 2010: 11). The simultaneous interoperation of sensation, understanding, and perceptual calibration is embedded in sensorial perception as a confounded representation of interstitial reality. How consciousness calibrates and reflects upon the fleeting overlapping moments of light/darkness/sound within the confines of the gallery space draws attention to the confluence of immediacy. This suggestion of memory informs the response to momentary experience, i.e. "now". Utilizing the stroboscopic flux of light and the perceptual afterimages it creates, provides a useful metaphor to begin consideration of changing light consciousness of architectural space subject to the diurnal sequence. Architectural space which is subject to light is a complex scenario. The primary components of spatial size, structure, materiality, apertures, orientation, and artifacts contribute when combined with the darkness of light to a multiplicity of Fluxus. The "Heraclitan doctrine" (Zeki, 2009: 2827)

heralds the ambiguity of constant change. As a spectator, the definition of Eliasson's work is through the communication exchange between the interstitial gallery moment of experience and the representative manifest of the work as a still image (Figure 1). "Big Bang Fountain" situates light as a fundamental appropriator of uncertainty within repetitive, glancing moments. By recognizing characteristic mammalian ecologies of light as a sensorial dialogue in perception, the installation manifests itself as a repeating afterimage. The flickering afterimage continually changes while reinforcing itself as a repeating embodied image, in the same way, cognition may be unaware of the interstitial changes of the diurnal sequence, yet biology is not (Foster, 2020: 67).

Figure 1. Olafur Eliasson, *Big Bang Fountain*, 2015. © Anders Sune Berg

Mixed Memory

"The Condition of Sculpture" written in 1975 by William Tucker, situated sculpture in the world as the "language of the physical (whereby) new thought finds form by stretching the medium itself" (Tucker, 1975: 35). Light and gravity, Tucker suggests, are the fundamentals through which sculpture is, and through which it is experienced. In this relationship, however, "the property of actively giving light must remain that of the world, not of sculpture, just as movement is the prerogative of the spectator" (Tucker, 1975: 36). Movement and light, perception, and the experience, intertwine within Eliasson's work, and expose attention to the experience of tangible and intangible at one time by presenting time as a frozen element within collective experience. If memory is an amalgam of the past at this very moment, recollection becomes a dual historical and contemporary mechanism. Experience of each moment of light reveals itself in time, as it "arises from relation to things" (Merleau-Ponty, 1962: 412). While the experience of the infinitesimal memories, presented as droplets of water hanging in the air at this moment are "temporal light modulation… more commonly referred to as "flicker" have visual, neurobiological, performative, and cognitive effects on viewers" (Veitch & Martinsons, 2019: 790). Aligned to this, Eliasson suggests that "history is not external and objectified in a situation, but is inside the spectator" (Eliasson, 2007: 33). An interpretation of this may suggest that in every moment of awareness, a memory of the experience is, by its nature, historic. The history of a passing moment was at some point presented as now. This is the interstice between past and present. Interstitial grasping of sensorial cues emanating outside the body and acts as the vehicle through which the experience of an explicitly exterior event becomes a recollection through its sensorial translation.

The interchange between "stroboscopic visibility" (Veitch & Martinsons, 2019: 791) and experience portrays this phenomenological "historicity" (Merleau-Ponty, 1964: 92). What exists between now, following a previous, upon a previous now and after that, propagates time as the mechanism, facilitator, and communicator through which the process of the internal description of what is encountered is registered. These descriptive moments become a memory that is extended and fully aligned in time, through time. As such, the "Big Bang Fountain" is experienced as a series of moments which are joined together. The work becomes a moment halted within time, yet it provides an opportunity to evaluate time as a static entity over a protracted period. Within these moments motion can move us away from work, circulate it, move from side to side, or shut our

eyes and re-open them. Yet within this continual corporeal motion, observation of the work remains unchanged.

METHOD

This possession of time which Eliasson locks the perceiver into creates ownership of awareness through which questioning of individual understanding of experience takes place. This connects the work in such a way that it takes possession of personal experience. It provides the scenario for the observer to relate to the experience with uncertainty rather than certainty. The observation is anything but certain. It is outside of the observer's reality of experienced time. The visual perception of falling water in the form of rain is a familiar occurrence for many people. However, the observation of droplets of water in the form of droplets captured within a vertically dropping cascade is uncertain and unusual. There is no certainty within perception. The image is not a photograph of a still moment of water captured, it is not a freeze-frame within a film poised upon the edge of the movement. Witnessing the "stroboscopic effect" (Bullough & Marcus, 2016: 869) presents beads of water astonishingly hanging as individual stationary elements. Each bead's possession is captured within the reality of the perceiver's never-ending continual moment. The scope of this effect creates a unique framework upon which both practitioners and students are able to build new understanding and construct a reappraisal of embodied spatial awareness. This text aims to be an examination that broadens practical understanding of the phenomenological flux experience within architectural space subject to light and the sensory dialogue commonplace within it.

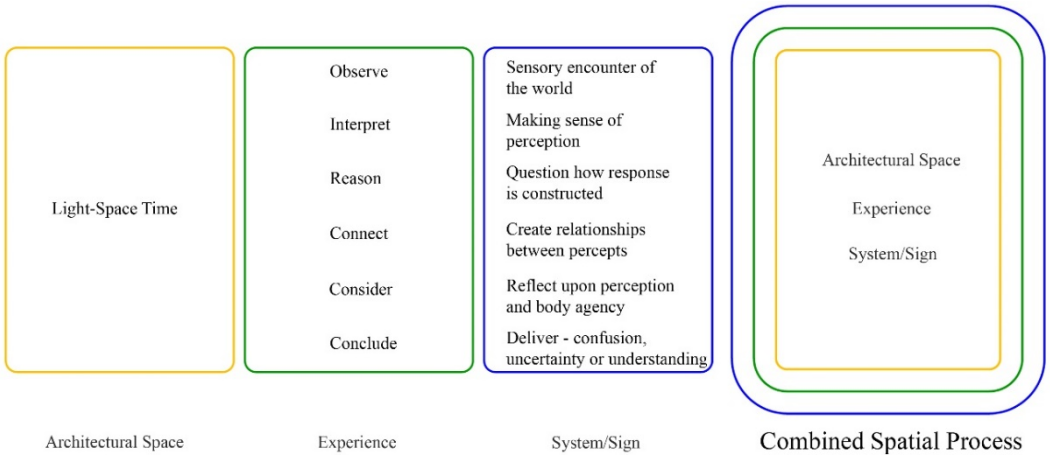


Figure 2. Notional dialogue in spatial process

Motionless Motion

By encountering the experience of beads of water hanging in the air perceptually motionless because of the effect of the "constant strobe rate" (Wilkins & Gray, 2015: 64) their positional dimensions in space are present to see. The volume, size, and opacity are open for a close examination, which presents the reality where one is beholding time as static, motionless, still. This stasis exploits sensorial perception through the reality of observation and challenges the idea that moments in time exist between the subject of observation and the observation of the subject. Within the experience environment – the gallery is intimate, approximately 25m² with "Big Bang Fountain" centrally placed with stroboscopic light raised above. It is lined with dark acoustic material to absorb sound and is sequentially filled with darkness and brightness. Experience of this space provokes, conjures, and manipulates vision, it propagates the illusion of something everlasting as implicit. The historian Pamela Lee suggests within her essay "Your Light and Space" that Eliasson "implicates his observer in a feedback loop of self-perception... seeing oneself seeing" (Eliasson, 2007: 35). The suggestion by Lee that Eliasson's work has the capacity to render the perceiver into a position of awareness of their self-awareness of self, challenges the everyday detachment and trust exhibited toward spaces encountered.

Figure 3. Sketch for "Big Bang Fountain" ©Olafur Eliasson, 2014

The ability of this work to capitalize upon "multiple object tracking" (Bennet et al., 2018: 1) within environmental experience has the capacity to influence consideration of, and interpretation of the environment met. Stroboscopic flashes of artificial brightness produce "a stroboscopic effect (which) can be defined as a change in motion perception induced by a time-modulated light stimulus for a static observer in a non-static environment" (Lee et al., 2018: 773). By utilizing this effect within an environment of complete darkness, the successive flashes enable alternate visual perceptions to be constructed. The flashes portray moving, transient droplets of water as static. It is an illusion, as the bead of water is not a single droplet or static. The bead is part of a moving sequence of droplets falling vertically within and against a black background. The water droplets are frozen within perception by a repetitive sequence of extreme brightness. The sequence between brightness/darkness and brightness/darkness, is the mechanism in which the successions of falling beads hang weightlessly in the air. The repeating pulses of intense brightness bracketed by complete darkness, interlock moments in the droplets fall upon the eye's retina as both perceived image and perceived afterimage. When the perception of the droplets hanging in mid-air remains in thought, they are held as a perception of the object, not the object itself. Franz Brentano expands this point,

> …by an object of thought I [mean] what it is that the thought is about whether there is anything outside of the mind corresponding to the thought. It has never been my view that the immanent object is identical with the "object of thought". What we think about is the object or thing and not the "object of thought". (Brentano, 1966: 77)

The environment of the "immanent" object could be any number of things, the brightness, the darkness, the bead of water, or a combination. Brentano provides guidance on the separation of the "immanent object" from the "object of thought," while suggesting that one may provide an opening to the other. They are not part of the same sense experience, the bead of water that comes from the collective cascade of falling water, it is made individual and isolated in its singularity by the motion of its falling.

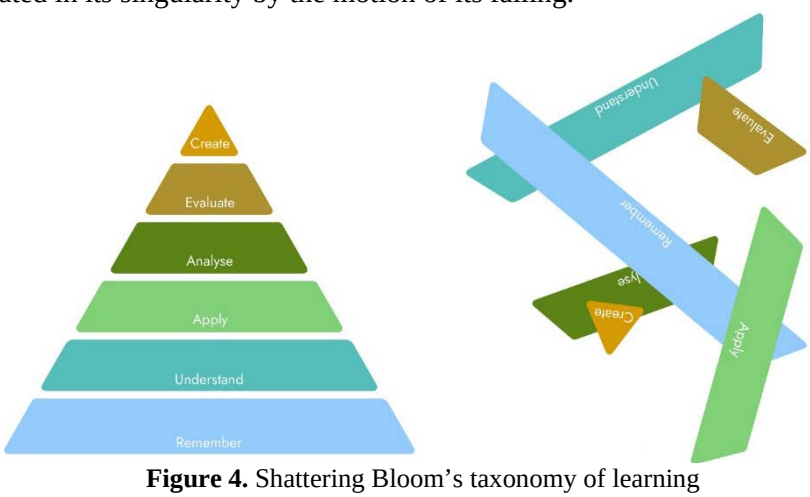


Figure 4. Shattering Bloom's taxonomy of learning

When complimented with Bloom's Taxonomy of Learning, Brentano provides a useful pedagogical tool for architecture students to understand their experience of space. The layered domain which Bloom suggests helps students comprehend an idea of their growing wisdom. Eliasson's work shatters this domain and provides new questions about how we encounter and evaluate the experience. Ownership, presentation, and objectification of space are presented as considerations of building wisdom. Concerning this Brentano suggests, "all the appearances of consciousness are divided into two great classes - the class of physical and the class of mental phenomena" (Brentano, 1995: 77). This suggests that consciousness can be understood as the "intentional inexistence of the object" (Moran, 2000: 48). This notion is derived from the Latin verb "in-esse" meaning to be. Considering what Brentano believed, when a thought relating to a sensed object occurred, such as the hanging bead of water, it was an act of consciousness outside the reality of the bead. The phenomena which can be sensed, and the phenomenon which is derived through thought such as "a colour, a figure, a landscape which I see, a chord which I hear, warmth, cold, odour, which I sense; as well as similar images which appear in the imagination" (Brentano, 1995: 79-80). This spaciousness between the experience of lived life in the reality of sensed living and the imaginative exploration through interaction with the phenomena, of this lived world is close and inseparable. If "images which appear in the imagination" are physical phenomena it confuses understanding of the power of "immanent object" which Brentano has indicated he believes are not "identical" to the "object of thought". This ambiguity presents difficulty when building consideration of the correspondence between the "object of thought" and the "immanent object" as the bead of water cannot be both if they are not "identical".

It is the body that assists this phenomenological inquiry. It readily and automatically becomes the instrument or "tool" (Sartre, 1995: 325) which shapes exploration of the work. In this way, it becomes the filter through which sensation is opened and explored, it is the juxtaposition between the primordial and biological evolutionary process at work when Eliasson's work is encountered. The phenomena derived through sensual visual perception such as "a colour, a figure, a landscape" are vision based. Vision-constructed descriptive analyses becomes the "object of thought". This mechanism may allow perceptual analysis to make sense of what is apprehended by ordering them in a way that allows filtering the aberrations of vision into a comprehensible shape. This is an aspect of consideration that "requires much more input from other disciplines, including architecture… to give signposts to how buildings can be better sensed" (Perez-Gomez, 2020: 21). Language is one of the tools used to describe the shape of experience and perception of environments. These perceptions are moments and glimpses that are part of time-based recognition of something outside the body that afford captivation and intrigue derived from sight sense. The sound of "Big Bang Fountain" informs the sensed reality from which the experience of the work emerges. Like a musical chord, this work is not silent, the object made in thought is not quiet, yet consideration of a bead in apparent stasis or static isolation hanging in the air confutes sensual perception.

FINDINGS: SENSING COORDINATES

The visual experience of this work manifests multiple beads of water appearing as static. Water, captured by a vision in mid-flight, is apprehended by hearing as a sploosh or gurgle of falling water making contact with itself or an unknown surface. Sensorial perception overrides this water as static even when the end of the fall is heard. The gravity of the fall is noise that surrounds the perceiver. Clearly discernible as a penetration of the silent captured moment of stillness. The silent held fixity of the water hints toward the lie. The body senses the physical, but the physical is always outside reach. Vision presents a scenario that evolved to sense the environment encountered. Although vision has evolved many ways of seeing, the camera eye uses the lens, pupil, and retina as the chosen evolved biological solution for humans as one animal among many. Humans use their bodies as an instrument of perception and have continued to extend this possibility by developing abstract tools developed for lived life as extensions beyond biological sensorial nature. These sensorial extensions instinctively expand understanding of environmental conditions. They help navigation through environments that connect visualization of immediate surroundings with the experience of a greater world. Recognition of the conditions of this experience is apparent when "my body always extends across the tool which it utilizes: it is at the end of the cane on which I lean and against the earth, it is at the end of the telescope which shows me the stars" (Sartre, 1995: 325).

These constructed extensions allow humans to inhabit and respond in a modified way to the encountered world - adapt and adjust objects to accommodate being. Humans have the capacity to change their place in the world by affecting the environment inhabited with tools such as the “cane” or the “telescope” to navigate a path through what Husserl coined the “life-world” (Moran, 2000: 181). Paul Ricoeur in his analysis of Husserl’s phenomenology, described this as a “pre-given passive universal in all judgmental activity” (Ricoeur, 2007: 12). Merleau-Ponty continued this process by considering the “meaning” of experienced phenomena of the lifeworld without the imposed constraints of a “Cartesian” (Perez-Gomez, 1983: 49) frame. This makes understanding perceptions a biological universal, inherent within the human life system through time and over time.

A phenomenological enquiry based upon the sensorial openness of the body as it becomes the instrument of measure is a naturally transposed and calculated activity. Reading the perceptual openness of the body’s experience, where the environment is key, makes phenomenology an exploration of how meaning is made inside and out of individual consciousness. It becomes a discipline concerned with the beginning - the birth of individual consciousness. Eliasson’s work has the distinction of combining a constructed use of technology for the creation of a prosaic reality experienced by the perceiver. This reality is in opposition to a Vitruvian point of view based upon an objectification of space which is “Euclidian” (Perez-Gomez, 1985: 49), which is opposed to the sensorial experience of space which is embodied. Vitruvius finds the prosaic within the framework of geometry but loses sight of the possibility that in this creation, architectural space subject to light generates a sensorial response in humans. This work is the combination of “techne (and) poiesis” (Perez-Gomez, 1983: 47) as it becomes the technological realization of a poetic moment in time because the work relies upon stroboscopic technology to formulate conditions for changing perceptual response through vision. Complete darkness shuts down visual acuity while brightness and afterimage connect the body to a sequenced moment. The work becomes mimesis for the relationship humans have to the diurnal sequence in which perceives the day as one entirety, rather than the interstice of continual change between past and future which the body experiences and perceives. This percept is an outward realization, distinct and dethatched - the body as percept becomes the perception,

> …my body does not perceive, but it is as if it were built around the perception that dawn through it: through its whole internal arrangement, its sensory motor circuits, the return ways that control and release movements, it is, as it were, prepared for a self- perception, even though it is never itself that is perceived or itself that perceives. (Merleau-Ponty, 1968: 9)

Perception is not of oneself, but the experience of the object to the subject as a relationship between object and subject creates the outcome of experience which formulates a perception. “Big Bang Fountain” becomes a work that demonstrates the capacity to translate a technical situation into a poetic one. This poeticism is created through the individual’s perception of the elements of the work combined to become an individual whole for the perceiver. This whole makes the work what it has become, yet to exclude one element may have made the work less of a convincing poem in light, and more of a technical exercise, empty and void of perceptual stimulation and intellectual dexterity. The notion that Eliasson has actively and intuitively manipulated the vagaries of time, such as brightness and darkness and interwoven these as passing elements of experience, determines light as the formal material upon which and through which his work is concerned. When looking at the work, the observation of correspondence between light and darkness as a material form is confused. The darkness of light as much as the brightness of light temper being and fulfil a biological imperative for both.

Momentary Impermanence

In the Mendota Stoppages, James Turrell tested the notion that no moment in time is permanent; no awareness of any moment in time is more than a recollection or memory of a moment that has passed. Momentary impermanency after momentary impermanency is the perception of changing impermanence. It is through the interpreting of this sequence that the procession of experience is witnessed. That which is perceived has no life beyond the moment Turrell comments, “nothing we know is permanent... all exists only in shifting relationships with everything else - we have little to fall back on except ourselves, our own processes of being” (Turrell, 1980: 7). As such, known or unknown, recognized, or unrecognized awareness of experiences of light will always be created through the interstice, moment to moment. When the individual recognizes an experience but has difficulty speaking about the nature of the experience Louis Kahn called this descriptive

sensation “presences” (Kahn, 2013: 26) in relation to the environment sensed. This is a consciousness of biological response to light. Time and light are inextricably linked through different elements of consciousness. Peter Sellars has written about these considerations as moments transposed within the work of Bill Viola, he references Gertrude Stein when he suggests in his essay “Bodies of Light” that “each time there was a difference, just a difference enough so that it could go on and be a present something” (Sellars, 2003: 173).

Sequenced Moments

Every moment of life is changed from the former to the latter, Sellars suggests. It is just “enough” to be different so that it can become “a present something.” Each “present something,” is based upon the experience of a moment in time different from the previous one. Each is individual, distinct, and meaningful. Eliasson’s work recognizes this “just a difference enough” in the relationship between time, brightness, darkness, sound, and architecture. The relationship in which Sellars aligns to Bill Viola’s work and the repetition of the hanging droplets creates a reality of sequenced moments. This becomes the punctured passing of time in the relationship between the experience within an environment and the link between time and light. The capacity of the fountain to be photographed as a “present something” where the interstice of awareness between the un-noticed ways in which light and time pass in moments of “just difference enough” is profound. This profundity exists if “we recognize the exterior world with the pause button on, and (recognize) its interior workings (then the) ongoing processes begin to reveal themselves” (Viola, 2003: 186). Experience is a continual overlapping now. It is linked and ongoing, so when consideration is given to the notion of the “pause button” awareness is arrived at by unawareness of moments in time - holding time, by providing an experience of light that is paused. Eliasson’s invocation of these qualities means understanding that the passing of time is unbroken and inevitable.

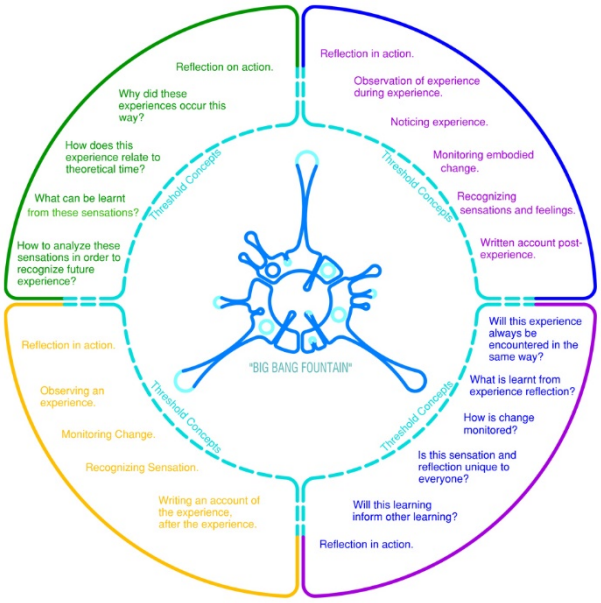


Figure 5. Methodology - In & On Action

The argumentation within this text is that bodies are aware of the interstice of time yet remain cognitively unaware of it. This presents as a “Threshold Concept” (Figure 5) where awareness of being outside of a linguistic frame steers an embodied methodological pathway. Individuals develop cognitive intuition of the object world through which they navigate their lives, such as an awareness of physical objects like the chair or the tree. However, light is not understood as a physical entity in the same way. Light presents a different cognitive intuition that many people are unaware of or only grasp occasionally in the way Kahn suggested. It, therefore, follows that being aware of the psychology of light when a conscious thought connected to light or time arises, what Husserl termed “monad” (Husserl, 1980: 26) is when the attachment of Being in the world, knowing the actual experience of the self as a connection to the “life-world” occurs. For Husserl, the individual ego was a central facet in the manufacture of cognitive experience, a conjugate between psychological egos,

through which cognitive representations of self are made, becomes an ego-centric experience. However, the ego through which the phenomenological experience of the environment is made is, for Husserl, a transcendental ego. The transcendental ego is based upon unknown, unidentified "eidetic memory" (Costa-Mattioli, 2008: 875), thus, the composition is formulated through shared biological history. Intuitive knowledge, which one could argue is sensed and not rationalized or cognitively constructed, is transcendental.

Combining pure ego and transcendental ego as the mechanism through which experience co-creates the notion of a now, or at least recognizes a sequence of time from which the idea of now is a centrally emerging component is important as time and light are inextricably linked; each exists within the realm of the other. The changes in light that alter environmental conditions are linked to time, distance, proximity, and light intensity, which open the observer open to conditions light manifest. These generate observational points of view. When Eliasson's work is viewed from the point of view of perception, it must be close and enveloped within the entirety of the work or at the maximum distance the space of the gallery allows. These two points of view provide relatively different ways of seeing the work. Each way in which perception is gained generates vastly different perspectives on the experience received.

Viewing the work from the edges of the space is an experience of the whole work. Sensual perception of the work is the combination of being up close where the viewer can see nothing but the expanse of brightness/darkness/sound/fixed and fluxus. Yet the space will only become apparent when the viewer moves or changes their point of view. These points of view combine and join, through which a status view is achieved, where a sense of what is being looked at can be processed cognitively. Perceptual movement within every architectural space is informed by proximity and distance in the same way. Within architectural space, the embodiment is in the light and, at the same time, distant from the light perceived. The perception of light on, in and through objects is concurrent to the recognition of shadow on the walls and the floors of architectural spaces. This encounter with light has the capacity to transfer an inexhaustible multitude of different qualities and sensorial characteristics within a single interstice of time. Light, time, and space recite continually changing and evolving scenarios of experience; however, awareness of this coexistence is often and easily overlooked.

CONCLUSION

This text makes a new contribution to understanding "Big Bang Fountain." It creates new perspectives and pathways through which it is possible to acknowledge and navigate embodied experiences. The development of this original content draws much-needed attention to how and why encountering this work manifests such deep impact and suggests implications for the experience of light in architectural space. This study aims to create new results that interrogate the human relationship with time-light-space through philosophical debate and biological research. It connects diverse fields of study to say more satisfactorily how understanding space through sensorial encounter occurs. "Big Bang Fountain" has made awareness of this coexistence available. Experience of this work manipulates embodiment with the flux of passing time. It presents time as an extended encounter by introduction to the possibility of time being held static as an image of a moment; in this reflective encounter, we are able to examine and investigate.

The visual representation of this work carries with it all inherent future assumptions and reflective perceptions. Awareness that the work cannot ever recreate or repeat each passing moment may be present. However, it propagates the illusion of immeasurable, improbable moments of stationary time to come which is untrue. Reflecting upon this truth provides insight into the ever-changing flux of interstitial experience of architectural space. It draws attention to the passing of time and the importance of time as the arbiter of ever-changing spatial qualities of architectural space subject to light. Alongside this, it highlights the parameters through which time influences and guides the embodied perception of light. How we meet the essential flux in Eliasson's work draws attention to the automatic, and mostly ambivalent way in which perception sense navigates passage through spaces we inhabit. Alongside this, and most importantly perhaps, it draws attention to the innate biological connection of interstitial experience of light variability in architectural spaces and the need to be less ambivalent to its biological importance.

Authors' Contributions

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.

REFERENCES

Bayne, T. (2012). *The unity of consciousness*. Oxford University Press.

Bergson, H., Birnbaum, D., Eliasson, O. (2002). *Olafur Eliasson*. Phaidon Press.

Bennet, S., Hayes, S., Uji, M. (2018). Stroboscopic vision when interacting with multiple moving objects: Perturbation is not the same as elimination. *Frontiers in Psychology*, *25*(9), 1-6. https://www.doi.org/10.3389/fpsyg.2018.01290

Brentano, F. (1966). *The true and the evident* (R. Chisholm, Trans.). Routledge.

Brentano, F. (1995). *Psychology from an empirical standpoint*. Routledge Classics.

Bullough, J., Marcus, D. (2016). Influence of flicker characteristics on stroboscopic effects. *Lighting Research Technology*, *48*(7), 857-870. https://doi.org/10.1177/1477153515599566

Costa-Mattioli, M. (2008). Switching memories on and off. *Science*, *322*(5903), 874-875. https://doi.org/10.1126/science.1167228

Dawkins, R. (1996). *Climbing mount improbable*. Viking.

Eliasson, O. (2007). *Take your time*. M. Grynsztejn (Ed.). San Francisco Museum of Modern Art.

Eliasson, O., Kuo, M. (2018). *Experience*. Engberg-Pederson, A. (Ed.). Phaidon.

Eliasson, O., Norretranders, T. (2015). *Light! On light in life and the life in light*. Forlaget Tor.dk.

Foster, R. (2020). Light regulation of circadian rhythms: Fact and fiction and design implications. *Architectural Design*, *90*(6), 66-71. https://doi.org/10.1002/ad.2633

Godfrey, M. (2019). *Olafur Eliasson: In real life*. Tate Publishing.

Husserl, E. (1980). *Phenomenology and the foundation of the sciences*. Ideas pertaining to a pure phenomenology and to a phenomenological philosophy (Klein, T., Pohl, W., Trans.). Martinus Nijhoff.

Kahn, L. (2013). *Silence and light*. A. Vassella (Ed.). Park Books.

Anderson, L. W., & Krathworthl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching and assisting: A revision of Bloom's taxonomy of education objectives*. Longman.

Lee, C., Joseph, L., Pak, H., Park, S.W & Song, D.W. (2018). Phantom array and stroboscopic effects of a time modulated moving light source during saccadic eye movement. *Lighting Research Technology*, *50*(5), 772-786. https://doi.org/10.1177/1477153517693468

Merleau-Ponty, M. (1962). *Phenomenology of perception* (C. Smith, Trans.). Routledge.

Merleau-Ponty, M. (1964). *The Primacy of perception*. J. Edie (Ed.). Northwestern University Press.

Merleau-Ponty, M. (1968). *The Visible and the invisible* (A. Lingis, Trans.). Northwestern University Press.

Merleau-Ponty, M. (2004). *The world of perception*. Routledge.

Moran, D. (2000). *Introduction to phenomenology*. Routledge.

Perez-Gomez, A. (1983). *Architecture and the crisis of modern science*. MIT Press.

Perez-Gomez, A. (2020). Mind in life in architecture: A conversation with architectural historian Alberto Perez-Gomez. *Architectural Design*, *90*(6), 14-21. https://doi.org/10.1002/ad.2626

Ricoeur, P. (2007). *Husserl: An analysis of his phenomenology*. Northwestern University Press.

Sartre, J. P. (1995). *Being and nothingness: An essay on phenomenological ontology* (H. E. Barnes, Trans.). Routledge.

Sellars, P. (2003). *Bodies of light*. Getty Publications.

Tucker, W. (1975). *The condition of sculpture*. In M. Ryan. (Ed.). Gravity and grace: The changing condition of sculpture 1965-1975. South Bank Centre Publications.

Turrell, J. (1980). *Light and space*. Whitney Museum of American Art.

Ursprung, P. (2016). *Studio Olafur Eliasson*. Taschen.

Veitch, J., Martinsons, C. (2019). Detection of the stroboscopic effect by young adults varying in sensitivity. *Lighting Research Technology*, *52*(6), 790-810. https://doi.org/10.1177/1477153519898718

Viola, B. (2003). *Passions*. Getty Publications.

Wilkins, L., Gray, R. (2015). Effects of stroboscopic visual training on visual attention, motor attention, and catching performance. *Perception & Motor Skills*, *121*(1), 57-79. https://doi.org/10.2466/22.25.PMS.121c11x0

Zeki, S. (2009). In praise of subjective truths. *Journal of Physiology*, *587*(12), 2825-2835. https://doi.org/10.1113%2Fjphysiol.2009.170415

Figure References

Figure 1: Notional dialogue in spatial process © Niall O'Hare, 2023.

Figure 2: Eliasson, O. (2014). *Big Bang Fountain*. ©Tate Gallery, London. UK. https://olafureliasson.net/artwork/big-bang-fountain-2014/ (20.02.2023).

Figure 3: Eliasson, O. (2014). *Sketch for Big Bang Fountain*. ©Tate Gallery, London. UK. https://olafureliasson.net/artwork/big-bang-fountain-2014/ (20.02.2023).

Figure 4: Shattering Bloom's Taxonomy of Learning © Niall O'Hare, 2023.

Figure 5: Methodology - In & On Action © Niall O'Hare, 2023.

Author's Biography

Niall O'Hare is a Chartered architect with the Royal Institute of British Architects (RIBA) and registered as an architect with the Architects Registration Board (ARB). He is a Fellow of the UK Higher Education Authority (HEA) and a Teaching Fellow in Architecture at the Belfast School of Architecture (BSA). Niall pursues an interest in the Iconography of Light, Architectural Presence, the Embodied Perception of Architectural Space and Architectural Pedagogy.

International Design and Art Journal

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Inquiring the generative capacity of urban abstraction and mapping for first-semester basic design studio

Assoc. Prof. Dr. Derya Yorgancıoğlu[1*], Asst. Prof. Dr. Doğa Dinemis Aman[2], Assoc. Prof. Dr. Beyza Şat[3]

[1]Özyeğin University, Faculty of Architecture and Design, Department of Architecture, İstanbul, Turkey.
derya.yorgancioglu@ozyegin.edu.tr

[2]Özyeğin University, Faculty of Architecture and Design, Department of Architecture, İstanbul, Turkey.
dinemis.aman@ozyegin.edu.tr

[3]Özyeğin University, Faculty of Architecture and Design, Department of Interior Architecture and Environmental Design, İstanbul, Turkey.
beyza.sat@ozyegin.edu.tr

*Corresponding Author

Received: 24.01.2023
Accepted: 16.03.2023

Citation:
Yorgancıoğlu, D., Aman, D. D., Şat, B. (2023). Inquiring the generative capacity of urban abstraction and mapping for first-semester basic design studio. *IDA: International Design and Art Journal*, 5(1), 42-56.

Abstract
The development of students' critical and creative thinking skills is at the core of the first-semester basic design studio. Students' perceptual experiences of their environment form the key references of abstraction in this beginning phase. This paper inquires studio approach based on abstraction and mapping as tools for intertwining visual reasoning and bodily experiences in the design process. Focusing on the case study of a basic design studio assignment, the authors analyze the structure, application, and products of the "Urban Abstraction and Mapping" project. The study adopted the case-study method as part of qualitative research approach and dwelled on researchers' first-hand interaction with a phenomenon within its real-life context, ARCH/MIM101 studios. The findings showed that abstraction and mapping strategies based on students' bodily experiences in urban contexts raised awareness of design as a generative and iterative research process. Students who were able to reveal and reconstruct the relationship between different forms of knowledge through experiential and conceptual levels of the design process managed to develop heuristic 2D and 3D design strategies. The findings of this study provide a ground for discussions on the effectiveness of teaching/learning methods applied in the introductory level of design education.

Keywords: Basic design, First year design studio, Abstraction, Urban mapping, Critical-creative thinking

Extended Abstract

Introduction: First-semester basic design studio has the critical responsibility to provide a constructive learning environment for students who encounter design studio pedagogy for the first time. In the basic design studio, students are encouraged to develop new ways of looking, seeing, observing, analyzing, and visualizing through the exploration and use of different media. In a basic design course, students are exposed to the basic elements of design (point, line, plane, volume, form, orientation, scale, etc.). They learn the basic principles of design (color, shape, texture, rhythm, balance, contrast, continuity, repetition, etc.) and develop a new geometric language by using 2-dimensional and 3-dimensional design elements based on these principles. The emphasis on *form* and *space* in the early design phase is considered the legacy of the *modernist tradition*, which is also made manifest in basic design education. However, giving priority to the geometric language of abstraction in composition design may cause limitations when visual perception dominates other perceptual realms. Rather, integrating visual perception with other perceptual dimensions may evoke and enlarge the designer's awareness of the tangible and intangible features of the physical environment. This would, in turn, help integrate conceptualization and materialization in design for foundation design education. Hence, the present study raised the following questions: how can we develop an inclusive model for a basic design studio to stimulate a better understanding of the dynamic commingling of visual reasoning and bodily experiences in the design process? What are

the pedagogical potentials of experiencing physical space and of walking as a performative act for achieving this in basic design education?

Purpose and scope: This paper inquiries about a design studio approach to stimulate a dynamic commingling of visual reasoning and bodily experiences in the design process. This study aims to present and discuss a studio approach that was undertaken as part of the first-semester design studio at the Department of Architecture at Özyeğin University in Turkey. This studio approach is analyzed through the structure, application, and products of a four-week project entitled "Urban Abstraction and Mapping." The main objective of this project was to generate new ways of grasping the complex and multi-dimensional nature of urban space in a critical and creative manner by going beyond the geometric language formed through abstraction in composition development. The analysis and abstraction of the physical environment are utilized as a tool for synthesizing conceptual thinking with the concreteness of sensory experiences and bodily perception. The cyclical relationship between the trio of perception-experience-conceptualization constitutes the basic components of this project. For this purpose, *urban abstraction* and *urban mapping* are inquired and used as methodological tools, and İstanbul, as a case of a complex urban city, is experienced through bodily perceptions of the students walking on a predetermined route. The bodily experiences of students as *flaneur* constituted the basis firstly for conceptualizing the tangible and intangible features of urban city and secondly, transforming this conceptualization into an experiential and perceptual design process through testing material-color-texture-light/shadow-scale of volumetric explorations.

Method: The analysis is based on the structure, application, and products of a four-week project entitled "Urban Abstraction and Mapping," as the final stage of the ARCH/MIM 101 Design studios. Qualitative case study methodology fits well with the objectives of the present study that aims at presenting and discussing a studio approach developed for the basic design studios in the first semester of the first year of the bachelor's degree in Architecture and the bachelor's degree in Interior Architecture and Environmental Design in Özyeğin University. The study dwells on the final exercise of the basic design course entitled "Urban Abstraction and Mapping," which aimed at introducing the students to context-based design knowledge through the embodied interaction of the body/subject with the physical space. The "Urban Abstraction and Mapping" project is described and analyzed by the authors of the present study, who were the tutors of ARCH/MIM 101 studios while conducting the case study research. The methodology is based on a detailed examination of a phenomenon, part of qualitative research approach. Data sources cover the first-hand observations and reflections of studio tutors and the evaluations of students' projects.

Findings and conclusion: The findings showed that urban abstraction and mapping strategies developed through students' bodily-sensory experiences in urban contexts helped raise awareness of design as a generative and iterative research process. Students who were able to reveal and reconstruct the relationship between different forms of knowledge and to cyclically convert them through the experiential and conceptual levels of the design process managed to develop distinctive heuristic 2D and 3D design strategies. Implementing this studio approach in subsequent terms and increasing the number of participants would help make further analysis of the potentials/constraints of urban abstraction and mapping strategy for basic design education. Nevertheless, the findings of this study provide a ground for discussions on the effectiveness of teaching/learning methods applied in the introductory level of design education.

Keywords: Basic design, First year design studio, Abstraction, Urban mapping, Critical-creative thinking

INTRODUCTION

First-year design education has a critical responsibility to provide a constructive learning environment for students who encounter design studio pedagogy for the first time. In the basic design studio, students are encouraged to develop new ways of looking, seeing, observing, analyzing, and visualizing through the exploration and use of different media. As noted by Özkar (2017: 2), "a basic design course tries to equip the beginning student with fundamental design skills that will universally apply to any form and material in future contexts," and this is facilitated through "experimental use of abstract forms and materials to respond to abstract problems." In a basic design course, students are exposed to the basic elements of design (point, line, plane, volume, form, orientation, scale etc.), they learn the basic principles of design (color, shape, texture, rhythm, balance, contrast, continuity, repetition, etc.) and develop a new geometric language by using 2-dimensional and 3-dimensional design elements based on these principles. Consequently, they start to develop "designerly ways of knowing" and cultivate "visual and spatial reasoning" (Cross, 2004; McDonnell, 2016; Özkar, 2017).

The emphasis on form and space in the early design phase is considered as the legacy of the modernist tradition, which is also made manifest in basic design education. However, giving priority to the geometric language of

abstraction in composition design may cause limitations when visual perception dominates other perceptual realms. Rather, integrating visual perception with other perceptual dimensions may evoke and enlarge the designer's awareness of the tangible and intangible features of the physical environment. This would, in turn, help integrate conceptualization and materialization in design for foundation design education (Figure 1). Hence, the present study raised the following questions: how can we develop an inclusive model for a basic design studio to stimulate a better understanding of the dynamic commingling of visual reasoning/critical conceptualization and sensory experiences/bodily perception in the design process? What are the pedagogical potentials of experiencing physical space and of walking as a performative act for achieving this in basic design education?

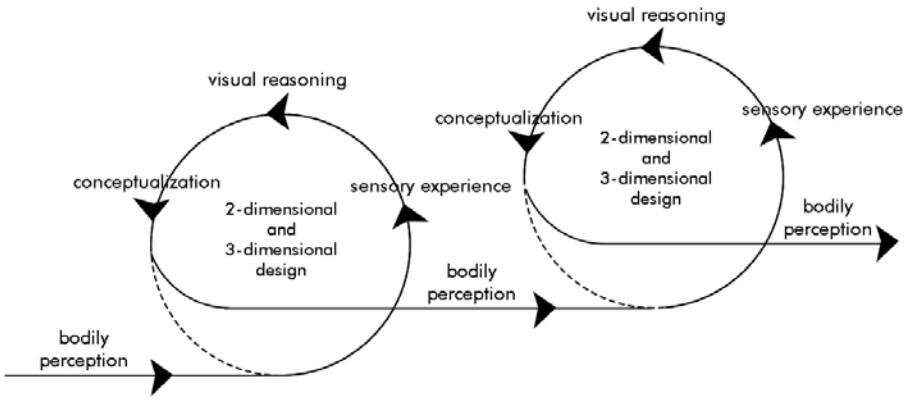


Figure 1. Conceptual framework of basic design education

This study aims to present and discuss a studio approach that was undertaken as part of the basic design studio at the Department of Architecture at Özyeğin University in Turkey. This studio approach is analyzed through the structure, application, and products of a four-week project entitled "Urban Abstraction and Mapping." The main objective of this project was to generate new ways of grasping the complex and multi-dimensional nature of urban space in a critical and creative manner by going beyond the geometric language formed through abstraction in composition development. The analysis and abstraction of the physical environment are utilized as a tool for synthesizing conceptual thinking with the concreteness of sensory experiences and bodily perception. The cyclical relationship between the trios of perception-experience-conceptualization constitutes the basic components of this project. For this purpose, *urban abstraction* and *urban mapping* are inquired and used as methodological tools, and İstanbul, as a case of a complex urban city, is experienced through bodily perceptions of the students walking on a predetermined route. The bodily experiences of students as *flaneur* constituted the basis firstly for conceptualizing the tangible and intangible features of urban city and secondly, transforming this conceptualization into an experiential and perceptual design process through testing material-color-texture-light/shadow-scale of volumetric explorations.

Although there are many articles that examine architectural design studio approaches at different grade levels with the case-study method (Hisarlıgil, 2012; Lizondo-Sevilla et al., 2019; Yorgancıoğlu & Genel, 2022), the number of articles focusing on the first semester of the first year, which has a critical role in design education is very few (Çelik, 2014; Acar et al., 2021; Çil & Demirel-Özer, 2021). Moreover, very few case study analysis discusses the theoretical and pedagogical framework of project approaches in the design studio beside the project itself (Love, 2019; Qureshi, 2020; Saghafi, 2021). This study contributes to the body of knowledge on first year design education as it inquiries about a threshold between basic design education and architectural design education by integrating the notions of form, space, structure, and scale to abstract design principles and elements. This study investigates the potential of mapping methodology for the development of critical-creative thinking and making skills of beginning design students.

In what follows, the paper lays out the theoretical context of the study by emphasizing, firstly, the goals of basic design education, secondly, *mapping* as a generative tool in basic design education, and thirdly, the theoretical implication of *urban flaneur* for mapping studies. Then, it describes the methodological framework of research by explaining why the case study methodology fits well with the present study and explains the structure and stages of the "Urban Abstraction and Mapping" project. This is followed by the evaluation of the

outcomes of project stages in terms of the educational goals, educational achievements, and limitations and constraints encountered by the first-semester design students. It inquiries about the ways design is transformed into a research process for first semester design students, in which representation techniques are utilized as analysis and knowledge production tools. The paper ends with conclusive remarks about the possibilities of enhancing the generative role of mapping methodology to support the development of first semester design students' critical thinking skills as part of basic design education.

Theoretical Context

In the view of Temple (2006: 5), the first-year design studio is concerned with the "issues related specifically to perceptions, processes, and definitions but also necessitates the formation of habits of mind, habits of hand, habits of reflection, and habits of communication, as a basis for continued learning, exploration, and development." For Boucharenc (2006: 1), this critical role of beginning design education necessitates "a holistic, creative and experimental methodology that develops the learning style and cognitive abilities of students with respect to the fundamental principles of design." The design projects are structured in a way to help students develop abstract, analytical, diagrammatic, and creative thinking skills, combined with skills of doing through hands-on experiences. First year design students are encouraged to go beyond the familiar perceptions of space, look at alternative perspectives, explore relationships, and design the tools necessary to express those relationships in new and creative ways. Thus, the formation of a critical learning and design culture in the studio is supported (Akoury, 2020; Çil & Demirel-Özer, 2021). Students critically analyze and re-frame the design problem and develop solution alternatives (Kuhn, 2001; Salama, 2008; Nabih, 2010; Mackintosh, 2014). Design critique -a principle pedagogical method used in the design studio- plays an important role in the development of critical thinking skills of students (Schön, 1984; Wilkin, 2005; Gray & Smith, 2016; Belluigi, 2016). The positive/negative aspects of the projects are discussed, different perspectives are developed iteratively, and each actor in the studio publicly shares his /her own viewpoints and open them up for the evaluation by others (Christensen & Ball, 2016; McDonnell, 2016; Demiri, 2021). The new ways of thinking necessitate being open-minded, creative, and critical and have high awareness (Ennis, 1994; Yorgancıoğlu & Tunalı, 2021). Alternative and creative ways of thinking enable an individual to look through multidimensional perspectives and integrate mental constructs of different knowledge fields to (design) knowledge production processes (Erkök et al., 2005; Aydınlı & Kürtüncü, 2014).

Critical and creative thinking triggers the reorganization of knowledge and the production of new knowledge, and when it comes to design, this is a type of knowledge that is "conceptually learned and experientially grasped" (Erkök et al., 2005: 63). "Sensory experience" is fundamental in learning how to design and learning-by-doing, an essential component of studio-based pedagogy, is based on hands-on experiences and working with physical materials through the design process (Özkar & Steino, 2012). The learning-by-doing approach serves not only for making visible and materializing abstract ideas through 2D drawings and 3D physical models but also for exploring and generating new ideas and creative solutions to design problems. Beyond the visualization of knowledge, the reproduction of knowledge through critical-creative means of representation is encouraged. Students examine the visual and structural qualities of different materials and the principles of tectonics. Thus, an experimental, iterative, and experiential approach based on the unity of thinking and doing introduces first year design students to a new learning paradigm.

Mapping as a generative tool in basic design education

The transformation of the design into a research process and the use of representation techniques as tools of analysis and knowledge production in this process constitute important dimensions of design studio pedagogy. Students are encouraged to use multiple visualization methods in research processes (Gray & Malins, 2004; Yorgancıoğlu & Turgut, 2022). In this context, mapping is utilized as a research tool in design studio practices for representing and restructuring knowledge through conceptual, schematic, or diagrammatic explanations and visualization of the stages and the outcomes of design as a research process (Al-Kodmany, 2001; Şenel, 2019). Mapping serves for the visual representation of varied forms of data by revealing the relationships between different forms of knowledge and the principles and insights that can be derived from this relationality (MacEachren, 1992; Moere, 2007). As a performative act that combines conceptualization and visualization, mapping becomes a method that has as much generative potential as representation (Arslan, 2019).

Mind mapping is a mapping technique commonly used in design studios. Bodily perceptions and sensory experiences of individuals regarding the outer world intertwine with the subjective, cognitive, and intuitive responses of their inner world. For design students, the layering and overlapping of these two realms have the potential to generate design knowledge (Aydınlı & Kürtüncü, 2014). Such an experience is usually activated by spatial stimuli resulting from the displacement of individuals from their current contexts and encountering a new environment, which opens the perceptual realm. All the inputs gathered via such encounters are filtered through the individuals' perceptual, experiential, and conceptual realms and pave the way for the development of a subjective interpretation of the situation. The perception of the physical environment through bodily experiences and its leading to an intellectual inquiry and conceptualization process fits well with the goals of basic design education as it supports the integration of conceptual and experiential knowledge through design.

The theoretical implication of "urban flaneur" for mapping studies

The concept of *flaneur* has theoretical implications for the present study. *Flaneur* has been a concept used for explaining varied responses of the modern persona to the modern city. For Baudelaire (2017), the *flaneur* makes observations of urban space, walking through the crowds but at the same time hiding himself/herself from the crowds, as for Benjamin (1999) the observations of the *flaneur* as a walking citizen lead to production of ideas about the modern city. Gros (2014) introduces the concept of "urban *flaneur*" whose experience of the city, through all his/her senses, dwells on his/her daily routines such as walking to work, going through the crowds, and then going back home after work. Gros (2014) points to urban heaps of crowded city spaces that cover up gates, sudden changes, dangers, and surprises, all being part of the experiences of the urban *flaneur*. The sensory qualities of walking are also emphasized by Urry (2016) who describes the relationship between citizens and the modern city through the concept of walking. Beyond a displacement of the body, walking becomes a performative act, and the city generates an interactive realm for the citizens, allowing one to better grasp body-space-time relationality. In the view of Le Breton (2008) walking in the city requires the participation of the whole body and activates all senses in the background of visual, auditory, and haptic stimuli.

Within this framework, the embodied and sensory engagement of *flaneur* to the modern city through walking is rooted in phenomenological concepts of the human body based on a criticism of a dualistic understanding of mind/body or thinking/perception. Rather, as it is discussed in contemporary body theories (Merleau-Ponty, 2002; Pallasmaa, 2014), such engagement dwells on the particularity of the body's interaction with space through perception and experience. This particularity stems from a way of accessing and re-constructing knowledge of space through different strategies of experiencing and perceiving (Yorgancıoğlu & Çalak, 2020). Movement is key to those strategies, since the body's movement in space leads to constant changes of his/her experiences and, thus, of the knowledge derived from those experiences. Experiencing space through movement, especially walking, has a dynamic structure, enabling unexpected or contingent encounters and grasping multi-layered phenomena in urban space. Accordingly, the body is re-contextualized to the center of urban space and becomes "actualizers of the city" whose active engagement with the city through embodied experiences leads to producing knowledge of urban space (De Certeau, 1988).

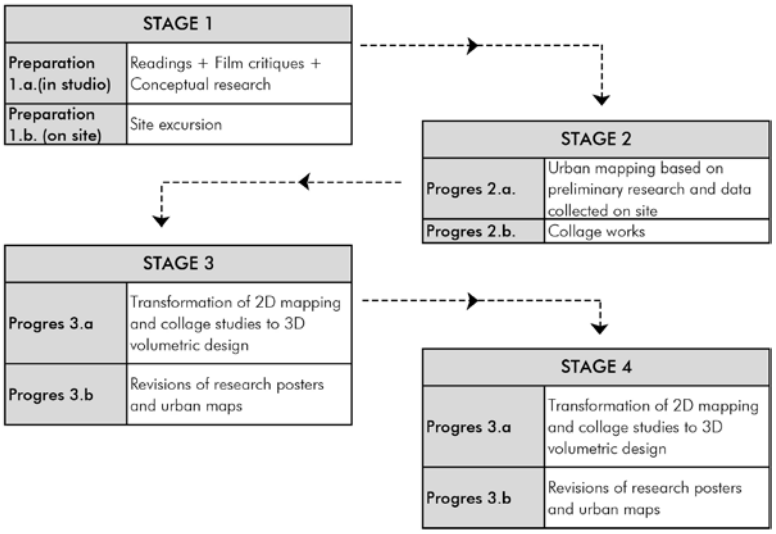
METHOD

The present study is based on a qualitative case study methodology (Bergin, 2018; Yin, 2018). The researcher's first-hand interaction with a phenomenon within its real-life context is essential in qualitative case study research that may cover interviews, observations, and reflections used to analyze a topic in design research (Jonson, 2005; Charlesworth, 2007; Groat & Wang, 2013). Qualitative case study methodology fits well with the objectives of the present study that aims at presenting and discussing a studio approach developed for the ARCH/MIM 101 Design studios taught in the first year of the bachelor's degree in Architecture and the bachelor's degree in Interior Architecture and Environmental Design in Özyeğin University. The study dwells on the final exercise of the basic design studio entitled "Urban Abstraction and Mapping," which aimed at introducing the students to context-based design knowledge through the embodied interaction of the body/subject with the physical space. This project is described and analyzed by the authors of the present study, who were the tutors of ARCH/MIM 101 studios while conducting the case study research. The authors

facilitated the design and implementation of the pedagogical approach as well as the chance to observe and interpret students' experiences and learning strategies in the context of the studio. Besides, over the years, the authors have been reflecting on the teaching methods used in ARCH/MIM 101 Design studios, trying to improve the content and procedures of studio pedagogy each academic year.

In the present study (1) first-hand observations and reflections as the studio tutors in the studio context and within site excursion, (2) reflections on studio tutor's work through weekly critiques, and a final jury evaluation and (3) projects designed by the first-year design students are used as data sources and data collection tools. A triangulation strategy based on multiple data analysis techniques is applied to compare the data sets and increase the validity and rigor of this qualitative study (Humble, 2009; Teddlie & Tashakkori, 2009) of the students participating in the ARCH/MIM 101 studios. "Urban Abstraction and Mapping" was designed as the final project of ARCH /MIM 101 Design course that covered four more projects on the following topics: Ex.1.0. Abstraction of natural objects and pattern design, Ex.1.2. Abstraction of photographic composition, Ex.2.0. Figure-ground composition based on Gestalt principles, Ex.3.0. Movement analysis and volumetric design and Ex.4.0. Transformation of form. The content and sequence of these short-term projects are structured in accordance with the main objectives of the course, which are introducing the first-year design students to the basic elements and principles of design, guiding them to develop 2D and 3D composition designs based on these design elements and principles and cultivating in their skills of thinking and making with a special emphasis on material-technical-structural issues and critical-creative representation tools. In the studio, *urban abstraction* and *urban mapping* are inquired and used as methodological tools. İstanbul, as a complex urban city, is experienced through bodily perceptions of the individual as a *flaneur*, walking on a pathway. The bodily experiences of the individual as *flaneur* constituted the basis firstly for conceptualizing the tangible and intangible features of urban city and secondly, transforming these features and layers into the volumetric design of the abstracted urban mappings.

Table 1. Educational phases of Urban Abstraction and Mapping project



The project duration was four weeks, and four main stages of learning are systematically implemented throughout the four-week schedule (Table 1). In Stage 1, students were expected to read chapters they have chosen from the book Invisible Cities by Italo Calvino (1997) and make group discussions on the concepts that can be derived from the readings. Students were also given further readings by de Certeau (1984), Baudelaire (2017) and Benjamin (1999) and extracts from the movies The Man with a Movie Camera (Vertov, 1929), Metropolis (Lang, 1927) and Qatsi Triology (Reggio, 1982, 1988, 2002) were shown and discussed in the studio. This was also supported by conceptual research as the group works with reference to keywords such as urban abstraction, urban mapping, mind-mapping, *flaneur*, urban experience, urban palimpsest, urban layering. The introductory stage also included a site excursion to selected locations in the Galata and Karaköy districts in the European side of Istanbul. Galata Tower Square was selected as the meeting point for studio tutors and students. 3 main paths (Galata Tower-Bankalar Avenue- Karaköy Ferry Station- Paket Post Office, Galataport)

were selected for the analysis of tangible and intangible features (visual/geometric elements, urban image, scale and monumentality, auditory experiences, transportation networks, user groups, daily practices, programmatic elements, etc.) of urban space. Students were asked to utilize site analysis tools such as sketching, mind-mapping, visual and auditory recordings during the site visit. The data collected during the site excursion was analyzed in Stage 2, in which students were expected to develop 2-dimensional urban mapping studies and collage works. These 2-dimensional studies were expected to reflect the designerly ways of thinking of each student about the tangible and intangible layers of urban space and how they can be abstracted using creative representation tools. All the inputs derived from the preliminary conceptual research, the site-excursion and analysis and mapping studies were expected to guide the first-year students in Stage 3 for a critical inquiry of the volumetric representation of urban layers in X-Y-Z dimensions. The 3D volumetric design of the abstracted urban mapping and collage studies were to experiment with the abstraction of urban layers, their possible intersection and/overlapping, and the potentials of the materials (color, texture, durability, etc.) for the representation of the visible and invisible elements of the urban layers. In Stage 3, students were asked to design 2 posters for the representation of both the process and the products of the project: a research poster exposing the findings of all preliminary conceptual and environmental analysis, and a design poster portraying all the design processes, including the 2-dimensional studies of mind-mapping, abstracted urban mapping and urban collage as well as the 3-dimensional volumetric design, both the prototypes and the final model. Stage 4 included Revisions of 3D model through desk critiques and Final Jury presentations and evaluations.

FINDINGS

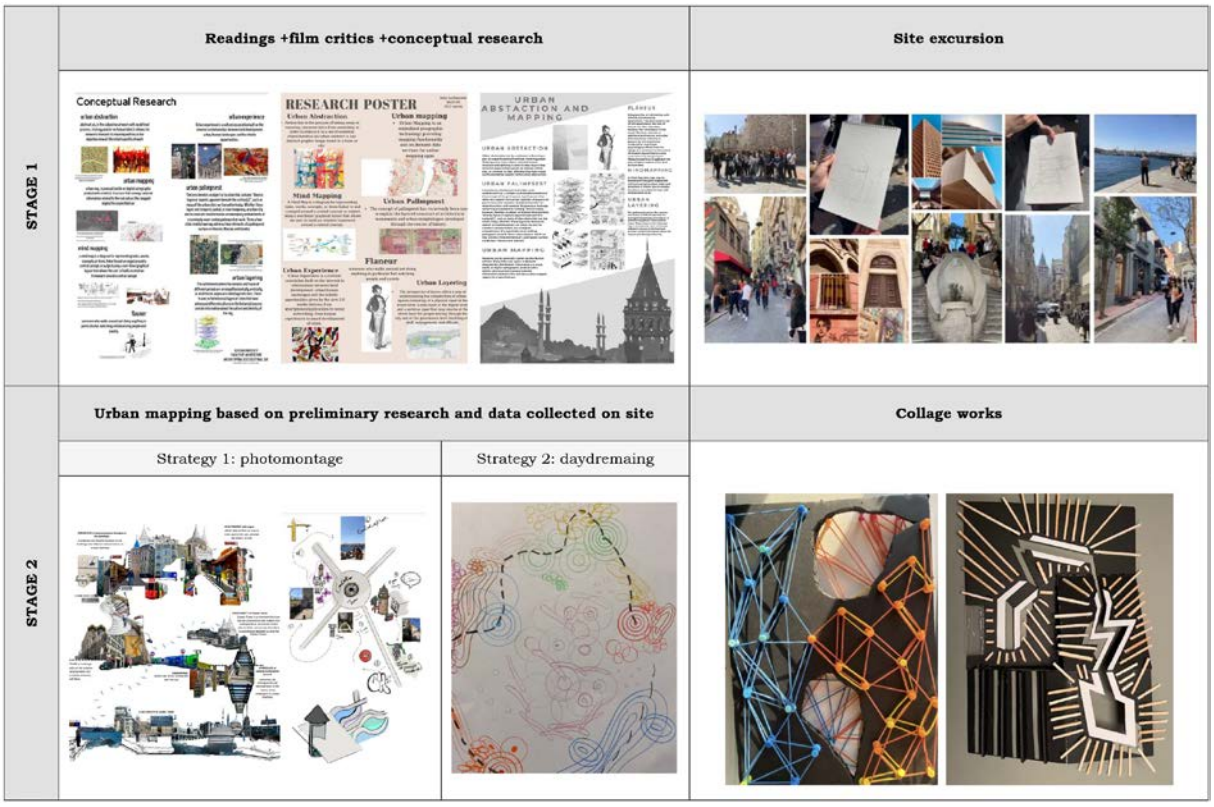
The results are based on the analysis of the generative capacity of mapping to integrate experiential and conceptual knowledge and evoke inputs for 3D volumetric design at the introductory design process in ARCH/MIM 101 studios, by focusing on the structure implementation, and products of the studio approach. Evaluation and the interpretations enriched the discussion part of the manuscript, and the discussion is based on (1) educational goals, (2) educational achievements, and (3) limitations and constraints encountered by first-semester design students in each phase of “Urban Abstraction and Mapping” project as part of the design process in ARCH/MIM 101 studios (Table 2).

Table 2. Educational objectives, achievements and limitations/difficulties encountered in each phase of “Urban Abstraction and Mapping” project

			Educational objectives	Educational achievements	Limitations and difficulties
STAGE 1	Preparation 1.a (in studio)	Readings + Film critiques + Conceptual research	to structure the conceptual framework of the project through different mediums	raising awareness of design as a research process; developing critical thinking skills and knowledge base about designing.	dominance of visual literacy skills over reading
	Preparation 1.b (on site)	Site excursion	to observe and analyze urban space through bodily perceptions and sensory experience as an individual; to expand research and learning practices beyond the boundaries of the studio	increasing the students' awareness of the city they live in by exploring the heterogeneous and layered structure of urban space; learning to experience their environment as active participants	difficulties in describing and analyzing their experiences through concepts
STAGE 2	Progres 2.a	Urban mapping based on preliminary research and data collected on site	to activate students’ critical-creative thinking skills; to abstract the tangible and intangible layers of urban space by using creative representation tools	transfering the findings of conceptual research and on-site observations to the design process by revealing and reconstructing the relationships between them, synthesizing conceptual and perceptual knowledge through a critical-creative-subjective filters	low levels of abstraction in mapping; difficulties in activating the intuitive reasoning skills
	Progres 2.b	Collage works	to transform perceptual and sensory experiences into authentic frame of references for abstraction and design	developing volumetric design and exploring the nature and potentials of model-making materials	dominance of aesthetic concerns in composition design

STAGE 3	Progres 3.a	Transformation of 2D mapping and collage studies to 3D volumetric design	to inquire volumetric representation of urban abstractions in X-Y-Z dimensions by experimenting the transfer of conceptual and abstracted knowledge to volumetric design	discovering the circular nature of design process by inquiring the tangible and experiential counterparts of the concepts in mapping studies; developing 2 different mapping strategies called as "photomontage" and "daydreaming"	difficulties in understanding that the process of transformation from abstract to concrete and from concrete to abstract continues at every stage of the design process
	Progres 3.b	Revisions of research& design posters and urban maps	to showcase the conceptual research outputs and studio discussions as the introductory stage of the design process	re-constructing different forms of knowledge by taking into consideration principles of compositon design	low level of creative visualization of different knowledge forms; lack of engagement with composition design principles in poster design
STAGE 4	Finalization 4.a	Revisions of 3D model through desk critiques (prototype development)	to iteratively develop 3D volumetric representations of urban abstractions	testing material potentials in accordance with the conceptual references of mapping	low level of abstraction in some volumetric design experiments ex., tendency to represent some landmarks in the route as they are
	Finalization 4.b	Final Jury presentations and evaluations	to explain the process and the outcomes of design designs; to respond to questions raised by the tutor-jurors	developing skills of self-expression, openness to criticism and time management; raising awareness about the wholeness of the design process	difficulties in explaining mapping strategies; difficulties in explaining the transition between different stages of the design process

The project is structured on four stages (Figure 2). STAGE 1 included preparation in the studio based on Readings + Film critiques + Conceptual research. Educational goals envisioned for this stage were questioning the concepts that inform the conceptual framework of the project through different media and, thus, helping students get familiar with foundation concepts. This stage of the project not only raised students' awareness of design as a research process but also contributed to developing their critical and creative thinking skills and knowledge base about design. On the other hand, there were also some constraints at this stage of the studio. Because first-year design students are mostly equipped with visual literacy more than text literacy, they are not familiar with reading articles or book chapters.



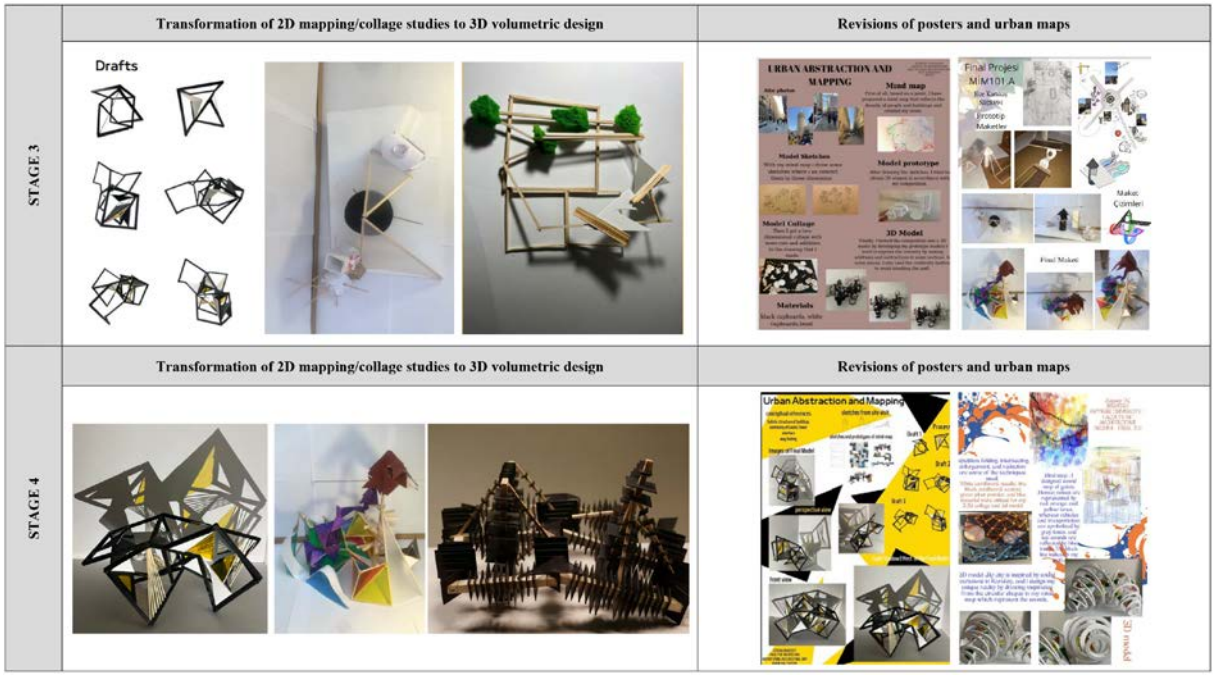


Figure 2. Four subsequent stages of "Urban Abstraction and Mapping" project

Yet, the state of having more active visual perceptions turned into an advantage for the studio exercise of watching excerpts from movies and discussing certain concepts in relation to the project brief. These discussions provided a ground for critically evaluating the tangible and intangible elements of urban space through daily practices, the interaction between the observational reality and the subjective and imaginative perceptions of the observer. This, in turn, prepared the students for the site excursion they participated in the next stage of the project. The reason for choosing documentary films was to draw attention to the fictional dimension of urban/spatial experiences of observers, to the fact that we all experience the world through our own lens. These two exercises were followed by literature research about the main concepts given in the design brief and the preparation of a presentation. The students, who gained a certain awareness of the readings and movie critics in the studio, discovered the definitions of the related concepts and started relating these concepts with visual examples. Preparation on site was based on site excursion. The educational objectives of this stage were observing and analyzing urban space through bodily perceptions and sensory experience, promoting personal perspectives in observing, perceiving, conceiving, and visualizing space. The pedagogical goals were to expand research and learning practices outside the studio, to increase students' awareness of the city they live in, and to encourage them to explore the heterogeneous and layered structure of urban space, especially within the framework of the chosen route. Students were encouraged to learn to experience their environment as active observers and participants, one of the key features of being a designer. Bodily movement through walking was the primary notion that supported the active engagement of students to space; observations and experiences on the go were effective in enabling students to look at the space through multiple perception channels. However, the students who had difficulties bringing their conceptual awareness to a certain level in the studio research exercise needed help describing their experiences through concepts. This difficulty was also evident when analyzing the data collected after returning to the studio from the site excursion: some students needed help finding conceptual references for their data analysis.

STAGE 2 started with practices of urban mapping based on preliminary research and perceptual-sensory data (in different media such as photographs, sketches, video recordings, sound recordings, etc.) collected on site. The objectives were to activate students' critical-creative thinking skills and to abstract the tangible and intangible layers of urban space using creative representation tools. Bodily perceptions and sensory experiences were expected to be re-evaluated as a spatiotemporal frame of reference for abstraction. The mind-map method was determined as the appropriate method to achieve this. Because mind-map has the potential to provide an opportunity for each student to represent the spatial experience they have acquired from their

own point of view by synthesizing the concrete-abstract, objective-subjective elements together; thus, this method contributes to encouraging the students to develop their own design strategies. Mind-map helped students to transfer the findings of conceptual research and on-site observations to the design process by revealing and reconstructing the relationships between them, synthesizing conceptual and perceptual knowledge through a critical-creative-subjective filter and, eventually, representing this synthesis through different forms of knowledge (visual, textural, etc.). Some successful examples of expressing experience with concepts were: the use of "interface" concept with reference to "interior/exterior of the buildings (facades and interior practices)" and "underground/above ground combining the underground and aboveground of the city by using underpass"; the inquiry of "sound" with reference to diverse sound qualities such as "deliveries and miscellaneous; transportation; street sound; traffic, harbor and building operation"; "palimpsest" concept related with diversities between and co-existence of "layers of human density, human orientations, building heights." Conceptualizing the experience, in other words, trying to express the prominent elements of the students' subjective experience in the route, constituted the first stage of the mapping exercise.

The concepts were reconstructed by students using different visual and written knowledge forms. Two different approaches were observed among students. Some students tended to bring together the photographs they took during site excursions and or the images found on the web to reconstruct the route in a certain flow. While doing this, they cropped the images, distorted them by altering their scales, overlapped, or changed the positive-negative space setup by making the ground line upside-down. So, this group of students created their own route compositions. While creating their compositions, some students maintained the route's flow and sequence of elements in this flow, while others first disassembled and recombined the route in a new setup in accordance with their own imaginative and intuitive filters. This visual flow is also supported by short explanations and concepts. The first strategy of urban mapping used by students in the first semester design studio can be defined as the "photomontage strategy" and the second as the "daydreaming strategy." The second group of students exposed a more abstract approach, coming closer to the subjective notion of mind-mapping strategy. For instance, some students focused on the sound variations experienced during site excursion, such as human sounds represented as red, orange, and yellow, vehicular sounds represented as tones of gray, and the sound of sea represented as blue. Another student focused on varying densities of people and buildings, represented through diverse geometric shapes and colors. An interesting approach to mind-mapping was based on a cartographic composition made of horizontal lines as modular groups, representing the interpretation of concepts such as "field of view", "crowd", "light", "width of route" and "height of route." Mapping as a strategy to synthesize conceptual and perceptual notions of urban space also had its challenges for first-year design students, who were expected to discover mapping methods for the first time. In some mapping studies, the level of abstraction remained low. Studio tutors had difficulties in activating the imaginative and intuitive reasoning skills of students, as they were inclined to represent concrete features of their site observations. Stage 2 also included collage works that aimed to guide students in their attempt to transform daily experiences into an authentic frame of reference for abstraction and design. Most of the students seem to achieve an introduction to volumetric design and working with materials in design. Yet, the problems in this stage were low levels of abstraction and emphasis on creating aesthetic compositions. Besides, successful collage works were sensitive to composition design principles (proportions, equilibrium, continuity, contrast, etc.) and tested the potentials of different materials as preparation for 3-dimensional volume design.

STAGE 3 included experimentations for the transformation of 2D mapping and collage studies to 3D volumetric design. The main objective of this stage was to inquire volumetric representation of urban abstractions in X-Y-Z dimensions by experimenting with the transfer of conceptual and abstracted knowledge to volumetric design. As the students tried to conceptualize their bodily perceptions and sensory experiences at Stage 2, this time, they questioned the tangible and experiential counterparts of the concepts on which they based their mapping studies. As indicated at Figure 1, they once again discovered the circular nature of the design process. It is revealed that the two different mapping strategies discussed above had two different reflections in the 3-dimensional design process. For the students utilizing "daydreaming as mapping strategy" there was a formal and compositional continuity between their mind-map collage studies and the 3-dimensional models: a more explicit relationship between the successive stages of the design process was observed. The figural formations in mind-map and collage studies and the principles of combining these shapes (in X and Y dimensions) become more robust by gaining depth with the Z dimension. The students were directed to

spatialize the 3D volume so that it could be perceived from 6 different perspectives, as was emphasized throughout the semester in the first-year studio. The relationship between 2-dimensional mapping studies and 3-dimensional models for the students exposed to “photomontage as a mapping strategy” in stage 2, was more implicit. Observing a formal and compositional continuity between the two stages of the design process was harder. The mapping studies based on “photomontage” strategy exposed a composition of images and concepts with no definite geometrical language; thus, defining the frame of references for 3-dimensional volumetric design was a challenge for students proceeding from stage 2 to stage 3 (Figure 5). The challenge was defining the strategies to guide this transition in terms of the integrity of the design process and to reflect the subjective conceptual and perceptual filters for each student. For example, the student focusing on the concept of “interface” with reference to the dualities of “interior/exterior” and “underground/above the ground”, tried to transform this concept into a fluid space by replacing solid and permeable surface elements in X-Y-Z dimensions in her volumetric experimentation. The mapping that was created by overturning different urban layers, were transformed into a volumetric design in which when turned upside down, the model was based on a similar stratification (layering) strategy. The volume designed by expressing the different sounds perceived in the urban space with different material textures can be given as another example that follows the “photomontage” strategy.

Stage 3 also aimed at guiding the first-semester design students to test the potentials of materials (transparency, durability, flexibility, etc.) for representing abstracted urban references in a volumetric way. Students were encouraged to choose materials according to their relevance for their individual design strategies and to test different treatments for transforming the material (creating texture or voids on material surfaces, cutting, folding, stretching, etc.). They used linear and planar elements based on principles such as repetition, continuity, balance, contrast, and techniques such as folding, intersecting, overlapping, scaling, addition/subtraction, which were emphasized throughout the ARCH/MIM 101 Design courses. The challenges for stage 3 mostly derived from the difficulties in understanding that the process of transformation from abstract to concrete and from concrete to abstract continues at every stage of the design process, and that the 3D volumetric design is more than gaining depth of a 2D design. Studio tutors underlined the importance of experiencing a circular process in which the students should continue to achieve progress by generating, critically evaluating, and developing alternative design solutions.

Stage 3 continued with Revisions of research and design posters and urban maps to showcase the conceptual research outputs (based on the keywords such as urban abstraction, urban mapping, mind-mapping, flaneur, urban experience, urban palimpsest, urban layering) as the introductory stage of the design process. Students had made progress in terms of developing skills for re-constructing different modes of knowledge by taking into consideration principles of composition design. Some posters can be regarded as experiments to creatively visualize different forms of knowledge, which were designed as compositions by taking into consideration the compositional principles in poster design. In some posters, the potential for creative visualization of different knowledge forms needed to be more robust: the lower competence in using digital tools and their tendency not to treat the poster as a composition design can be the underlying reasons.

STAGE 4 included revisions of 3D models through desk critiques (prototype development) with the aim of guiding students in the iterative development of 3 dimensional representations of urban abstractions. Students developed prototypes of their 3D volumetric design by taking desk critiques for 3 times before the final evaluation. This helped them test the material potentials/constraints (such as durability, elasticity, permeability, solidity, etc.) in accordance with the conceptual references of their mapping studies and their volumetric design strategies. The final part of Stage 4 and the project process was the execution of a final jury. Final jury aimed at encouraging students to explain the process and the outcomes of their designs and respond to questions raised by the tutor-jurors, which would help them develop skills of self-expression, openness to criticism, process/time management and increase their awareness about the wholeness of the design process. In the final jury, the 2D mapping, collage studies and 3D models acted as tools for communication between the students and tutors. Some students made presentations by explaining the transitions between the conceptual research-site excursion-volumetric design stages of the design process; while in some presentations, it was observed that how each design stage constituted an input to the next was not clearly understood and well-explained by the students.

CONCLUSION

Focusing on the structure, process, and products of an introductory design studio approach conducted at the Department of Architecture of Özyeğin University, this study examined how the analysis and abstraction of the tangible and intangible elements of the physical environment can be utilized as a tool for synthesizing perception-experience-conceptualization as three essential components of design. The main questions addressed in this study were how an inclusive introductory design studio model could be developed for stimulating a better understanding of the balance between and a dynamic commingling of visual reasoning/critical conceptualization and sensory experiences/bodily perceptions in the design process and the ways experiencing physical space through walking as a performative act can contribute to achieving such a balance and commingling in basic design education.

The study findings showed that urban abstraction and mapping strategies developed through the first-year design students' bodily perceptions and sensory experiences in urban context helped raise awareness of the heterogeneous and multi-layered structure of urban space, but also of design as a generative and iterative research process. Furthermore, students managed to transfer the findings of conceptual research and on-site observations to the design process by revealing and reconstructing their relationships, synthesizing conceptual and perceptual knowledge through a critical-creative-subjective filter. Thus, the studio approach opened new perspectives for beginning design students to go beyond the abstract geometric language of composition development, but rather to integrate experiential and conceptual knowledge to generate new knowledge as a basis for 3D volumetric design. It is shown that urban abstraction and mapping strategies have been instrumental in increasing students' engagement in critical thinking and volumetric and material experimentations in the design process.

The results of the case study analysis of a pedagogical approach for the first-year design studio through a final project indicated two different urban abstraction and mapping strategies developed by the students- "photomontage" and "daydreaming" strategies. This pointed to the potential of mapping for the development of diverse critical-creative and intuitive approaches to re-construct different forms of knowledge through the filter of each student's subjective, conceptual, and perceptual approaches to the act of designing. It is revealed that the students who were able to operate the transition from perceptual-experiential realms to the realm of abstraction and conceptualization through a cyclical process managed to better utilize from urban abstraction and mapping as a research and design strategy and achieved distinctive heuristic approaches to 2D and 3D design learning. On the other hand, those students who had difficulties in transferring one form of knowledge to another tended to approach 3D volumetric design as gaining the depth of a 2D design. Consequently, this research can help discuss the contribution of mapping methodology to the development of basic design pedagogy and of the basic design education to the transition phase to architectural design. The findings of this study may contribute to the development of new teaching and learning strategies based on the physical environment as a reference to abstraction to be implemented for the introductory design education, in a way to support the abstract design approaches that are widely covered in basic design courses.

There were several limitations to this study. The current study is based on a four-week project at ARCH/MIM 101 Design studios at Department of Architecture of Özyeğin University. Although the study combines students' projects of three studio sections in Spring 2022 semester providing opportunities to analyze the potential and constraints of urban abstraction and mapping strategy for introductory design education, a longitudinal study is needed by increasing the number of participants and repeating this approach. For future studies, it would be supported to investigate the potentials of this strategy with a larger sample size in subsequent introductory design studios. Another issue to be raised could be examining the reflections of the learning goals achieved in this studio on the subsequent studio levels. These will help test the pedagogical contributions of urban abstraction and mapping strategy for the development of first year design students' critical-creative-intuitive thinking and making skills as part of basic design education. The findings of this study also provide a ground for further discussions on the contribution of basic design education to form a more engaged learning process for foundation-level design students and support the transition to architectural design. Finally, the results are relevant for and accessible by other design researchers and tutors who are interested in analyzing and evaluating the effectiveness of teaching/learning methods applied in the basic design studio at the introductory level of design education.

Authors' Contributions

The 1st author contributed 50%, the second author contributed% 30 and the third author contributed % 20 to the study.

Acknowledgements

This study was based on ARCH 101 and MIM 101 Design Studios that were conducted in 2021-22 Spring Term at Özyeğin University Faculty of Architecture and Design. Special thanks to the students of the Department of Architecture and the Department of Interior Architecture and Environmental Design for their contribution to the study, especially to the students Alisa Kaptan, Berçin Şen, Burak Songun, Buse Özdemir, Cansel Toplu, Ece Karakaş, Lara Güner, Selin Kurbanzede, Yağmur Ergezen, Tunahan Kaya, Zehra Keskin and Zeynep Uç whose work is demonstrated in the article. We also thank Gizem Efendioğlu for her valuable contributions to ARCH/MIM101 studios as research assistant.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval is not required.

REFERENCES

Acar, A., Acar, Ş. S. & Ünver, E. (2021). Mimarlık bölümü birinci sınıf öğrencilerinin kendi problem çözme becerilerine dair algılarının dikkat ve görsel-mekânsal becerileriyle ilişkisi üzerine bir araştırma. *MEGARON*, *16*(2), 212-222. https://doi.org/10.14744/MEGARON.2021.98623

Akoury, C. (2020). Apprehending the creative process through drawing in the foundation design studio. *iJADE, 39*(1), 113-125. https://doi.org/10.1111/jade.12223

Al-Kodmany, K. (2001). Visualization tools and methods for participatory planning and design. *Journal of Urban Technology*, *8*(2), 1-37. https://doi.org/10.1080/106307301316904772

Arslan, P. Y. (2019). Kitabın performansı ya da basılı bilginin haritalanması üzerine. *Dosya 42: İlişkisel bir Eylem Olarak Haritalama* (pp. 39-47), E. A. Aral (Ed.), TMMOB Mimarlar Odası Ankara Şubesi. http://www.mimarlarodasiankara.org/dosya/dosya42.pdf

Aydınlı, S. & Kürtüncü, B. (2014). *Paralaks oda*. Cenkler Matbaacılık.

Baudelaire, C. (2017). *Modern hayatın ressamı* (A. Berktay Çev.). İletişim Yayınları.

Belluigi, D. Z. (2016). Construction of roles in studio teaching and learning. *The International Journal of Art & Design Education*, *35*(1), 21-35. https://doi.org/10.1111/jade.12042

Benjamin, W. (1999). *The Arcades Project* (H. Eiland & K. McLaughlin Trans.). The Belknap Press of Harvard University Press.

Boucharenc, C. G. (2006). Research on basic design education: an international survey. *International Journal of Technology and Design Education*, *16*, 1-30. https://doi.org/10.1007/s10798-005-2110-8

Charlesworth, C. (2007). Student use of virtual and physical modelling in design development – an experiment in 3D design education. *Design Journal*, *10*(1), 35-45. https://doi.org/10.2752/146069207789318027

Christensen, B. T. & Ball, L. J. (2016). Dimensions of creative evaluation: Distinct design and reasoning strategies for aesthetic, functional and originality judgments. *Design Studies*, *45*(Part A), 116–36. https://doi.org/10.1016/j.destud.2015.12.005

Çelik, F. (2014). Basic design education in landscape architecture. *International Journal of Architectural Research: ArchNet-IJAR*, *8*(1), 76-183. https://doi.org/10.26687/archnet-ijar.v8i1.334

Çil, E. & Demirel-Özer, S. (2021). Mimari habitusun eşiği olarak ilk yıl mimari tasarım stüdyoları. *METU JFA*, *38*(1), 139-160. https://doi.org/10.4305/METU.JFA.2021.1.3

Cross, N. (2004). Expertise in design: an overview. *Design Studies*, *25*(5), 427-441. https://doi.org/10.1016/j.destud.2004.06.002

De Certeau, M. (1988). *The practice of everyday life*. The University of California Press.

Demiri, K. (2021). Critical thinking and crits in the 1st year design studio. In C. Chatzichristou, P. Iacovou, P. & L. Koutsoumpos (Eds.), *Proceedings of TYFD 2019-Practices of Teaching 1st Year Design in Architecture* (pp. 106-114), University of Cyprus, Nicosia, 23-25 October 2019.

Ennis, R. (1994). *The nature of critical thinking: an outline of critical thinking dispositions and abilities* [Paper presentation]. The Sixth International Conference on Thinking, MIT, Cambridge, MA.

Erkök, F., Eren, C., Uz Sönmez, F., & Aydınlı, S. (2005). A paradigm shift in the first-year design education. *ITU A|Z*, *2*(1/2), 62-78.

Gray, C. & Malins, J. (2004). *Visualizing research. A guide to the research process in art and design*. Ashgate.

Gray, C. M. & Smith, K. M. (2016). Critical views of studio. In E. Boling, R. A. Schwier, C. M. Gray, K. M. Smith & K. Campbell (Eds.). *Studio teaching in higher education* (pp. 271-280). Routledge.

Gros, F. (2014). *A philosophy of walking* (J. Howe, Trans.). Verso.

Groat, L. & Wang, D. (2013). *Architectural research methods* (Second Edition). John Wiley & Sons.

Humble, Áine M. (2009). Technique triangulation for validation in directed content analysis. *International Journal of Qualitative Methods*, *8*(3), 34-51. https://doi.org/10.1177/160940690900800305

Hisarlıgil, B. B. (2012). Franz Kafka in the design Studio: A hermeneutic phenomenological approach to architectural design education. *iJADE*, *31*(3), 256-264. https://doi.org/10.1111/j.1476-8070.2012.01764.x

Calvino, I. (1997). *Invisible cities* (W. Weaver, Trans.). Vintage Books.

Jonson, B. (2005). Design ideation: The conceptual sketch in the digital age. *Design Studies*, *26*(6), 613-624. https://doi.org/10.1016/j.destud.2005.03.001

Kuhn, S. (2001). Learning from the architecture studio: implications for project-based pedagogy. *International Journal of Engineering Education*, *17*, 349-52.

Le Breton, D. (2008). *Yürümeye övgü* (İ. Yerguz, Trans.). Sel Yayıncılık.

Love, J. S. (2019). Studio teaching experiments – spatial transitioning for autism schools. *Archnet-IJAR: International Journal of Architectural Research*, *13*(1), 39-57. https://doi.org/10.1108/ARCH-11-2021-0321

MacEachren, A. M. (1992). Visualization. In R. F. Abler, M. G. Marcus & J. M. Olson (Eds.). *Geography's inner worlds* (pp. 99-137). Rutgers University Press.

Mackintosh, L. (2014). Just doing it: the role of experiential learning and integrated curricula in architectural education. *The International Journal of Pedagogy and Curriculum*, *20*(3), 67-78.

McDonnell, J. (2016). Scaffolding practices: A study of design practitioner engagement in design Education. *Design Studies*, *45*, 9-29. https://doi.org/10.1016/j.destud.2015.12.006

Merleau-Ponty, M. (2002). *Phenomenology of perception* (C. Smith, Trans.). Routledge Press.

Moere. A. V. (2007). Aesthetic data visualization as a resource for educating creative design. From information visualization over ambient display to data art. In A. Dong, A. V. Moere & J. S. Gero (Eds.), *Computer-aided architectural design futures: Proceedings of the 12 the International CAADFutures Conference 2017*, pp. 71-84, Springer.

Özkar, M. & Steino, N. (2012). Shaping design teaching: exploring form as an agent in design reasoning and pedagogy. In M. Özkar and N. Steino (Eds.). *Shaping design teaching: Explorations into the teaching of form* (pp. 9-24). Aalborg University Press.

Özkar, M. (2017). *Rethinking basic design in architectural education: Foundations past and future*. Routledge Press.

Qureshi, H. (2020). Collaborative architectural design studio environment: An experiment in the studio of Architectural Design-I. *Archnet-IJAR: International Journal of Architectural Research, 14*(2), 303-324. https://doi.org/10.1108/ARCH-08-2019-0187

Pallasmaa, J. (2012). *The eyes of the skin: Architecture and the senses*. John Wiley & Sons.

Saghafi, M. R. (2021). Teaching strategies for linking knowledge acquisition and application in the architectural design studio. *Archnet-IJAR: International Journal of Architectural Research*, *15*(2), 401-415. https://doi.org/10.1108/ARCH-01-2020-0005

Salama, A.M. (2008). A theory for integrating knowledge in architectural design education. *International Journal of Architectural Research: ArchNet-IJAR, 2*(1), 100-128.

Schön, D. A. (1984). The architectural studio as an exemplar of education for reflection-in-action. *Journal of Architectural Education, 38*, 2-9.

Steinø, N. & Özkar, M. (2012). *Shaping design teaching: Explorations into the teaching of form* (First Edition). Aalborg Universitetsforlag.

Şenel, A. (2019). Mimarlik eğitiminde haritalama: geleneksel eril mimarlık üretimine yaratıcı bir eleştiri. *Dosya 42: İlişkisel bir Eylem Olarak Haritalama* (pp. 5-17), E. A. Aral (Ed.), TMMOB Mimarlar Odası Ankara Şubesi. http://www.mimarlarodasiankara.org/dosya/dosya42.pdf

Teddlie, C. & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating qualitative and quantitative approaches in the social and behavioral sciences*. Sage.

Temple, S. (2006). Developing a beginner's mind. In S. Temple (Ed.), *Proceedings of a beginner's mind. The 21st National Conference on the Beginning Design Student* (pp. 5-10). The University of Texas at San Antonio, College of Architecture.

Urry, J. (2016). *Mobilities: New perspectives on transport and society*. Routledge.

Wilkin, M. (2005). Reviewing the review: an account of a research investigation of the crit. In D. Nicol & S. Pilling, S. (Eds.). *Changing architectural education: Towards a new professionalism* (pp. 85-89). Taylor & Francis Group.

Yorgancıoğlu, D. & Çalak, l. E. (April 2020). Bedensel deneyime dayalı yer bilgisinin yeniden yapılandırılması için bir yöntem irdelemesi: Deneyimsel haritalama. *MEGARON, 15*(1), 126-137. https://doi.org/10.14744/megaron.2020.80269

Yorgancıoğlu, D. & Tunalı, S. (June 2020), "Critique's role in the development of design literacy in beginning design education. *RChD: Creación y Pensamiento (Review of Chilean Design), 5*(8), 49-62. https://doi.org/10.5354/0719-837x.2020.57651

Yorgancıoğlu, D. & Genel, A. Ö. (April 2022). Reversing the design process in the introductory architectural design studio: The exploratory function of sketch modelling. *ADCHE, 21*(1), 67-84. https://doi.org/10.1386/adch_00047_1

Yorgancıoğlu, D. & Turgut, H. (2022, April 14-15). *The role of methodology in new architectural research approaches: OzU 'City and Architecture' postgraduate program as a case* [Presented Paper]. Unspoken Issues in Architectural Education (UIAE) 2022 Conference, Eastern Mediterranean University, Famagusta, Cyprus.

Authors' Biographies

Derya Yorgancıoğlu holds a B.Arch. (2000) degree from YTU Department of Architecture (2000), and M.Arch. (2004) and Ph.D. (2010) degrees in architecture from METU Department of Architecture, Turkey. She conducted research studies at Queen's University of Belfast, Center for Educational Development (CED) in 2017 and Indiana University, Bloomington, Center for Innovative Teaching and Learning in 2018 as a visiting researcher. She is currently working at Özyeğin University Department of Architecture and teaching basic design and architectural design studios. Her research interests cover theory and research in architecture, architectural education, design studio pedagogy, scholarship of teaching and learning in higher education.

Doga Dinemis Aman is a landscape architect who graduated from Istanbul Technical University (ITU) with a diploma prize in 2011. She completed her doctorate in ITU on public open space and disaster relief in 2019. During her doctoral studies, she continued her research at Wageningen University (2016). She worked as a research assistant in ITU between the years 2011-2019. She participated in national and international competitions in professional categories and received first prizes. Her research focuses on urban landscape planning, green urbanism, hazard mitigation and climate adaptive design. She currently works as Assist. Prof. in Özyeğin University Department of Architecture.

Beyza Şat graduated B.Sc. with an honorary degree from Istanbul University, Landscape Architecture Department in 1999, then orderly obtained M.Sc. in 2002, and Ph.D. in 2009 from Science Institute of Istanbul University. She is expertise on Landscape Analysis and Ecological Planning subjects. Over a span of twenty years, she has taught on ecology and sustainability related issues both in state and private universities. She had worked in Toledo University, (U.S.) as visiting scholar in 2014 with a research proposal award. She has been working as an associate editor in a prestigious journal of Springer Open, Ecological Processes since 2017.

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

A contemporary approach in transformation of space perception: The meaning of architecture in 2000's art

Res. Asst. Dr. Gencay Çubuk[1*]

[1]Trakya University, Faculty of Architecture, Department of Architecture, Edirne, Turkey.
gencaycubuk@trakya.edu.tr

*Corresponding Author

Received: 27.01.2023
Accepted: 16.03.2023

Citation:
Çubuk, G. (2023). A contemporary approach in transformation of space perception: The meaning of architecture in 2000's art. *IDA: International Design and Art Journal, 5*(1), 57-72.

Abstract
The purpose of this study is to provide a discussion ground that can answer the question, "as a contemporary theme in transformation of space perception, what is the meaning of architecture in the art of the 2000s". As the scope, works of leading figures of 2000s art were examined through literature review and it was aimed to obtain an original concept set by evaluating them in the context of art-space relationship. The methodology is divided into three sections. The first section is literature research which is based on the determination of the theory about the artworks. The second section is based on the demonstrations of the relationships between the spatial themes through "knowledge discovery in databases". In the third section, the groups are emphasized through "relative frequencies of the spatial themes". Accordingly, when the artworks are evaluated in terms of spatial features, it is seen that narratives are related with war, peace, anarchy, individuality, imprisonment, separation, loneliness, uncanny, anxiety, curiosity, desire, lethargy, memory, boredom, consumer culture, ambiguity, habit, conflict and revel. As a result, the image of space occurs while being positioned together with interior and exterior, official and informal, ordinary and extraordinary, dramatic and analytical where dualities formed by contrasts are dissolved.

Keywords: Perception of space, Space in art, Contemporary space, Spatial context

Extended Abstract

Introduction: The study discusses the meaning of architecture as a contemporary theme in the transformation of space perception through the art of the 2000s. It is aimed to create a concept set by evaluating the explanations of leading theoretical figures and the works of artists who developed representations that question the meaning of space in the art of the 2000s. This set of concepts will be instrumental in drawing a roadmap on how the art of the 2000s contributed to the art-space relationship in subsequent architectural studies.

Purpose and scope: The works of the leading figures of 2000's art were examined through a literature review, and it was aimed to obtain an original concept set by evaluating them in the context of the art-space relationship. The basic research question is stated as follows: "As a Contemporary Approach in the Transformation of the Perception of Space, What Is the Meaning of Architecture in Art of the 2000s?" Accordingly, Banksy's Flower Chucker, Luc Tuymans' Within, Peter Doig's 100 Years Ago, Ken Currie's Three Oncologists, Neo Rauch's Gold, Vincent Desiderio's Cockaigne, Zhao Bo's Mother 2004, Inka Essenhigh's Shopping, Mark Alexander's Blacker Gachet I and John Alexander's Parade are evaluated. All these artworks are critical in that they represent themes that worked as a pioneering force before the contemporary art trends that emerged in the 2010s and evolved into different themes. The most influential difference between the art of the 2000s and the art of the 2010s and 2020s stems from the fact that the thematic essences to be used in the art of the following years are based on the interrogative works of art developed from the space-human interaction in the first half of the 2000s.

Method: The methodology is divided into three sections. The first section is literature research which is based on the determination of the theoretical studies about the artworks. The second section is based on the demonstrations of the relationships between the dominant themes through "knowledge discovery in databases". In the third section, the groups made through the determinations are emphasized through "relative frequencies of the spatial themes". Primarily, keywords with spatial characteristics in the criticism texts of the selected works were determined through a literature

review. Sentences containing these spatial keywords were sorted to form a meaningful combination and subjected to data analysis with the help of Voyant Tools. The aim here is to list the spatial essences in the art of the 2000s under the titles of “Anarchy, Uncanny and Escape”, “Consumption” and “Nothingness and Ceremony” and to show the connections they have established with other themes. In this way, the spatial potentials of the bases, which are a reference to the art of the 2010s, have been determined and the bonds that will determine the spatial approach in the art of the coming years have been made visible.

Findings and conclusion: All the artworks are evaluated in terms of their spatial and thematic features and it is seen that the narratives are presented through essences of public space, prison, island, sea, boat, operating room, dark room, provincial store, showcase, cave, shelter, residence, dining room, shopping mall, market, void, dark and ceremony area. The conceptual palette associated with these spaces is nourished by the themes of war, peace, anarchy, individuality, imprisonment, separation, loneliness, uncanny, anxiety, curiosity, desire, pleasure, lethargy, memory, boredom, consumer culture, ambiguity, habit, conflict and revel. As a result, it is seen that all these interrogations create an eclectic image by positioning the themes of “inside and outside”, “formal and informal”, “ordinary and extraordinary”, “dramatic and analytical” together in the context of space. This image is fed by the plurality theme, which forms a strong basis for many themes that will be discussed in the 2010’s art and represents the connections that will affect the spatial perception of the coming years. Following the spatial dualities and contrasts in works of art over a certain production period can provide many guiding data in terms of architecture. These can be evaluated through the identity of the space, the harmony-incompatibility of the space with age, the semantic weight of the space for the users, the obligations that space imposes and the areas of freedom which space offers, the way the space is interpreted by different user profiles or the role of the space in changing the habits of the masses. All the evaluations are based on the conclusion addressing the spatial qualities and forms of association in the pioneering works of art of the relevant period have a role in realizing the architectural design.

Keywords: Perception of space, Space in art, Contemporary space, Spatial context

INTRODUCTION

Countless images surround contemporary urban people. While the distinction between artistic and non-artistic among these images becomes blurred, works and spaces intertwine, creating an illusion and presenting various evidences for the semantic dissolution of the age (Berger, 1972: 98). These evidences can be discussed in terms of the way spaces are evaluated with the perspective of artworks, and they can be deconstructed in a way that makes their contextual relations visible. Accordingly, it is necessary to examine the components that make up the image. Explaining the relationship between the components that make up the image with the concept of association, Pellegrino and Jeanneret (2009: 269) present various approaches to the definition and description of space, and mention that the production of meaning developed in architectural theory can be explained by evaluating both the approaches of modernist function-oriented and the post-modernist communication-oriented world.

In this context, art offers essences that are useful in evaluating the spatial meaning and contextual reading (Pellegrino & Jeanneret, 2009: 271). The art in the 2000s, on the other hand, contextualizes the transformation of space with its powerful themes, such as the transformation of the contemporary understanding of the city, the examinations of the urban people, the ways in which the last phase of capitalism spread through images, the speed of popularization of individuality versus sociality, the questioning of actions, the dissolution of the meanings assigned to urban life and the sanctity of the countryside. Particularly, the first half of the 2000’s art includes a perspective that is positioned just before technology, autonomy, and artificial intelligence-based predictions with spatial details that deal with semantic dissolution in the physical context, compared to the second half prepared for the art in 2010 and later. This perspective is also important in terms of expressing the understanding of phase before art is explained entirely through speculation, brand value, and shopping (Stallabrass, 2020: 12). Ten artworks examined in the study were evaluated mainly by the way they interpret the sensitivities of the age through space (Figure 1).

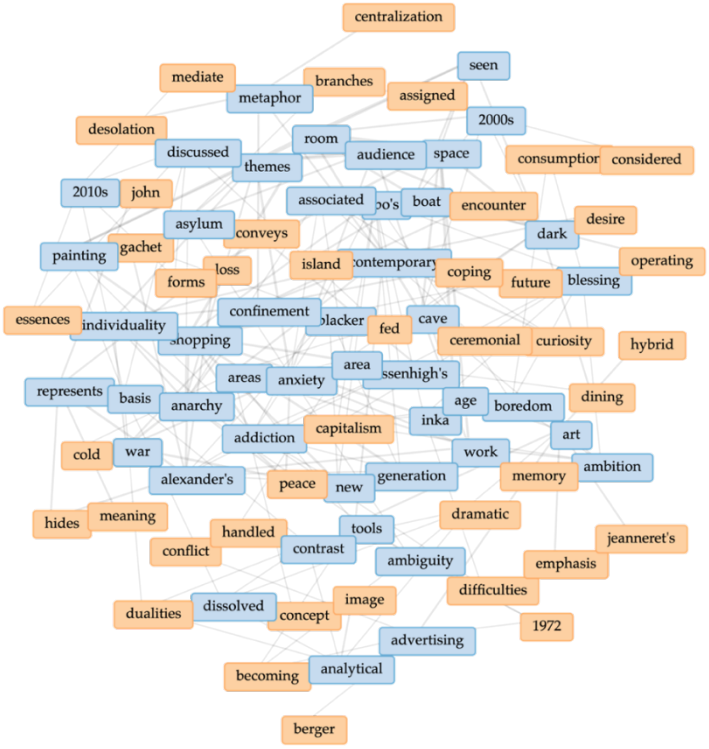


Figure 1. Relations of spatial themes in the artworks and evaluations examined in the study

METHODOLOGY

The first section is literature research which is based on the determination of the theory about the artworks. The keywords with spatial characteristics in the critical texts of the selected artworks were determined through a literature review. The second section is based on the demonstrations of the relationships between the spatial themes through “knowledge discovery in databases”. Sentences containing these spatial keywords were sorted to form a meaningful whole and subjected to data analysis with the help of Voyant Tools. In the third section, the groups are emphasized through “relative frequencies of the spatial themes”. The aim here is to list the spatial essences in the art of the 2000s under the titles of “Anarchy, Uncanny and Escape”, “Consumption” and “Nothingness and Ceremony” and to show the connections they have established with other themes. In this approach, the spatial potentials of the bases, which are a reference to the art of the 2010s, have been determined and the bonds that will determine the spatial approach in the art of the coming years have been made visible.

FINDINGS

Anarchy, Uncanny and Escape in Space

Banksy, Tuymans and Doig stand out with their artwork on the themes of anarchy, the uncanny and escape. Scardamaglia (2022: 418) touches on the importance of the brand value created by Banksy, who spent his entire career staying away from visible properties. Giving a new meaning to the space, Banksy uses an anarchy aesthetic that makes the audience rethink the value of the street and art. Banksy used blank walls to reflect his stance that brings to light speculative issues in public spaces. Many themes such as obsolescence, abandonment, the disintegration of the idea of peace, anxiety, loss of shelter, the transformation of time perception and anarchy are the main themes of Banksy’s artworks. All can be observed in the art that he applies with the stencil technique. Although the ruins are sometimes overlooked parts of the metropolitan fabric that hybridizes with the different uses of glass, steel and brick, Banksy’s art assigns an anarchist context to these

pieces, turning them into a mute forum of ideas represented by minorities and a showcase of opposition to actions that reflect the oppressive attitude of the order (Figure 2).

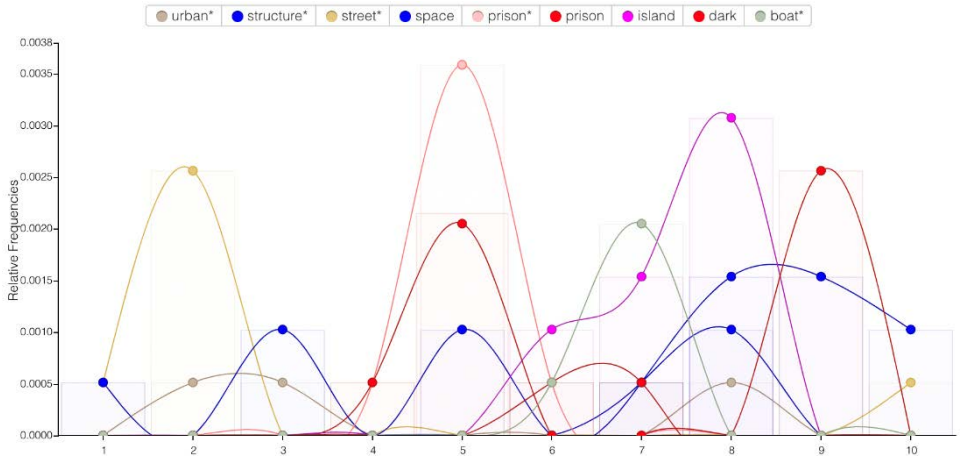


Figure 2. Relative frequencies of the spatial themes in the artworks of Banksy, Tuymans, Doig and Currie

Mentioning that "graffiti" functions as a critique of the alienated spaces of modernity, Branscome (2011: 114) also mentions that Banksy's works, exhibitions and prints attack the Warhol cult in many ways through a "legal" street vandalism, while simultaneously opposing BritArt. Famous as one of the most radical artists of the postmodern form of the language of communication on the street, Banksy finds exhibition spaces for his works in parking lots, abandoned industrial sites and under highway overpasses or the remains of infrastructure work. Abused streets, seemingly derelict city parts and areas where concrete texture is visible in its coldest forms act as the backdrops that take on the role of the carrier of the postmodern movement. In this context, graffiti works as an architectural element that offers different spatial narratives to the daily users and the viewers in the gallery. Street art, which is an important metaphor for demonstrating destruction from the inside, exhibits itself in Banksy's two-dimensional drawings with many political messages. These political messages contain a conceptual richness that allows many architectural and urban design elements such as walls, streets, pavements and the values attributed to them to be questioned in terms of capitalism, marketing tools and consumer culture (Ward, 2006: 920) (Figure 3).

Figure 3. Banksy, *Flower Chucker*, 2000, Stencil print on brick wall, Beit Sahour, West Bank, Palestine

Zabawa-Krzypkowska and Groń (2020: 9) discuss the relationship of artistic activities in the public sphere with architecture through the refreshing and complementary effect of murals on the urban landscape. Murals are works of art that use the surfaces or spaces they choose as a backdrop directly as a context and sometimes turn them into tourist attractions. By indirectly drawing attention to the exhibited and questioned space, it can turn the surrounding buildings into symbols, add depth and richness to the character of the public flow, or turn an inactive part of the city into an interesting focal point. Murals often take on a task associated with the

identity of the place and often mediate it to produce a new context. Zabawa-Krzypkowska and Groń (2020: 9) show the works of Fangor and the Warsaw Metro as examples in this context.

Another artist who examines space through contemporary dualities is Luc Tuymans. Mieves (2013: 297) emphasizes that Tuymans examines the way he evaluates the relationship between photography/film and painting. Mieves' article examines the impact of photography on Tuymans' work and indicates Benjamin's approach to technological reproducibility to discover the works of Tuymans, who also adopts new technology and media in his paintings, the dualities of internal/external, private/public, real/imaginary, material/spiritual, etc. The article also demonstrates the need for an in-depth questioning of dualities in European Modernism. While Tuymans constructs an artistic language by questioning the fundamental contrasts that modernism insists on and discussing their depths, he also presents compositions that allow for deep analysis of the meanings and contexts of spaces. With the prison theme, Within also contains connotations of many spatial dualities mentioned above, especially the inner/outer duality. Luke Tuymans, in his work Within, examines the distorted feeling of being imprisoned by creating an uncanny silhouette behind bars. The tension created by the interweaving of the coldest hues of green and blue is reinforced by the installation of two small cages in front of larger iron bars. Wide and narrow intervals form composites that consist of a common grid math but represent different meanings. While the viewer has the feeling that the narrowly spaced fences resemble cages in which animals are closed rather than humans, they feel that the wide-spaced fences are produced for humans (Earl, 2006: 921).

Morris and Worrall (2014: 1084) point out that from a policy perspective, a better understanding of the relationships between architectural design and prisoner behavior is associated with many administrative burdens such as safety, security, cost, and operation. Models developed to explore the effects of prison architecture on violent and non-violent inmates contain many striking data revealing the psychological effects of prisons on inmates. In this context, Tuymans multiplied the conceptual and psychological weight of the prison metaphor by creating space within space and increased the spatial load of his work. Relatedly, Johnsen et al., (2018: 19) reminders that life in an institution is determined by a totalitarian order, just as in prison, reminds us that this spatial metaphor is adjacent to every day and offers illusions associated with the age lived. The simple life described in prisons is actually a multidimensional life loaded with dreams, nightmares, memories and delusions. The prison is a composition not only of the inmates inside, but also of aluminum food containers, old bunk beds and chairs, old basins and jugs. Objects as well as individuals appear pale and isolated from life. Although there is a courtyard just outside the cells, the windows facing the courtyard are narrow and add to the gloom of the interior. While laws, rules and regulations tell what an institution can and cannot do, the anger, frustration, pain, helplessness, despair and sadness felt by the prisoners turns into a giant, burning silence, which determines the unique characteristic of the place (Figure 4).

Figure 4. Luc Tuymans, *Within*, 2001, Oil on canvas, 223x243 cm, Saatchi Gallery, London, England, Britain

The theme of imprisonment refers to a set of concepts directly related to the themes of escape and loneliness. Peter Doig's *A 100 Years Ago* stands out for the way it questions these themes. Standing in the middle of a deserted water with a contrasting color and brightness, the female figure in the boat represents the loneliness

of the age in a dominant language, metaphorically. While the dark sky provides an effect that heightens the gloom of the distant island, the island, with its numbered roads and the monumental stain at the top, represents distant dreams and belongings left behind together. The shadow of the female figure is the same color as the boat. This strengthens the viewer's thought that the woman is not in a semantic unity with the boat in which she sits with an uneasy body language and that the boat assigns a new meaning to the female figure. It can be thought that the fact that the boat is flame-colored and that the figure is depicted in pale and dark tones play a role in this thought (Bonaventura, 2006: 922).

Mentioning the importance of island symbolism in architecture, Mcgrath (2020: 81) indicates Rossi's 1982 definition of "island as structure" which emphasizes that the links with phenomenology and history should be considered in order to understand the use of structural elements built as part of built islands. The island is described as an effective metaphor for welding from the past to the present and helping to ensure the smooth passage of time. It is an attempt to assign a temporal axis to the horizontal plane of space. In this context, the islands are also referred to as paradise with the most optimistic view. As an urban structure, the island is also a powerful formation that depicts the tension between the cities' cosmopolitan structure and the individuals' loneliness. Carpi (2020: 225), on the other hand, deals with the connotations of this spatial metaphor in the context of law and literature, mentioning that the concept of the island represents separations and corruption in the context of the law. The island means a new and destructive geopolitical space. According to Carpi, the new legal space created on the island is not a discredited form of natural space but a temporary, artificial organization that preserves cultural memory. In this view, those who reach an island are actually described as survivors of a physical, spiritual, or cultural wreck. This context can also examine a break from civilization with its legal system, the deterioration of a known system, or a physical, moral, political, or social disaster. The creation of an island is an invitation to re-examine old relations in the legal and political context (Figure 5).

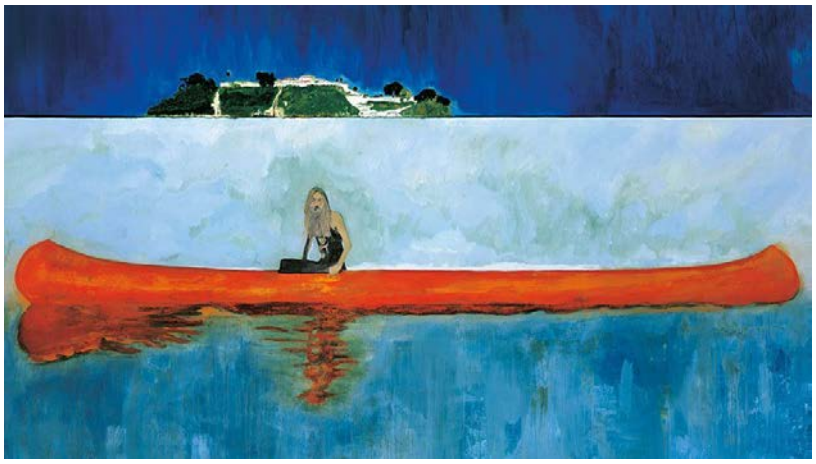


Figure 5. Peter Doig, *A 100 Years Ago*, 2001, Oil on canvas, 229x358.5 cm, Victoria Miro Gallery, London, England, Britain

Considering the prominent themes in the previous three paintings, it can be said that the themes of anarchy, imprisonment, loneliness and escape open up space for the representations of anxiety, which are positioned as their successors. Traces of all of these themes can be captured in Currie's painting The Three Oncologists. In the artwork, three oncology specialists head towards a dark space behind dark curtains with their facial expressions and trembling silhouettes that reflect anxiety and cautiousness together. The tension created by being disturbed and being accountable for the problem they are dealing with can be read from the faces and body language of the figures. The dark space framed by dark curtains stands out as a metaphor loaded with many negative connotations, referring to the magnitude of the problem and the polysemy of time (Honigman, 2006: 925). Emery (2005: 61) mentions that while Currie uses doctors and the dark background to reflect his philosophy of art and beliefs in his painting Three Oncologists, this work contains a feeling of uncanny and insecurity that differs from traditional doctor representations. Relatedly, while explaining the relationship between surgery and architecture, Adams (2018: 261) emphasizes the prevalence among medical historians of

the belief that architecture is one of the necessary criteria for medical progress, and reminds Sullivan's iconic statement about form following function. Recalling the Victorian surgical amphitheater, surgical suites, and pseudo-operating rooms of the post-war era, the concern to relate to the street refers to the way contemporary operating theaters are placed at the center of hospital complexes and invisible from the outside, in contrast to past details such as skylights, sometimes rounded, exaggerated ventilation solutions. This raises questions of a duality that fits with the situation in Currie's painting. Doctors struggle with countless dangerous ideas while completing their work in the darkness of a psychological realm disconnected from the world in the operating room, which is perceived as their autonomous space. Ibrahim et al. (2017: 34) also point out the importance of evidence-based operating room design, emphasizing that operating rooms work like a closed box. Few operating theaters' actions are known, officially recorded, and tracked. In this context, darkness seems to be an appropriate use to describe a space where ideas and actions become invisible by intertwining (Figure 6).

Figure 6. Ken Currie, *Three Oncologists*, 2002, Oil on canvas, 195.6x243.8 cm, National Scottish Portrait Gallery, Edinburgh, Scotland, Britain

"Space within Space" Based on Consumption

Spatial outputs on consumption habits, one of the most important themes of 2000s art, can be seen in the works of Rauch, Desiderio, Bo and Essenhigh. Eisman (2012: 233) mentions that Rauch is particularly known for his approach to navigating the boundary gap between figuration and abstraction, combining recognizable images with solid-colored spaces, in addition to his alienated people in eerie landscapes. Critics often describe these works as "Kafkaesque" and "nightmarish". The productions are filled with visual references to socialist realism, dada, pop, comics, and 1950s advertisements (Figure 7).

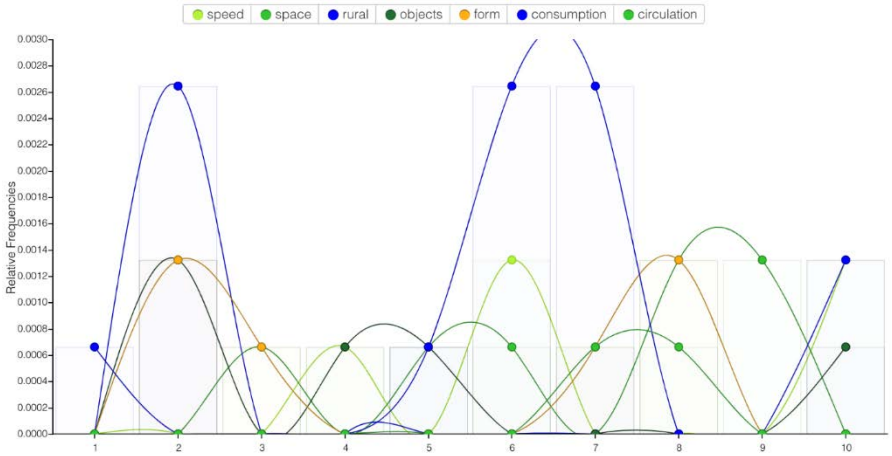


Figure 7. Relative frequencies of the spatial themes in the artworks of Rauch, Desiderio, Bo and Essenhigh

Rauch's painting reflects the combination of feelings created by a showcase in the country life surrounded by boring everyday elements, while the province watches this effect with its unique atmosphere in golden tones.

As one of the main metaphors of capitalism, the showcase offers a representation area that triggers pleasure and entertainment motives in users. In Rauch's painting, mask-like objects in the form of a human face are in the showcase. While the paint on the glass refers to the internalization of hasty and careless marketing logic, the red spots create the illusion of black humor that the objects may be real human heads (Grant, 2006: 927). Akhimien and Isiwele (2017: 10) mention that not every change in rural can be read as a sign of development. The emphasis that the built environment determines the character of the rural area, as well as the community members, is also important in this context. The relationships that people establish with each other, as well as the relationships they establish with places, play a decisive role in the character of the rural area. Pop and Viorel (2010: 19) also mention that local rural heritage represents an aggregate of all local architectural and landscape elements that form a common denominator for both traditional buildings and a particular rural landscape and contains the footprint of residents. The locals try to survive in a society that tries to impose contemporary values and techniques (Figure 8).

Figure 8. Neo Rauch, *Gold*, 2003, Oil on canvas, 250x210 cm, David Zwirner Gallery, New York, USA

Desiderio's 2003 work, Land of Dreams, on the other hand, exhibits a messy, dirty and lived-in room with books, a table and dinnerware, with a composition it presents against the traditional use of space. The reactions and strategies of the last form of capitalism, aimed at satisfying all the senses as quickly and impulsively as possible, are visible in the picture. In such a place, meals were interrupted and all the books were thrown one after the other after a rough scan. Insatiability and anxiety, two of the main diseases of the age, were treated with an intense feeling of boredom. Books stand out not with their theoretical weight, but with the abundance of their visuals. This strengthens the viewer's perception that the person or people who read the books represent shy, speed and entertainment-oriented characters who do not like to read much (Lerner, 2006: 930). Desiderio (2008: 2) makes his explanations in the context of innovative art through Manet, Delacroix, Duchamp and Marx, who has explanations about the fetishization of commodities. Pointing out that Duchamp's adoption of aesthetics that can only be determined socially, creates an important context for the art of desire and the spaces of desire, Desiderio mentions that the struggle of the rising bourgeois sensibility is no longer as important as it used to be for art and the spatiality it spawned. Pallares (2020: 310), on the other hand, emphasizes a collective understanding defined through the blurriness of the alien environment, recalling Bruegel's 1559 fragments of composition full of animals, objects, evil and stupidity. The everyday built environment is filled with passers-by, workers, shoppers, artists, traders, dreamers and the homeless. Upton (2002: 707) mentions that the daily space is not as successful as it is thought to define and determine the objects used by it. Everyday life is actually full of innumerable uncertainties and is far from the desire of architecture to describe. Combining life and landscape, commodification and social stratification are two-pronged consumption paradigms that trigger each other. While man supports a resilient spatiality, he is also bored with it and desires the new (Figure 9).

Figure 9. Vincent Desiderio, *Dreamland*, 2003, Oil on canvas, 284.2 x 389.6 cm, Hirshhorn Museum, Washington, USA

One of the most powerful descriptors of the morbid desire for the new is Zhao Bo. Bo's 2004 painting is illustrated with a background featuring the most popular figures of capitalism. The mother and her children, who are depicted with dissatisfied expressions, are represented by the popular neon colors of the age, and are shown as one of the elements of the consumer society. Logos, writings and clothes reinforce the intertwining with the language of the age. While the space described in the background represents the chaotic composition of many elements, it also reflects the consumption and speed-oriented cultural transformation of the post-2000s. This desire for consumption is constructed and transformed with a speed and transience that triggers selfishness, haste, thoughtlessness and dissatisfaction among family members. Billboards are powerful elements that reflect the fluid consumption traffic of the age as the most practical and dominant tools for corporate identities to infiltrate the daily life and intellectual world of individuals (Machida, 2006: 934).

Chase (1991: 211) mentions that consumption is the most important output of social and economic organizing power. Architecture is defined as a discipline that responds directly to agreements and regulations related to consumerism and realizes this through symbolism rather than abstraction. Although architecture is not essentially a marketing-based mission, architectural production has also changed form, through the appeal of advertising and symbolizing a ready supply, playing a role in the process of influencing new requirements by the disproportionate demand of the public for goods and services. Sklair (2017: 225) has worked on the discovery of theoretical and tangible connections between iconicity and consumption habits in the field of contemporary architecture and urban design. The belief that happiness will increase as consumption and property habits are developed, and in this context, the values attributed to consumption-related sectors are problematic in many respects. The visibility of the fact that capitalist globalization and consumption habits are unsustainable in the long run due to ecological pressure is decreasing. These relationships are explained through the knowledge that the circulation rate is much slower in places such as libraries and cemeteries compared to the circulation flow in the places where money is spent the most (Sklair, 2017: 225) (Figure 10).

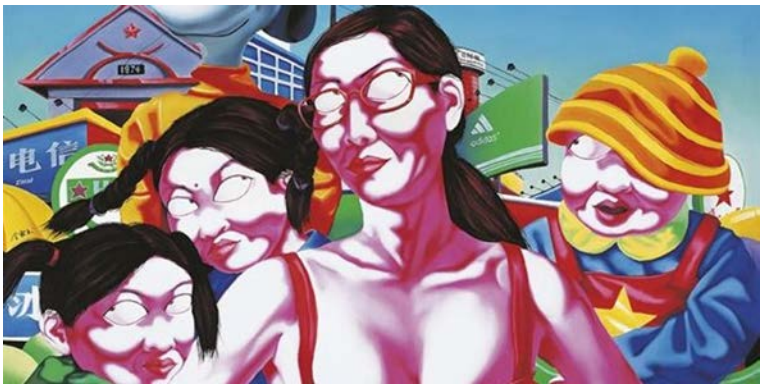


Figure 10. Zhao Bo, *Mother 2004*, 2004, Oil on canvas, 100x120 cm, China Gallery of Modern Art, London, England, Britain

Contrary to Bo's approach, Essenhigh evaluates the shopping theme through a futuristic space. The perception that the space offers a slice of the future is reinforced with cool colors and minimalist interior architecture. The floor is represented in a jointless form that is easy to clean. The figures shop with their "plastic-surgery" faces that resemble each other and their clothes, which are by-products of the same fashion trend. Their dissatisfied, indecisive expressions reflect the data-bombarded minds of the age. The sales units, designed in a minimalist form, contain a limited number of products, unlike in the past. The color tones on the walls depict an old, rotten, rusted, stinking space. The space, which appears to be free of the means of color and entertainment, is, in turn, surrounded by segmented units for the completion of the sales transaction as quickly as possible. Long lines, represented by elliptical forms, refer to Fordist production methods (Honigman, 2006: 925) (Figure 11).

Figure 11. Inka Essenhigh, *Shopping*, 2005, Oil on linen, 178 x 193 cm, Saatchi Gallery, London, England, Britain

Lovelace (2001: 113) cites Esssenhigh's success in creating his own visual universe and even "his own genre". Cyborgs, small humanoid shapes, the feeling of thick enamel that covers the canvases, the pieces that shine as if they were polished and the technological feeling are all parts of Essenhigh's distinctive artistic language. Bold, avant-garde and occasionally minimalist backgrounds balance the ability to be exotic with mundane details. Resembling atmospheric fabric waves, these pieces are deep enough to express a technologically advanced decay in addition to a limited representation of the future. Alvesson (2013: 47) reminds that few people focus on the real meaning of consumption, apart from green activists who are portrayed as enemies of development. He mentions that in such an age, fashion and brands are built with a speed and variability that is aimed at temporarily providing consumer satisfaction. In an age where the concept of need is deceptive, and all non-essential needs other than food, water, oxygen, and sensory stimulation are reflected as necessary, it produces its spaces with this understanding. Relatedly, Baudrilliard (1998: 25) speaks of a kind of fantastic abundance of consumption that appears with the proliferation of objects. In this abundance of services and goods, the ecological orientations of the human species also mutate, resulting in a way of life that lives at the speed of things and forgets its own natural rhythm and falls into a new fluidity.

Dissolving Spatial Meaning: Nothingness and Ceremony

The meanings assigned to the space through themes can be examined through both the world framed by the artwork and the positioning of the characters who share that world. The themes of nothingness and ceremony are also prominent among the themes frequently observed in the art of the 2000s. The theme of individuality, sanctified through social tensions, manifests itself in solitude, nothingness, and eclectic compositions in ceremonies (Figure 12).

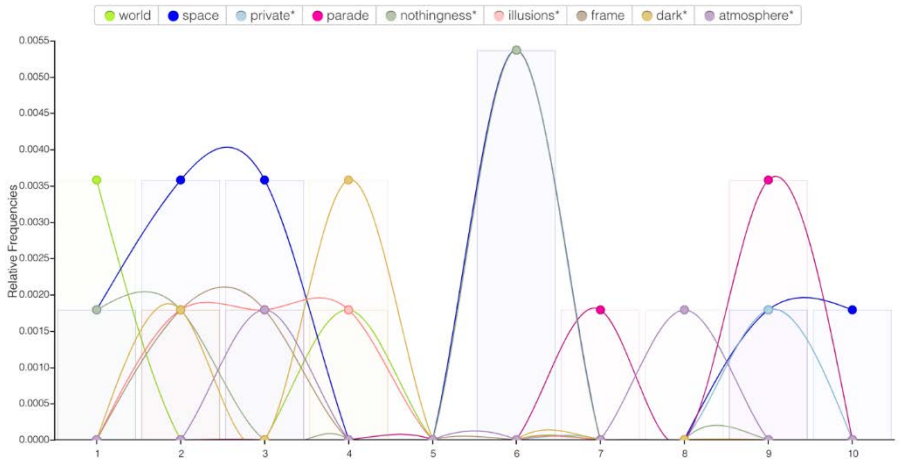


Figure 12. Relative frequencies of the spatial themes in the artworks of Mark Alexander and John Alexander

Alexander's The Blacker Gachet I depicts a thoughtful and tired male figure with illusions of tone and texture on a black background in a dark frame. The painting works like a framed space, creating a sense of autonomous space for the viewer to breathe in if entered. Although the painting represents the special and unique space of a figure buried in uncertainties, illusions, long thinking processes, and indecisions, the emotions expressed through the painting are easily transmitted to the viewer, and a contagious space that leaps from the frame and spreads around is depicted. The gloomy atmosphere obtained with black color and textural illusions also bears signs of the indistinctness of the thoughtful and tired figure. The dominant language of the age is covered with a veil that is too dark to make the individual and the individual's dark world covered with thoughts sufficiently visible. The state of integration with this veil also plays a role in the fading of uniqueness and its transformation into a gloomy fossil (Middleton, 2006: 938) (Figure 13).

Figure 13. Mark Alexander, *The Blacker Gachet I*, 2005, Oil on canvas, 88 x 76.5 cm, Haunch of Venison, London, England, Britain

Lyons (2018: 11) offers important insights into how a masterfully arranged form drags the viewer into the space of nothingness. He mentions that art is shared through the tension between different levels of appreciation, since art is subjective and immanent, meaning is objective. The space nourished by nothingness and the artistic context assigned to that space can be reinterpreted even though it remains "specific to the individual".

The ways in which nothingness is represented can also contain marked contrasts. Spaces of individual loneliness and spaces of public loneliness also differ in this context. John Alexander highlights this contrast with Parade. Streamers and flags, strange masks on faces, skeletons in cloaks and ballerina costumes, bruised, sunken or painted faces, hoods and crowns, people in suits with religious motifs, banknotes flying through the crowd, animals dressed in suits create an atmosphere of festivity and mourning. Formality and sarcasm,

slowness and haste, shyness and assertiveness are intertwined. The perspective of the painting also reinforces its frightening effect. Head and body figures stacked at the bottom of the rectangle reduce the effect of depth and create a perspective perception that will tip over the viewer. This space, which is found suitable for a parade, constructs its meaning through those on it (Mahony, 2006: 941) (Figure 14).

Figure 14. John Alexander, *The Parade*, 2006, Oil on canvas, 213 x 457 cm, Private collection

Driskell and Trawalter (2021: 2) mention that different purposes can be pursued in relationships with the past, including honoring proud moments in history, as well as acknowledging and correcting shameful ones. The responses of participants from different minorities can be clearly observed in hybrid compositions. Alexander's work also most easily chooses the use of public space or the responses to develop a sense of ownership and belonging.

DISCUSSION AND CONCLUSION

Anarchy, war, peace, economy and inequalities are told with the "Flower Chucker" made by Banksy in 2000 with the stencil printing technique on a brick wall. The gigantic "Within" made by Luc Tuymans in 2001 questions the deciphering and reconsideration of the meaning assigned to the prison metaphor. In "100 Years Ago" by Peter Doig in 2001, the themes of loneliness, island metaphor, escaping from centralism and desolation are emphasized. With "Three Oncologists", completed by Ken Currie in 2002, the uncanny, insecurity, indecision and pessimism are brought to the fore. With "Gold" completed by Neo Rauch in 2003, belongings, desire to own, curiosity and escape from the countryside are internalized. With Vincent Desiderio's 2003 work "Cockaigne", the space of objects, use, ambition, indifference, disorganization and shyness come to the fore in the context of space. Zhao Bo's 2004 painting "Mother 2004" highlights capitalism, consumption habits, the blessing of individuality and the difficulties of being a family. Inka Essenhigh's 2005 work "Shopping" criticizes superficiality, addiction to shopping, a new generation of wealthy housewifery and the shopping spaces of the future. Mark Alexander's 2005 work "The Blacker Gachet I", on the other hand, is evaluated with the space of nothingness that the work hides, the loss of meaning and its multiplicity. With John Alexander's 2006 Parade, the representation of minorities, the semantic contrasts of ceremonies, and the distortions of daily rituals are represented.

Considered as a whole, it is seen that the spatial themes that are the most processed in the 2000s painting are public space, prison, island, sea, boat, operating room, dark room, provincial store, showcase, cave, shelter, residence, dining room, shopping mall, market and space. It is seen that it is indicated through the dark and ceremonial area. Among the themes associated with these places, the prominent ones are listed as war, peace, anarchy, individuality, imprisonment, separation, loneliness, uncanny, anxiety, curiosity, desire, pleasure, lethargy, memory, shyness, consumer culture, ambiguity, habit, conflict and revel. Contemporary ways of seeing which Berger (1972: 98) defines through the art image becoming a part of advertising tools, are in line with the thematic emphasis of Pellegrino and Jeanneret (2009: 271) on the hybrid period after modernism and postmodernism. The art of the age conveys the space of the age and the loss of the meaning of that space to

the audience through the lower branches of the upper themes such as memory, freedom, anxiety and asylum (Figure 15).

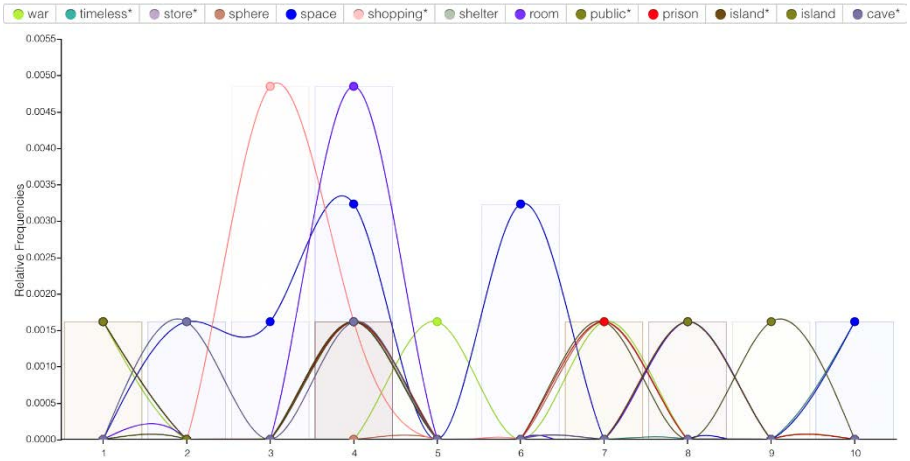


Figure 15. Relative frequencies of the spatial themes in the artworks of Banksy, Tuymans, Doig, Currie, Rauch, Desiderio, Bo, Essenhigh, Alexander and Alexander

The audience who is pushed to question the themes of war, peace, and anarchy in the public sphere can think about the contemporary reflections of individuality, imprisonment, and confinement through the intertwining of the prison metaphor and encounter the weight of coping with the feelings of indecision and autonomy caused by loneliness through singular and static images such as island-sea-boat. Warm neighborhoods that do not seem as cold and uncanny as dark rooms and operating theaters can turn into more restless and sometimes tragic areas with the visibility of contemporary marketing tools. While the concept of the room, as a metaphor for escaping the mental and spiritual burdens brought by age, maintains its popularity, shopping malls and supermarkets are positioned against it with the promise of responding to the diseases of boredom and inadequacy. While all these interrogations lead to the questioning of the urge to imprison individuals, works and spaces in nothingness, everyday identities and immanent characters collide, creating strange compositions in public associations. It creates an eclectic image by being positioned together with interior and exterior, formal and informal, ordinary and extraordinary, dramatic and analytical, in this world where dualities fed by contrasts are dissolved.

This image is fed by the theme of plurality, which forms a strong basis for the many themes that will be discussed in the 2010s painting and reminds of the timeless essences that mediate the transformation of the perception of space (Figure 16). Following the spatial dualities and contrasts in works of art over a certain production period can provide many guiding data in terms of architecture. These can be evaluated through the identity of the space, the harmony-incompatibility of the space with age, the semantic weight of the space for the users, the obligations that space imposes and the areas of freedom which space offers, the way the space is interpreted by different user profiles or the role of the space in changing the habits of the masses. All the evaluations are based on the conclusion addressing the spatial qualities and forms of association in the pioneering works of art of the relevant period have a role in realizing the architectural design.

public space * prison * island * sea * rowboat * operating room * darkroom * rural * shop

war * peace * anarchy * individuality * confinement * separation * loneliness * uncanny * anxiety * curiosity * desire

cave * sanctuary * dining room * shopping mall * market * space * darkness * parade * ground
pleasure * lethargy * memory * boredom * consumer culture * ambiguity * habit * conflict * revel

Figure 16. Spatial themes and related keywords in art of the 2000s

Authors' Contributions

The author contributed to the study 100%.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee declaration is not required for the study.

REFERENCES

Adams, A. (2018). Surgery and architecture: Spaces for operating. In T. Schlich (Ed.). *The palgrave handbook of the history of surgery* (pp. 261-262). https://doi.org/10.1057/978-1-349-95260-1_13

Akhimien, N., Isiwele, A. J. (2017). Architect's role in rural community development. *Journal of Engineering and Architecture, 5*(1), 1-13.

Alvesson, M. (2013). *Explaining the consumption paradox-why aren't people (more) satisfied?* The Triumph of Emptiness: Consumption, Higher Education, and Work Organization. https://doi.org/10.1093/oso/9780199660940.003.0007

Berger, J. (1972). *Ways of seeing* (1st ed.). The British Broadcasting Corporation and Penguin Books.

Bonaventura, P. (2006). 100 years ago, Peter Doig. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 922). Chartwell Books.

Branscome, E. (2011). The true counterfeits of Banksy: Radical walls of complicity and subversion. *Architectural Design, 81*(5), 114-121. https://doi.org/10.1002/ad.1301

Carpi, D. (2020). The island metaphor in literature and law. *Pólemos. 14*(2), 225-235. https://doi.org/10.1515/pol-2020-2015

Chase, J. (1991). The role of consumerism in american architecture. *Journal of Architectural Education, 44*(4), 211-224. https://doi.org/10.2307/1425143

Desiderio, V. (2008). *Notes on fugitivity.* Academia. https://www.academia.edu/9318177/NOTES_ON_FUGITIVITY (18.02.2023).

Driskell, S., & Trawalter, S. (2021). Race, architecture, and belonging: Divergent perceptions of antebellum architecture. *Collabra: Psychology, 7*(1), 21192. https://doi.org/10.1525/collabra.21192

Earl, S. (2006). Within, Luc Tuymans. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 921). Chartwell Books.

Eisman, A. (2012). Painting the East German experience: Neo rauch in the late 1990s. *Oxford Art Journal, 35*(2), 233-250. https://doi.org/10.1093/oxartj/kcs016

Emery, A. (2005). Three oncologists by Ken Currie. *Clinical Medicine, 5*(1), 61. https://pubmed.ncbi.nlm.nih.gov/15745201/

Grant, R. (2006). Gold, Neo Rauch. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 927). Chartwell Books.

Honigman, A. F. (2006). Shopping, Inka Essenhigh. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 925). Chartwell Books.

Ibrahim, A. M., Dimick, J. B., & Joseph, A. (2017). Building a better operating room: Views from surgery and architecture. *Annals of Surgery, 265*(1), 34-36. https://doi.org/10.1097/SLA.0000000000001777

Johnsen, B., Fransson, E. and Giofrè, F. (2018). *Prison, architecture and humans.* Cappelen Damm Akademisk (pp.19-27). https://doi.org/10.23865/noasp.31

Lerner, R. (2006). Cockaigne, Vincent Desiderio. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 939). Chartwell Books.

Lovelace, C. (2001). Inka Essenhigh at Mart Boone. *Art in America: Review of Exhibitions, 2001*(12), 113.

Lyons, F. (2018). *The architecture of nothingness: an explanation of the objective basis of beauty in architecture and the arts* (1st ed.). Routledge. https://doi.org/10.4324/9781315446646

Machida, N. K. (2006). Mother 2004, Zhao Bo. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 934). Chartwell Books.

Mahony, N. (2006). The Parade, John Alexander. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 941). Chartwell Books.

Mcgrath, B. (2020). Island as urban artifact/archipelago as urban model. *Island Studies Journal, 16*(1), 81-100. https://doi.org/10.24043/isj.140

Middleton, J. (2006). The Blacker Gachet, Mark Alexander. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 938). Chartwell Books.

Mieves, C. (2013). Distant toys, dissected bodies and reality tv: Luc Tuymans and painting in the age of ritual and new media. *International Journal of Arts and Technology, 6*(3), 297-316. https://doi.org/10.1504/IJART.2013.055396

Morris, R. G., & Worrall, J. L. (2014). Prison Architecture and Inmate Misconduct: A Multilevel Assessment. *Crime & Delinquency, 60*(7), 1083-1109. https://doi.org/10.1177/0011128710386204

Pallares, A. (2020). Bruegel's cloak: on the relationship between architecture and subject. *Journal of Architectural Education, 74*(2), 310-314. https://doi.org/10.1080/10464883.2020.1790941

Pellegrino, P. & Jeanneret, E. (2009). Meaning of space and architecture of place. *Semiotica, 2009*(175), 269-296. https://doi.org/10.1515/semi.2009.049

Pop, A., Viorel, P. (2010). Peculiarities of the New Architectural Interventions in Rural Area. Case Study: Trascău Depression, Alba County, Romania. *Journal of Settlements and Spatial Planning, 2010*(1), 19-27.

Scardamaglia, A. (2022). Banksy: Culture, counterculture and cancellation. *Griffith Law Review, 31*(3), 418-434. https://doi.org/10.1080/10383441.2022.2096973

Sklair, L. (2017). Architecture and the culture-ıdeology of consumerism. *The Icon Project: Architecture, Cities, and Capitalist Globalization.* Oxford Academic. https://doi.org/10.1093/oso/9780190464189.003.0012

Upton, D. (2002). Architecture in everyday life. *New Literary History, 33*(4), 707-723. http://www.jstor.org/stable/20057752

Ward, O. (2006). Flower Chucker, Banksy. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 920). Chartwell Books.

Zabawa-Krzypkowska, J., Groń, K. (2020). Art in the public space, different aspects of artistic activities in architecture. *IOP Conference Series: Materials Science and Engineering, 960,* 1-9. https://doi.org/10.1088/1757-899X/960/3/032090

Figure References

Figure 1, 2, 7, 12, 15, 16: Created by the author.

Figure 3: Ward, O. (2006). Flower Chucker, Banksy. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 920). Chartwell Books.

Figure 4: Earl, S. (2006). Within, Luc Tuymans. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 921). Chartwell Books.

Figure 5: Bonaventura, P. (2006). 100 years ago, Peter Doig. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 922). Chartwell Books.

Figure 6: Honigman, A. F. (2006). Shopping, Inka Essenhigh. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 925). Chartwell Books.

Figure 8: Grant, R. (2006). Gold, Neo Rauch. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 927). Chartwell Books.

Figure 9: Lerner, R. (2006). Cockaigne, Vincent Desiderio. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 939). Chartwell Books.

Figure 10: Machida, N. K. (2006). Mother 2004, Zhao Bo. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 934). Chartwell Books.

Figure 11: Honigman, A. F. (2006). Shopping, Inka Essenhigh. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 925). Chartwell Books.

Figure 13: Middleton, J. (2006). The Blacker Gachet, Mark Alexander. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 938). Chartwell Books.

Figure 14: Mahony, N. (2006). The Parade, John Alexander. In S. Farthing (Ed.), *1001 Art masterpieces you must see before you die* (p. 941). Chartwell Books.

Author's Biography

Gencay Çubuk is an architect and academic. Studied Architecture at YTU (undergraduate) and Architectural Design Program at ITU (master's degree). The year he completed his undergraduate education with department and faculty honorary degrees, awarded the 1st Prize of 6th International Young Architects Meeting. One year after he was invited to the 7th International Young Architects Meeting. Won more than 20 awards. In 2015, he was invited by YTU as lecturer, became a jury member in the graduation project. After working as academic at TU in 2017, he started his PhD program in Architecture in 2018 and completed dissertation in 2022.

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Minimal life “structures”: A studio experience

Asst. Prof. Tuğçe Çelik[1*], Lect. Esra Arslan Güreşçioğlu[2]

[1]Ostim Technical University, Faculty of Architecture and Design, Department of Interior Architecture and Environmental Design, Ankara, Turkey.
tugce.celik@ostimteknik.edu.tr

[2]Ostim Technical University, Faculty of Architecture and Design, Department of Interior Architecture and Environmental Design, Ankara, Turkey.
esra.arslan.gurescioglu@gmail.com

*Corresponding Author

Received: 27.01.2023
Accepted: 24.03.2023

Citation:
Çelik, T., Arslan Güreşçioğlu, E. (2023). Minimal life “structures”: A studio experience. *IDA: International Design and Art Journal*, *5*(1), 73-86.

Abstract
The necessity of the space to respond correctly to the user's wishes and needs is an unchanging phenomenon. Today, especially with the pandemic, differences in housing meaning are sought. With this current problem, minimal living spaces have been determined as the design studio subject of Ostim Technical University 2022-2023 Fall Semester. In this study, in the context of the suggestions developed by the students, the main motivation is to examine the meaning of the project designs and the residence; at the same time, it is aimed to discuss this studio experience. Within the scope of this study, the method, process, and end products of the studio are discussed. In this study, the changing meaning of the house and minimal living spaces were questioned by using the “document review” method, one of the qualitative research methods. The information obtained was analyzed by evaluating the results of the studio course. With this study, in which studio products with different user types and different functions are examined, it is concluded that the design of living spaces in small houses is very important for healthier solutions in comfort conditions, and it has been a very developing experience for the studio participants and executives.

Keywords: Architectural design, Design studio, Minimal living spaces, Housing, Design process

Extended Abstract

Introduction: Design is a complex process, and designers manage this process by using their knowledge, experience, spatial imagination, and creativity. In this context, while analyzing certain parameters such as environmental design, analysis of the structure and its environment, user requirements, and function analysis, on the other hand, concept development proposals related to design are made. Architectural education uses its own unique approaches by combining design-oriented and studio-oriented methods with the aspects of different disciplines and arts that contribute to creativity. The environments where design alternatives are tried, design methods, and teachings are discussed and discussed most in architectural schools are design studios, which form the focal point of architectural education (Gökmen & Süer, 2003: 18-20). Although architecture schools have different visions and structures, design studios are almost without exception at the center of architectural education. In these studios, the creative/professional/technical dimensions of spatial production, as well as the social aspect, are emphasized through design problems accompanied by critical thinking. Of course, these emphases may differ according to the priorities of the studio, educational strategies and the prominent paradigms of the period. The relative element that highlights the “project subject that will protect the design problem” to be given to architecture students by eliminating other subjects is actually the capacity of the subject to overlap with a connotation that studio managers want to emphasize (Basa, 2010: 221). Architectural design studio education is a learner-centered, process-based system that gives the responsibility of learning to the individual (Oxman, 1990: 18; Christiaans & Andel, 1993: 59-60). In this study, Ostim Technical University 2022-2023 fall semester Design Studio 2 course process is examined. With the questioning and transformation of the meaning of the house, which is a current topic, minimal living spaces have been determined as the studio theme. The house is inspired by its environment and the culture around it, both formally and spatially. For this reason, it is not only a physical structure but also a place that should respond to different needs and requests (Rapoport, 1969: 28). With the pandemic, it is predicted that the residence will turn into a function such as the use of home-office with the long periods spent in the residence and the transfer of business life to the housing.

Purpose and scope: In this study, it is aimed to examine the effect of the structural approach, which was taken into consideration from the beginning of the design process, on the design by questioning the tiny house or minimal living spaces structures that emerged with today's minimalist and free lifestyle approach in the context of the meaning of the house transformed after the pandemic. In addition, this study aims to raise the awareness that the design of living spaces in small houses will affect the comfort conditions of people and to offer solutions for people to live in healthier environments within comfort conditions. The scope of the study is the project proposals studied in the Ostim Technical University 2022-2023 fall semester design studio.

Method: Within the scope of this study, the method, process, and end products of the studio, where different parameters, which create the design, such as structure, requirement program, and user profile, are experienced, are discussed. In this study, the changing meaning of the house and minimal living spaces were questioned by using the "document review" method, one of the qualitative research methods. In the design studio of the first semester of the second year, which constitutes the scope of the study, a design problem-oriented educational approach based on the students' understanding of the intricate relationship between public and private space. They scrutinized, analyzed and proposed different home-office structures through education. After analyzing the coastline of the designated area, Datça, the participants were expected to develop their own program proposals, concepts, considering the design context, and to seek answers to the minimal living structure problem with mixed-function proposals that are both housing and office. The first stage of the process was carried out entirely with individual critics, and in the second stage, the jury and individual criticism methods were applied together. The result products are discussed by evaluating the information obtained in this study with qualitative research methods.

Findings and conclusion: The educational process, which is focused on research and learning in the process by exploring, has allowed creativity and diversity in design approaches and has been a highly developing experience for the executives as well as the studio participants. In the studies carried out within the scope of the project course, completely different user types were described, different occupational groups were selected, different functions were solved, but the same needs were met. The houses are designed together with the cultural and environmental characteristics of the regions where the people living in them live. These data can be classified as natural and cultural data. Small square meters of houses are on the way to become lively and important parts of contemporary architectural production and daily life. Solving the housing structure, which is transformed by including working spaces in small square meters, also requires questioning on design. In addition, the inclusion of the structural approach in the design process makes a serious contribution to creativity in design. It is supported by the study that the structural model, which allows the design thought formed in mind to become visible in the third dimension with the experience of "learning by doing", is beneficial in making the information about construction systems more permanent and more understandable in design education.

Keywords: Architectural design, Design studio, Minimal living spaces, Housing, Design process

INTRODUCTION

Design is a complex process, and designers manage this process by using their knowledge, experience, spatial imagination, and creativity. In this context, while analyzing certain parameters such as environmental design, analysis of the structure and its environment, user requirements, and function analysis, on the other hand, concept development proposals related to design are made (Adıgüzel & Özbek, 2012: 2). Architectural education uses its unique approaches by combining design-oriented and studio-oriented methods with the aspects of different disciplines and arts that contribute to creativity. Design studios are the environments where design alternatives are tried, and design methods and teachings are discussed most in architectural schools, which form the focal point of architectural education (Gökmen & Süer, 2003: 18-20). Although architecture schools have different visions and structures, design studios are almost without exception at the center of architectural education. In these studios, the creative/professional/technical dimensions of spatial production, as well as the social aspect, are emphasized through design problems accompanied by critical thinking. Of course, these emphases may differ according to the priorities of the studio, educational strategies and the prominent paradigms of the period. The relative element that highlights the "project subject that will protect the design problem" to be given to architecture students by eliminating other subjects is actually the capacity of the subject to overlap with a connotation that studio managers want to emphasize (Basa, 2010: 221). What actually happens in the design studio is that the student develops a solution with investigating, identifying, or even understanding the problem to be solved (Salama, 2021).

The architectural design studio is the main application area of architectural education and is at the center of architectural education with its holistic structure that combines courses such as basic design, technical drawing, and plastic arts. The project studio is at the heart of the training program in design-based disciplines. Each student understands and makes sense of the studio process, including input and information. In addition, the approach and method of the studio executive academician and the perspective of the institution are also effective in different perceptions and interpretations. However, it is possible to identify some basic features of design studios (Adıgüzel & İncirlioğlu, 2010: 4-6). Uluoğlu (1990), in her study on architectural design studios, determined these features as follows:

- The design studio is an indispensable part of architectural education.
- Design is learned by design, no matter whom it is learned from.
- One-on-one interviews and critical giving are a form of education in the design studio.
- Since the knowledge of how to design is learned from the executive, the executive assumes the main role (Uluoğlu, 1990: 17-18).

In the architectural design studio, the student is expected to embody their intellectual activity, which can be expressed abstractly, by externalizing it with visual expression techniques and conveying it with representative expression languages (Purcell & Gero, 1998: 389-390). In this context, instead of externalizing and presenting the information directly to the student, it is made available to the student actively through design experiments. Thus, the individual gains the ability to transform concrete and singular situations into abstract and general situations. The aim is not to store the information by perceiving only at the sensory level, but to pass it through the cognitive filter of the individual and cause a change in his thinking and behavior. Design education aims to target the production of new knowledge and to trigger the creative process with the re-presentation of knowledge in mind (Ayyıldız Potur & Barkul, 2010: 739). For this purpose, the key concept of the design studio is communication (Ward, 1990: 10-16; Heylighen et al., 1999: 211-235; Demirbaş & Demirkan, 2003: 437-456). An architectural design studio is an environment where people such as project coordinators, students, guest jury members invited to the studio and speakers communicate with each other. By providing social interaction between all these people in the studio, thoughts are freely expressed and shared (Coyne et al., 1994: 121). Therefore, the studio is an environment where students learn from each other, as well as from the critics of the studio executive and guest judges and speakers, if any, where they experience the process of thinking and designing.

Architectural design studio education is a learner-centered, process-based system that gives the responsibility of learning to the individual (Oxman, 1990: 18; Christiaans & Andel, 1993: 59-60). As part of the course, considering that there is a diverse mix of students who need to look at the entirety of the design problem, its objectives and possible outcomes, collaborative studio learning offers multiple perspectives on the problem at hand which are more easily introduced the given design exercise (Qureshi, 2019). This study examines the Ostim Technical University 2022-2023 fall semester Design Studio 2 course process. With the questioning and transformation of the meaning of the house, which is a current topic, minimal living spaces have been determined as the studio theme. In this course, besides the training for the development of basic knowledge and skills of spatial design, studies were carried out on the concept determined in order to create an identity in spaces, reveal their own architectural style and find solutions to design problems. In this context, students were expected to be able to look at the design problem from different angles, analyze it in different ways, and question it in multiple ways during the studio process. As a result, the diversity and diversity of the design approach in the studio structure enabled the experience of a process that nurtures creativity. It is understood that studio education, which has years of meeting with design and loves the job of design, should be designed with a creative focus in a way that will include diversity, provide critical thinking, and allow the student to overcome their limits by discovering.

THINKING THE TRANSFORMING MEANING OF HOUSING

The house is inspired by its environment and culture, both formally and spatially. For this reason, it is not only a physical structure but also a place that should respond to different needs and requests (Rapoport, 1969: 28). With the COVID-19 pandemic, users from all age groups have started to spend more time in the house

than usual, and their relationship with the house and living space has strengthened, even if it is mandatory. Although the measures in the pandemic started with "distance social life", restrictions were imposed on social activities to be held in common areas in the city, and full-time quarantine periods were experienced. At this point, the function assigned to the residence has also changed, and education and business life have also been moved to the residence. Almost all of daily life is spent in the house. Housing users have started to transform the house by necessity and have started to produce spatial solutions according to social distance rules and these new functions. As a necessity of this new need, architects have started to develop a new design concept for housing (Özdevecioğlu et al., 2022: 441).

Individuals noticed the deficiencies in their houses when they spent a long time in the house, and the importance of house design increased. In addition to the shortcomings, a new function has been added to the residence, the offices have been moved to the residence. Even though the quarantine processes are over, it is predicted that the process of working from home will continue and more people will work from their homes (Megahed & Ghoneim, 2020: 61). As a result, the consequences of the pandemic and the risk of recurrence or the possibility of new outbreaks make it necessary to study and implement a new concept in housing (Sipahi & Yamaçlı, 2021: 375).

While the correct organization of the spaces in residence, such as working, eating, and sleeping, is always important for architecture, it has been seen that the proper space organization is much more important in the pandemic than these units are planned in the required square meters, allow more functional uses. Especially in open plan examples such as open kitchen solutions, with the increase in the need for personal space, areas defined with separators were needed and solutions were brought to this need by the users. The increase in the function in the house and this process that the home-school-office life must pass in a single place has shown that the needs and wishes of all users should be planned in the housing design. From now on, the housing design will consider study/meeting spaces suitable for video calls, teleconferences, and youth/children's rooms in the classroom function where life lessons are followed. Criteria such as sound insulation and indoor air quality, which are more sought after in buildings such as offices and schools, have become sought after in residences that have these functions, along with the epidemic and pandemic process. It will be possible to solve the problems that will arise by making use of smart home systems, and at the same time, transforming / adaptable / changing flexible space solutions should be preferred for multifunctional spaces (Güney Yüksel, 2022: 96). Creating the design parameters of high comfort level, correct space organization, flexible, simple spaces that can be transformed without requiring high cost ensures sustainability in the interior of the house (Güney Yüksel & Seçer Kariptaş, 2019: 27-28). Sustainability is about ensuring continuity. Today, protecting and maintaining natural resources has become necessary for people (Filiz & Hacıhasanoğlu, 2011: 76). Flexibility is one of the most important parameters in terms of sustainability in space design and extends the life of the building. It is possible to make designs suitable for different functions with flexible spaces that can offer solutions to changing/transforming/increasing or decreasing needs, and spaces that grow or shrink can be separated or integrated with the help of movable divider systems. Thus, designs will be made to solve new needs emerging during the pandemic (Güney Yüksel, 2022: 91). In the light of this information, it is predicted that the house will turn into a function such as the use of home-office, and it is thought that the spatial transformations that occur with the change of its functional use ensure that the comfort conditions of the users are maintained and they remain connected with the world.

METHOD

Within the scope of this study, the method, process, and end products of the studio, where different parameters are experienced, are discussed. In this study, first of all, the changing meaning of the house and minimal living spaces were questioned by using the "document review" method, one of the qualitative research methods. In the design studio of the first semester of the second year, which constitutes the scope of the study, a design problem-oriented educational approach based on the students' understanding of the intricate relationship between public and private space. The result products of the studio were discussed by evaluating the information obtained in this study with the "content analysis" method, one of the qualitative research methods.

The main purpose of this study is to share the experience of a design studio that includes the architectural design process. In this direction, the main findings obtained in the research are revealed through the tiny houses designed within the scope of the design studio course, which is the scope of the study. Along with this, this study aims to examine the effect of the structural approach, which was taken into consideration from the beginning of the design process, on the design by questioning the tiny house or minimal living spaces structures that emerged with today's minimalist and free lifestyle approach in the context of the meaning of the house transformed after the pandemic. In addition, this study aims to raise awareness that the design of living spaces in small houses will affect the comfort conditions of people and to offer solutions for people to live in healthier environments within comfort conditions.

FINDINGS AND RESULTS: MINIMAL LIFE "STRUCTURES"

Although the meaning of the structure differs in various disciplines, it is basically the integrity formed by the parts. In this integrity, the correct establishment of the part-whole relationship is important for the design process. Because the right design depends on the design of the form that will provide the desired functions and the structure that will sustain it (Günal Ertaş, 2007: 13). Structure is derived from the Latin word "stuare" and is used to mean to build (Demirkan, 2006: 12). While Hasol (2019) defines structure as the system that will sustain form, Torraja (1958) emphasizes that structure is directly related to the form in his book The Philosophy of Structures (from Hasol, 2019 and Torraja, 1958, cited by Ertaş & Sönmez, 2018: 110). Vitrivius (2005), in his work titled Ten Books on Architecture states that architecture should be considered as a whole in design, although he bases architecture on three pillars: strength, beauty and usefulness. Similarly, French architect Eugene Emmanuele Violetle-Duc stated that architecture consists entirely of structure and is one of the main components of architecture (İpek, 2014: 1).

The discourses of all these researchers about the structure show how the structure impacts its relationship with architecture and interior architecture. One of the most important features of the structure is that it creates space (Özcan, 2017: 107). The importance of structure in architecture and interior architecture, generally defined as the art of creating space, begins with the education process. Because the idea that all the components and elements that the space contains reflect the interior identity that will form the parts of the whole should be conveyed to the students receiving vocational education (Ertaş & Sönmez, 2018: 112).

The necessity of two and three-dimensional representation as a whole in the architectural education process is at the common denominator. It is especially important in terms of conveying the structure, which is one of the basic elements that make up the architectural structure, accurately and understandably in the education process. Generally, while the formal and spatial approach is prioritized in the design process of architectural education, the structural approach remains in the background (Maden, 2020: 110). This study aims to examine the effect of the structural approach, which was taken into consideration from the beginning of the design process, on the design by questioning the tiny house or minimal living spaces structures that emerged with today's minimalist and free lifestyle approach in the context of the meaning of the house transformed after the pandemic. The Structure (Figure 1, Figure 2) is an important design element in the project. In addition, the targeted educational/learning outcomes of this course are,

- Addressing the relationship between space, user, function and environment with its conceptual dimensions,
- Gaining the ability to make, present and defend original designs,
- Analyzing the existing environment to be designed, identifying its problems and developing a scenario for its solution,
- Comprehension of activity-space, user-space, private space-public space relations,
- Gaining the ability to research the functions to be designed, to compose with materials and models, to construct, to express with two- and three-dimensional tools.

Figure 1. Student (Rania El Wartiti) structural experiment, Student (Nessreen Elshazly) structural experiment

Figure 2. Student (Büşra Arslan) structural experiment

Since the beginning of the design studio project of Ostim Technical University Faculty of Architecture and Design 2nd year students, the tiny house/minimal living spaces design, the relationship between structure and structure has been constructed with a holistic perspective in the second and third dimensions. In order to make the structure's place in the design process speakable and to question the meaning of the house, first of all, “tiny house”/minimal living spaces, which are popular among today’s housing types, were chosen as the project subject. In addition, the reason for choosing the tiny house building can be listed as being at the 2nd class project level, having a small scale where the structural design can be constructed comfortably. Finally, the basic information of the construction system has the feature of having a similar building. The culture of consumption, which started with the Industrial Revolution, caused a break in the meaning of housing worldwide. However, technological developments have also affected the construction system of the house (Sungur & Aydın, 2021: 400). Considering the possibilities provided by modern technology, people-oriented spaces that offer ease of use form the basis of the tiny house structure. The basic approach in small houses, called tiny houses, is shaped by the philosophy of life that adopts the idea of minimalism and freedom and foresees a social life beyond housing (Arslan, 2021: 41-42).

While it contains the lifestyles, cultural characteristics, behaviors, environmental preferences, images, time and space relations of the individuals living in the houses, it also reflects the tendency of people to prove and express themselves and their personality traits through design and equipment elements (Gür & Geçkin, 1996: 75-82). For this reason, completely different user types have been described in the studies conducted within the scope of the project course, and different occupational groups have been selected.

Method and Process

The most important part of architectural education in terms of curriculum focus and time spent by students is architectural design. It is in the design studio that students are expected to bring together knowledge from the different disciplines to inform the development of their architectural designs (Nicol & Pilling, 2000). The complex relation-ships among different agents and mechanisms in design studios require more than pureteam building of formal collaboration methods. Rather, carefully planned setups with theapplications of multi-

layered, diversified teaching strategies provide ample opportunitiesfor exemplar collaboration experiences and creativity (Park, 2020). A problem-oriented educational approach was adopted based on understanding the intricate relationship between public and private spaces and the architectural design activity as a whole by the design studio students, who are in the first semester of the second year. They examined, analyzed, and proposed different home-office structures through education. On the other hand, studio participants researched world-class applications and shared them in the studio environment. After analyzing the coastline of Datça, which is the designated project area, the participants develop their own program proposals (Figure 3), and concepts (Figure 4), taking into account the needs of the context, and seek answers to the minimal living structure problem with their mixed-function, housing and office proposals. The first stage of the process was carried out entirely with individual critics, and in the second stage, the jury and individual criticism methods were applied together.

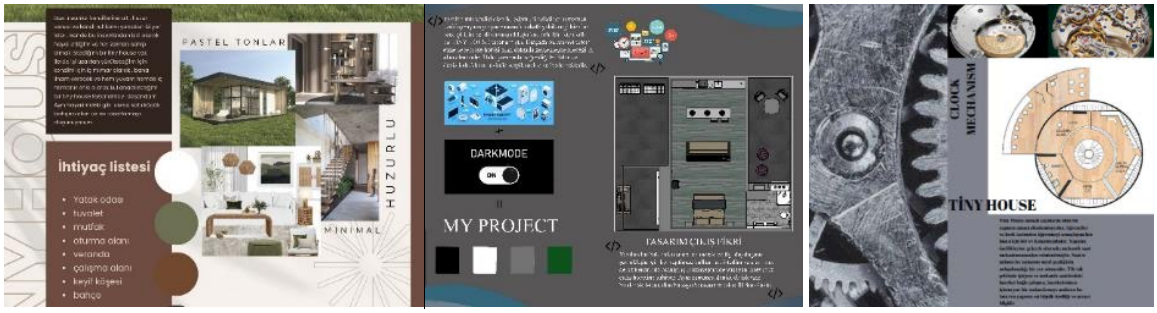


Figure 3. Student (Rania El Wartıtı) concept and needs program, Student (Osman Arif Tunç) concept and needs program, Student (Asil Yalınız) concept presentation board

Figure 4. Student (Nessreen Elshazly) concept presentation board

A Section of Result Products

Different types of housing have recently met the need for shelter. These housing types differ according to the needs and characteristics of the people. While designing small houses, the needs of people should be well determined. The changes in family, work and education areas that occurred during and after the Industrial Period also changed the needs of the residential users. After this period, spaces where individuality is at the forefront and where single or two-person lives are formed, have emerged (Bulhaz, 2014: 18-19).

It is also necessary to consider how to transform small square meters of living spaces into ergonomic, comfortable and productive spaces and how to solve smart living spaces that can provide their own energy. Built-in architectural components, double-functional fixed or modular furniture, gallery living spaces are just a few of the problems that need to be solved. The solutions that can be created to provide maximum functionality in minimum space are almost endless.

Design decisions

The residences designed within the scope of the project have different design parameters. Firstly, settlement decisions on the land were considered and topographic data were analyzed. Analyzing the topographic data well and designing houses that comply with the necessary analyzes will create an aesthetic phenomenon in terms of architecture and ensure the emergence of houses that are in harmony with the environment. Non-adaptive dwellings require large earthworks, many foundations and retaining walls. This house will both require a lot of cost and will create a feeling of not belonging to its environment, as it does not adapt to the environment. The land's slope angles should be considered while designing the house. If a residence is designed in an area with a high-level difference, spaces should be created at different levels. There are elevation differences on the plot given in Datça, and second-year students were asked to consider this (Figure 5).

Figure 5. Student (İkbal Lina Kaya) project, using the slope for settlement on the land, Student (Osman Arif Tunç) project, using the slope for settlement on the land

Another feature that should be evaluated together with the topographical situation while designing the structures is the location and the view (Figure 6). If there is a natural view of the existing land, living and working areas should be faced with this facade. Thus, an aesthetic result will be obtained for users.

Figure 6. Student (Buğra Mert Değerli) project, orientation toward the view

Changes in the needs and characteristics of individuals and societies in housing designs have also led to changes in design criteria. Reasons such as the change of time and the differentiation of needs have also led to the change in design data. Especially after the pandemic, with the transfer of working life to the residence, special areas related to the areas of interest were created within the spaces. More flexible planned spaces have emerged. For example, people felt the need to create a small work area in their living or sleeping areas (Figure 7). Thus, the concepts of flexibility and variability in residences have gained importance over time. In this context, students experimented with flexible plan solutions in their projects (Figure 8, Figure 9).

Figure 7. Student (Akif Harun Kaçar) project, workspace

Figure 8. Student (Ömer Can Derebaşı) project, flexible plan solution experiment

Figure 9. Student (Nessreen Elshazly) project, flexible plan solution experiment

Different design solutions came from the students who thought about the inclusion of work areas in the housing. Different functions were solved in the design proposals received from the students who designed living spaces for the concepts they chose and for different occupational groups (Figure 10, Figure 11, Figure 12, Figure 13, Figure 14), but answers were sought for the same functions.

Figure 10. Student (Ayşegül Elibol) project, designed for a pianist

Figure 11. Student (Buğra Mert Değerli) project that proposes a workshop on the ground floor and a living space on the upper floor

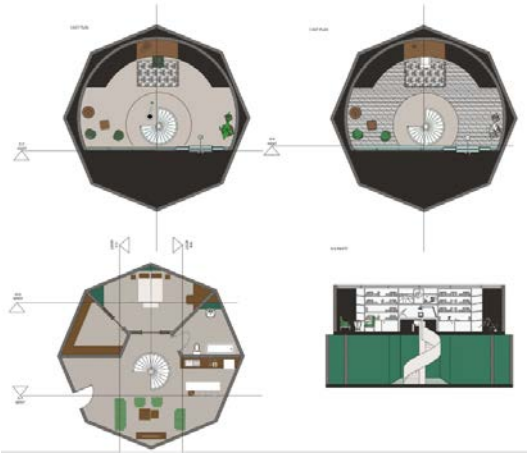


Figure 12. Student (Dilara Pınarbaşı) project that proposes a living space on the ground floor and a observatory on the upper floor

Figure 13. Student (İlayda Tupa), a workspace-housing combination proposal designed for a writer

Figure 14. Student (Ensar Bekir Arslan) project, music studio-housing association proposal with flexible plan solution

Students are freed in their project proposals; only certain limits and restrictions are given. One of the suggestions in this direction was a moving tiny house (Figure 15). The study obtained volumes at different levels in the interior by combining the minimalist life philosophy discussed in the design phase with natural light. The volumes at these different levels were used as spaces with different functions. With the portable house philosophy, the project was handled with the decision to meet the user's different needs by using a minimum of space In order to move the house, light construction was preferred as the construction material.

Figure 15. Student (Yazgı Cemre Tuygun), a proposal for a moving tiny house

CONCLUSION

Housing means a unified expression of communication, interaction, space, time, and meaning. On the one hand, it reflects the characteristics of the culture or ethnic group and lifestyle, behavioral rules, environmental preferences, time and space classification, on the other hand, it reflects the personality and privilege of the individual with the design by carrying the identity information of the user. Today, small square meters of

residences have become lively and important parts of contemporary architectural production and daily life. Solving the housing structure, which is transformed with the inclusion of working spaces, in small square meters, also requires questioning on design.

A lot of data is used when designing small houses. The houses are designed with the cultural and environmental characteristics of the regions where the people live. These data can be classified as natural and cultural data. When the data in housing design is considered natural and cultural, environmental factors such as climate, topography, natural resources are considered as natural determinants. Cultural data is a person's lifestyle, family and tradition thought and belief, socioeconomic, and local language.

In the studies carried out within the scope of the project course, completely different user types were described, different occupational groups were selected, different functions were solved, but the same needs were met. There are many gains that students can achieve within the scope of the design studio. Some of them can be said to be able to teach about designs that can offer personal choice, and to be able to design furniture where functionality is at the forefront. In this educational experience, in which learning environments based on teamwork, cooperation and interaction are tried to be created, and which aims to highlight the student as an active actor, many discussions have been held in the intersection of the housing, public life and architecture. In this course, in addition to training for the development of basic knowledge and skills of spatial design, a project is determined for the purpose of creating a coherent design idea, establishing a form-space relationship, creating an identity in spaces, creating its own design language. In addition, it is aimed to examine the effect of structural knowledge and approach on design.

Including the structural approach in the design process significantly contributes to creativity in design; the structure, which forms the basic setup of architectural and interior design, is primary in design. It is supported by the study that the structural model, which allows the design thought formed in mind to become visible in the third dimension with the experience of "learning by doing", is beneficial in making the information about construction systems more permanent. In addition, the dissemination of the idea that studio lessons should be integrated with building lessons, such as structural knowledge in architecture / interior architecture education, is among the results of the study. The educational process, which is focused on research and learning by exploring, has allowed creativity and diversity in design approaches and has been a highly developing experience for the executives and the studio participants. In addition, this study aims to raise awareness that the design of living spaces in small houses will affect the comfort conditions of people and to offer solutions for people to live in healthier environments within comfort conditions.

Authors' Contributions

The 1st author contributed 60%, and the second author contributed %40.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

It is not a study that requires ethics committee approval.

REFERENCES

Adıgüzel, D., & İncirlioğlu, E. O. (2010). Sürdürülebilirlik kavramının iç mimarlık eğitimindeki yeri. *1st. International Graduate Research Symposium, Yapılı Çevre, 2*, 3-8.

Adıgüzel Özbek, D., & Kutlu, R. (2012). Tasarım-Uygulama Kesitinde İç Mimarlık Proje Stüdyosu Deneyimi. *İçmimarlık Eğitimi 2. Ulusal Kongresi,* İstanbul.

Arslan G. (2021). *Kullanıcı, çevre, iç mekân bağlamında 21. yüzyıl barınma eğilimlerine uygulanabilir bir küçük öneri küçük ev/tiny house* [Master Thesis, Fatih Sultan Mehmet Vakıf University].

Ayyıldız Potur, A. & Barkul, Ö. (2010). Stüdyo: Tasarım eğitiminin kalbi / Studio: The heart of design education. *International Conference on New Horizons in Education*, 23-25 June 2010, Famagusta, North Cyprus, 738-743.

Basa, İ. (2010). Project selection in design studio: Absence of learning environments. *The Educational Forum*, *74*(3), 213-226. https://doi.org/10.1080/00131725.2010.483904

Bulhaz, B. (2014). *Küçük konutlarda iç mekân analizi: Ankara'da iki konut örneği* [Master Thesis, Atılım University].

Christiaans, H. H. C. M., & Van Andel, J. (1993). The effects of examples on the use of knowledge in a student design activity: The case of the 'Flying Dutchman'. *Design Studies*, *14*(1), 58-74. https://doi.org/10.1016/S0142-694X(05)80005-5

Coyne, R. D., Snodgrass, A. B. & Martin, D. (1994). Metaphors in the design studio, *JAE*, *48*(2), 113-125. https://doi.org/10.1080/10464883.1994.10734630

Demirbaş, O. O. & Demirkan, H. (2003). Focus on architectural design process through learning styles. *Design Studies*, *24*(5), 437-456. https://doi.org/10.1016/S0142-694X(03)00013-9

Demirkan, Ö. (2006). *Mimarlıkta strüktür ve süsleme ilişkisinin irdelenmesi* [Master Thesis, Gazi University].

Ertaş, Ş. & Sönmez, E. (2018). İç mimari tasarımda strüktür kavramına çok yönlü bir yaklaşım. *Uluslararası Mühendislik ve Teknoloji Yönetimi Kongresi*, 109-118.

Filiz, S. & Hacıhasanoğlu, O. (2011). Konut tasarımına yönelik sürdürülebilirlik ve teknoloji bağlamında bir gelecek tahmin modeli. *İTÜ Dergisi*, *10*(2), 71-84.

Gökmen, H. & Süer, D. (2003). *Mimarlık eğitiminde tasarım stüdyolarına farklı yaklaşımlar.* Mimarlar Odası İzmir Şubesi Yayınları.

Günal Ertaş, D. (2007). *Yapısal özelliklerin endüstri ürünleri tasarımına etkileri* [Doctoral Thesis, İstanbul Technical University].

Güney Yüksel, F. C. (2022). Pandemi ile değişen konut iç mekânını yeniden düşünmek. *Online Journal of Art and Design*, *10*(2), 88-101.

Güney Yüksel, F. C. & Seçer Kariptaş, F. (2019). Konut iç mekânına sürdürülebilir yaklaşımlar. *Yakın Mimarlık Dergisi*, *2*(2), 27-28.

Gür, Ö. Ş. & Geçkin, Ş. (1996). *Konutta mekân standartları*. Yapı Endüstrisi Merkezi Yayınları.

Heylighen, A., Neuckermans, H. & Bouwen, J.E. (1999). Walking on a thin-line between passive knowledge and active knowing of components and concepts in architectural design. *Design Studies*, *20*(2), 211-235. https://doi.org/10.1016/S0142-694X(98)00035-0

İpek, Y. (2014). *Hesaplamalı tasarım yaklaşımları: Bütünleşik bir tasarım önerisi* [Master Thesis, İstanbul Technical University].

Maden, F. (2020). Mimari tasarım stüdyosunda strüktürün form ve mekân ile entegrasyonu. *Tasarım Kuram*, *16*(31), 108-122. https://doi.org/10.14744/tasarimkuram.2020.22931

Megahed, N. A. & Ghoneim, E. M. (2020). Antivirus-built environment: Lessons learned from Covid-19 pandemic. *Sustainable Cities and Society*, 61. https://doi.org/10.1016/j.scs.2020.102350

Nicol, D. & Pilling, S. (2000). *Changing Architectural Education: Towards A New Professionalism*, (Routledge). Taylor & Francis, London and New York.

Oxman, R. (1990). Prior knowledge in design, a dynamic knowledge-based model of design and creativity' design studies. *ButterworthHeinemann*, *11*(1), 17-28. https://doi.org/10.1016/0142-694X(90)90011-Z

Özcan, N. (2017). *Fütürizm ve çit örücülüğünün tekstil tasarımında tekstür, strüktür ve form oluşumuna etkileri* [Master Thesis, Gazi University]

Özdevecioğlu, E., Özçelik, S., Begüm, K., Aydemir, E. N., & Bilgiç, S. (2022). Pandemi dönemlerinde konutların terapötik davranışları üzerine bir inceleme. *Mimarlık ve Yaşam*, *7*(1), 433-447. https://doi.org/10.26835/my.870369

Park, S. (2020). Rethinking design studios as an integrative multi-layered collaboration environment, *Journal of Urban Design*, *25*(4), 523-550. https://doi.org/10.1080/13574809.2020.1734449

Purcell, A. T.& Gero, J. S. (1998). Drawings and the design process. *Design Studies*, *19*(4), 389-430. https://doi.org/10.1016/S0142-694X(98)00015-5

Qureshi, H. (2019). Collaborative architectural design. *Archnet-Ijar: International Journal of Architectural Research*, *14*(2), 303-324. https://doi.org/10.1108/Arch-12-2018-0049

Rapoport, A. (1969). *House form and culture*. Prentice Hall International.

Salama, A. M. (2021). *Transformative Pedagogy in Architecture and Urbanism*. (1 ed.) (Routledge Revivals). Taylor & Francis. https://doi.org/10.4324/9781003140047

Sipahi, G. Ş. & Yamaçlı, R. (2021). Geleceği inşa etmek: Konut binalarında gün ışığı ve COVID-19 üzerine bir değerlendirme. *Journal of Architectural Sciences and Applications*, *6*(1), 374-383.

Sungur, M. & Aydın, D. (2021). Konya konutlarında (1920-1980) mekânsal mahremiyetin sosyal paradigmalar bağlamında incelenmesi. *Journal of the Academic Studies of Turkish Islamic Civilization*, *16*(32), 387-414.

Uluoğlu, B. (1990). *Mimari tasarım eğitimi tasarım bağlamında stüdyo eleştirileri* [Doctoral Thesis, İstanbul Technical University].

Vitrivius. (2005). *Mimarlık üzerine on kitap* (S. Güven, Çev.). Şevki Vanlı Mimarlık Vakfı.

Ward, A. (1990). Ideology, culture and the design studio. *Design Studies*, *11*(1), 10-16. https://doi.org/10.1016/0142-694X(90)90010-A

Figure References

Figure 1-15: Authors archive, 2023.

Authors' Biographies

Tuğçe Çelik received her B.Arch in Architecture from Gazi University, Faculty of Architecture (2012). Earned her MSc. And PhD. degree in Architecture from Gazi University, Faculty of Architecture (2015-2020). Started architecture in 2012 as a co-founder in her architectural office. Currently works as an Assistant Professor at Ostim Technical University. Major research interests include architectural design, computer aided design, design and art history.

Esra Arslan Güreşçioğlu received her B.Arch in Architecture from Gazi University, Faculty of Architecture (2012). Currently works an architect in her own architectural office and at the same time as a Lecturer at Ostim Technical University. Major research interests include architectural design, design and art, sociology and architecture.

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Investigating students' challenges in learning architectural design process

Asst. Prof. Dr. Navid Khaleghimoghaddam[1*]

[1]Konya Food and Agriculture University, Faculty of Engineering and Architecture, Department of Interior Architecture, Konya, Turkey.
navid.khaleghi1363@gmail.com

*Corresponding Author

Received: 08.02.2023
Accepted: 12.04.2023

Citation:
Khaleghimoghaddam, N. (2023). Investigating students' challenges in learning architectural design process. *IDA: International Design and Art Journal*, *5*(1), 87-98.

Abstract
Architectural design education is one of the curricula taught at different levels and requires identifying factors that influence students' design process. Meanwhile, learning styles and reflective thinking are two variables influencing the design process. Matching teachers' teaching styles with students' learning and thinking styles strengthens the design product. The present study aims to investigate the relationship between reflective thinking and learning styles with the design ability of architecture students. The method used is descriptive-analytical and descriptive-correlative. Accordingly, the preference of 140 architecture students from Tehran Azad University and Konya Technical University for Kolb's learning styles was investigated. In this respect, Kember and Leung's reflective thinking questionnaire was used for the four components of habitual action, understanding, reflection, and critical reflection, and Kolb's learning style questionnaire was used for the four components of divergent, convergent, assimilative, and accommodative learning styles. The results showed that there was a direct relationship between reflective thinking and students' design ability. In other words, with reflective thinking and intellectual ability, appropriate prediction for architectural design can be achieved. In addition, design ability is related to the student's learning style.

Keywords: Reflective thinking, Learning style, Design process, Design product, Architecture student

Extended Abstract

Introduction: Education in the field of architectural design is considered the most controversial issue in the development of the educational plan. In this regard, the important task of architectural education is to create comprehensive thinking that allows architecture students to enter the design process. Since students are different in terms of their individual characteristics, a major point of pedagogical mistakes is ignoring students' abilities and inclinations (Labib et al., 2019). In this regard, architecture students' knowledge of "thinking processes" and "learning styles" is considered as one of the most effective factors. Clara (2015) suggests "Reflective Thinking" as a significant concept for education and learning. DeWitt et al. (2016) consider "Reflective Thinking" as the fundamental purpose of learning. Therefore, with the aim of professional development and training of qualified designers, it is necessary to review and evaluate the education of the design process based on the level of reflective thinking in the educational planning of architecture schools (Karvan, 2021). Learning styles are proposed as another influential variable in architectural education, which refers to the differences between people in learning methods (Faizi & Dezhpasand, 2019: 149). Considering the importance of thinking styles, learning methods, and referring to these talents for the profession of architecture and especially for the design process, it is necessary to understand them properly.

Purpose and scope: The present study aims to investigate the relationship between reflective thinking and learning styles with the degree of student progress in the design process and design products. In this context, to achieve the research objectives, it seems necessary to evaluate and answer the following questions: Is it possible to predict the design product, including the content, method, and design evaluation of students with reflective thinking and different learning styles? Is there any relationship between reflective thinking and students' design products? Are there any relationships between students' learning styles and design products? To answer the corresponding questions, the study first determines the role of intellectual skills, including reflective thinking, on the degree of improvement of students' design product and then examines the relationship between learning styles and design products. To this end, Kolb's (1984) learning style model and Kember's (2008) reflective thinking patterns in student assessment, as well as the relationship between these two

variables and the grade resulting from their design, were evaluated. Then, through the analysis and examination of the theoretical basis and statistical results of the research, suggestions for teaching the architectural design process were presented. In this context, Kolb's learning style model and Kember's reflective thinking patterns were evaluated in assessing students and the relationship between these two variables and the grade they received for their design. Then, through the analysis and examination of the theoretical framework and statistical results of the research, suggestions for teaching the architectural design process were presented.

Method: The present study was conducted using the descriptive-analytical and descriptive-correlative methods. The statistical population of this study includes 60 architecture students at Azad University of Tehran (North Branch) in Iran (24 males & 36 females; M=21.15) and 80 architecture students at Konya Technical University in Turkey (46 males & 34 females; M=20.75). A total of 140 students (35 students from Basic Design 2 course, 35 students from Design Studio 2 course, 35 students from Design Studio 5 course, and 35 students from Design Studio 7 course) volunteered to participate in this study. As a first step, Kember et al. (2000) reflective thinking questionnaire was used to measure reflective thinking. The corresponding questionnaire includes 16 measures and 4 components, namely habitat, action, understanding, reflection, and critical reflection. The habitat action component includes questions 1 through 4, comprehension includes questions 5 through 8, reflection includes questions 9 through 11, and critical reflection includes questions 12 through 16, formed on a five-point Likert scale (strongly agree = 1 to strongly disagree = 5). In the second step, Kolb's (2005) learning styles questionnaire was used to measure learning styles, which contains 12 questions, each with 4 suggested answers. Based on this questionnaire, the suggested answers were ranked from 1 to 4 according to the learning style. The sum of the points of these options gives four points, which represent four learning styles. Thus, the first option in each question is the learning style of concrete experience, the second option is the learning style of reflective observation, the third option is the learning style of abstract conceptualization, and the fourth option is the learning style of active experimentation. From the two-by-two difference of these styles, two scores were obtained that formed four quadrants and four learning styles named divergent, convergent, assimilator, and accommodator.

Findings and conclusion: The results showed that there is a relationship between reflective thinking and learning styles and students' design products. Specifically, the results of the present study showed that the predominant learning styles of architecture students are accommodative for males and divergent for females, which can be attributed to the logical and executive thinking of males and the emotional and detailed thinking of females in the design process. It was also found that female architecture students use divergent and assimilative styles during their four years of study. Male architecture students prefer the convergent style in the first two years of study and the accommodative style in the last two years. This result not only sheds light on the distribution of learning styles in the field, but also indicates the possibility of flexibility and changeability of learning styles among students. In this regard, it is necessary for teachers to continuously teach different materials and content according to the needs of learners so that, taking into account their preferred different teaching styles, their effective learning opportunities are provided. This kind of teaching benefits from the interaction between the learner and the teacher and tries to consider learners' individual needs, their different attitudes, intellectual abilities, personalities and learning styles to create favorable conditions for understanding and learning. To strengthen their motivation to learn and their academic progress.

Keywords: Reflective thinking, Learning style, Design process, Design product, Architecture student

INTRODUCTION

The design process and its education in the fields of art and architecture are considered the most controversial issues in preparing the educational plan of schools worldwide. In other words, the root of art and architectural education are formed based on design. In this regard, the significant assignment of architectural education is to create exhaustive thinking that provides the ability to step into the design process for architecture students. The architectural design course is one of the curriculums of architecture students, which is taught at different levels, and it requires the identification of factors affecting the development of students' design. Today, the traditional methods of the training design process in architecture do not meet the students' expectations. Given that students are different in the aspect of individual characteristics such as ability, knowledge, insight, and reflection in design processes, in most architectural design training methods, students are considered equal. In such a situation, a significant point of educational mistakes is caused by ignoring the capabilities and tendencies of students (Labib et al., 2019: 962). Providing an efficient program for training the design process requires recognizing students' differences, promoting their capabilities and creative insight. In this respect, architecture students' knowledge of *Thinking Processes* and *Learning Styles* is considered one of the most effectual factors. Edward De Bono (2020) believes that design is rooted in the way of thinking named *Design*

Thinking. Heidegger considers training to be difficult than learning because teaching requires the creation of learning conditions for the learner (Babich, 2016). In line with this, Clara (2015) proposes "Reflective Thinking" as a significant concept in training and learning. DeWitt et al. (2016) consider "Reflective Thinking" the fundamental purpose of learning. Hence, with the aim of professional development and training of skilled designers, it is necessary to review and evaluate the education of the design process based on the level of reflective thinking in the educational planning of architecture schools. Reflective thinking is not only focused on examining approaches but also involves intellectual changes and seeks to create new opportunities and situations by solving problems. Indeed, reflective thinking refers to a mental involvement in cognitive processes to understand conflicting factors, which is a necessary component of the learning process. This mental engagement leads to a person actively creating insight about developing a strategy (Karvan, 2021).

Learning styles are proposed as another influential variable in architectural course training, which refers to the differences between people in learning methods (Faizi & Dezhpasand, 2019: 149). According to Sternberg (2016), learning and thinking styles are not strategic attitudes to improve skills but help individuals to use their talents. There are differences in the ways people understand and acquire knowledge, form ideas, think, and act (Aljojo, 2017; Kolb & Kolb, 2005). Considering the importance of the way of thinking, learning methods, and referring to these talents for the architecture profession and especially for the design process, it is necessary to understand them properly. For this reason, the present study aims to investigate the relationship between reflective thinking and learning styles with the degree of student progress in the design process and design products. In this context, to achieve the goals of the research, it seems necessary to evaluate and answer the following questions:

1. Is it possible to predict the design product, including the content, method, and design evaluation of the students with reflective thinking and various learning styles?
2. Is there a relationship between reflective thinking and students' design products?
3. Are there connections between students' learning styles and design products?

To answer the relevant questions, the study firstly determines the role of intellectual ability, including reflective thinking, on the degree of improvement of the student's design product, and then the relationship between learning style and design product is examined. To this end, Kolb's learning style model (1984) and Kember's reflective thinking patterns (2008) in assessment students and the relationship of these two variables with the grade obtained from their design have been evaluated. Then, suggestions for teaching the architectural design process have been presented by analyzing and examining the research's theoretical foundations and statistical findings. In this regard, Kolb's learning style model and Kember's reflective thinking patterns in assessment students and the relationship of these two variables with the grade obtained from their design have been evaluated. Then, by analyzing and examining the theoretical framework and statistical findings of the research, suggestions have been presented for teaching the architectural design process.

CONCEPTUAL FRAMEWORK

Design Process

Design is an effort to create solutions before implementation. Designers' ideas are the result of a process that has come from the combination of sciences. In the book *Design in Mind*, Lawson (1994) explains design as creating new things and innovative activities. In most cases, design is considered an analytical process in which potential design solutions, identified in the recognition phase, are devised (Lang, 2004: 64). Designing requires a complex mental process of the ability to obtain many types of information, combine them into a coherent set of ideas, and create a realized form of those ideas (Lawson, 2006: 17). Indeed, the architectural design process is a crucial aspect of the field of architecture, and learning this process is essential for aspiring architects. The process involves a series of steps that guide architects in creating functional, aesthetically pleasing, and sustainable buildings. To learn the architectural design process, students must first understand design principles and learn how to effectively communicate their ideas. They must also develop critical thinking and problem-solving skills in order to navigate complex design challenges. The design process could be examined in this regard from two perspectives of reflective thinking and learning methods.

Reflective thinking

Thinking is a cognitive process that leads to behavior or attempts to find a solution to a problem. In other words, thinking is a process by which we bring our information to a new result (Karvan, 2021: 26). Indeed, thinking organizes past learning to use it in the current situation (Solso, 2006: 521). In such a process, thinking attempts to evaluate and reason about problems by reviewing and organizing mental content (Pakzad & Bozorg, 2012). The ability to think critically, as well as the ability to recognize intellectual data, can promote a person's success and progress in various areas of learning and education (Lin, 2001: 27). One of the educational goals in dealing with architecture students is to pay attention to teaching them creative thinking and idea generation. This means that they should be taught to change their already-formed mental patterns. This trait makes people change the mental patterns formed based on their specific subject under appropriate conditions. The enhancement of thinking skills and their proper application led to success and progress. This usefulness and success are the result of thinking that brings about the training of professional specialists and designers (De Bono, 2020).

The designer's intellectual background and thinking capacity during the design process is one of the issues under the influence of cognitive psychology. The designer's way of thinking and approach play a direct role in the thinking process, i.e. the process from question to answer, the result of which is reflected in the design product. The results of recent studies from the perspective of cognitive psychology under the influence of human behavior and perceptual process show the need to pay attention to the thinking process in the field of architectural design education (Karvan, 2021: 27). Designers often unconsciously use strategies on design and idea generation. Such strategies, independently or in combination, help develop design concepts and ideas during the design process. Kember et al. (2000) generally classified design thinking strategies and introduced reflective thinking into four groups. In this classification, the four levels of reflective thinking include habitual action, understanding, reflection and critical reflection. The levels of habitual action and understanding are classified as non-reflective behaviors. The levels of reflection and critical reflection are classified as reflective behaviors. Habitual action is considered the lowest level. At this level, learners have already learned and performed the actions so often that they perform them automatically and without further reflection. Students have perceived the concept at the level of understanding, but they cannot reflect on its role in various personal and practical situations. At the reflection level, people measure and evaluate their learning experiences to improve them in the future, and to this end they consider different solutions and possibilities. At the highest level, critical reflection, learners criticize the accepted assumptions and propose an innovative solution. Kamarudin et al. (2016) believe that the characteristics of reflective thinking are possible through exploration, experimentation, manipulation, changing ideas, and applying reflective thinking. Reflective people make fewer mistakes, are more critical, and learn more in their jobs (Lindh & Thorgren, 2016).

Learning styles

One of the variables that can influence students' abilities is the teachers' teaching methods. Teachers must use active teaching methods and employ skills that improve the quality of their work (Hosseini et al. 2021: 46). They should create a suitable framework for students' learning through an ideal combination and organization of different teaching methods, make them available to students, and provide a way to achieve students' goals and develop their competencies (Zolfagharian et al., 2018; Diaz et al., 2010). In this regard, the architectural design process includes techniques that identify solutions to the design problem. Information processing and decision-making are very important in the concept generation phase, where different ideas are produced and evaluated. Researchers have found that the design learning process is an internal process and that each person in each learning environment prefers a particular method for receiving information. This personal preference is called learning style (Bastani & Mahmoodi, 2019:75). Various models of learning styles are used in the design process pedagogy. The best known are the style of Katherine Myers and Isabel Briggs, the style of David Kolb, the style of Felder and Soloman, and the style of Ned Herrmann. Of all the learning style recommendations mentioned, the style proposed by Kolb is the most widely accepted among researchers and his theories of academic learning are highly regarded. This theory is one of the most important and influential studies in the field of learning and education. Kolb has conducted extensive research in the areas of experiential learning, social and individual change, and vocational education. Although this theory was developed primarily for use in adult education, it has led to extensive pedagogical applications in higher education (Faizi &

Dezhpasand, 2019: 156). Kolb defines learning as a process in which knowledge is acquired through the transformation of personal experience. The basis of this definition is rooted in individual differences. In Kolb's view, the teacher is only a guide and facilitator of learning (Farzian, & Karbasi, 2014: 97; Kolb, 1984). According to Kolb, experiential learning takes place when the learner experiments in his environment. Therefore, this method seems to be appropriate for learning practical knowledge, including architecture. This means that architecture students need to experiment a lot to reach a final idea. This kind of learning can be effective (Karvan, 2021: 28).

According to Kolb's (2005) theory, there are two basic phases of learning: first, the acquisition of new information and experience, referred to as "concrete experience" and "reflective observation"; second, information processing, referred to as "abstract conceptualization" and "active experimentation". In concrete experience, the person learns to communicate with people, understand emotions, and rely more on inner feelings and experiences. In reflective observation, the person perceives situations differently, relies on objectivity and judgment, and constantly refers to thoughts and theories. In abstract conceptualization, the person begins logical analysis. In this phase, a principled and regular design and rational understanding of situations takes place. In the active experimentation phase, learning takes a more active role and causes a change in position and influence. Also, the person has a genuine interest and an active approach to the problem. Thus, for effective learning, these four steps must be completed. The following model refers to Kolb's experimental learning steps. This model represents a four-step process. The first part shows concrete experience, where the learner first performs the action; the second part refers to reflective observation, where the learner thinks about that action; the third part refers to abstract conceptualization, where the learner makes a hypothesis; the fourth part is active experimentation, where the learner finally tests the hypothesis.

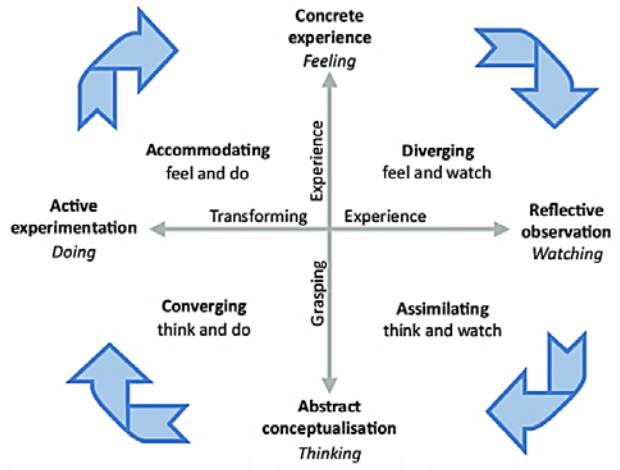


Figure 1. Kolb's experimental learning steps

By combining Kolb's experimental learning steps, the following four learning styles were proposed:

Divergent learning style results from concrete experience and reflective observation. This learning style causes individuals to evaluate situations objectively from different perspectives. Because these individuals can generate different ideas, their style is considered divergent. Their approach to situations is observational rather than action. In general, people with a divergent style have great imagination, prefer teamwork, and listen to different points of view in formal learning situations. Therefore, the group training method contributes to better learning in divergent people. These characteristics are useful for success in artistic and recreational activities.

Convergent learning style consists of two methods or two learning steps: abstract conceptualization and active experimentation. People with this learning style find practical applications for ideas and theories efficiently. For this reason, when faced with a problem, they try to quickly find the right solution or focus their efforts on that one solution. On the other hand, convergent people tend to experience new ideas and laboratory work. They are also successful in specialized work and technology.

Assimilative learning style consists of a combination of abstract conceptualization and reflective observation. People with this learning style can grasp and understand extensive information and put it into a concise, accurate, and logical form. These people emphasize abstract ideas and concepts. People with an absorptive learning style are successful in scientific and informational occupations. These people are interested in working with others to evaluate, set goals, get things done, test theories, and complete their projects.

Accommodator learning style created that are: Concrete experiences and active experimentation result from the combination of two learning styles. People with an accommodative learning style learn firsthand and enjoy implementing plans and engaging in challenging activities. These people prefer tangible things rather than logical analysis. The reason this style is called adaptive is because people with this style are able to adapt to new situations. People with this learning style are more successful in marketing and sales jobs than others. These people prefer reading, lectures, exploratory models, and enough time to think about things.

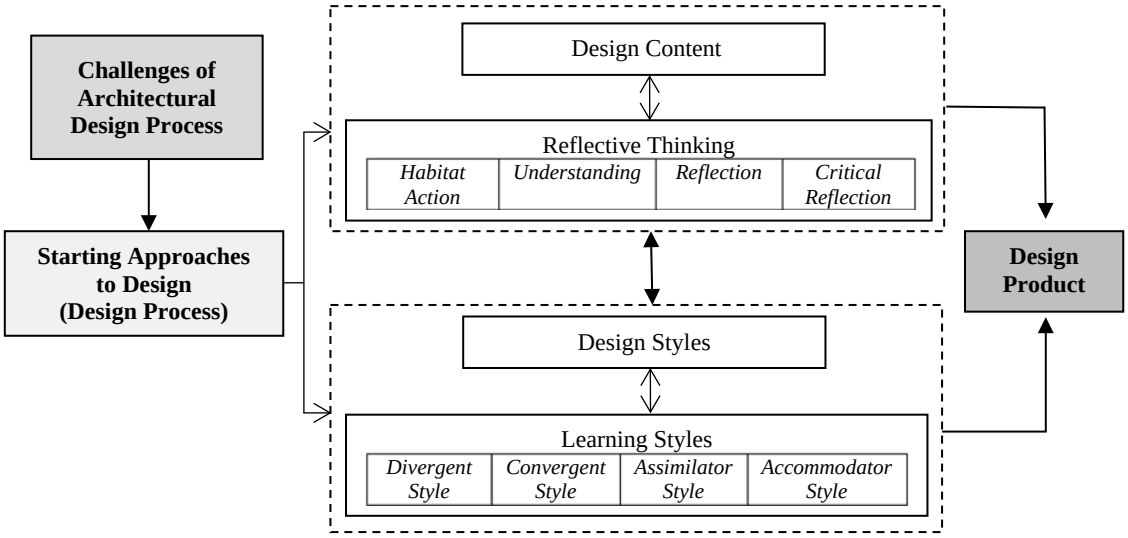


Figure 2. Conceptual model of the study

METHOD

The present study was conducted using descriptive-analytical and descriptive-correlative methods. The statistical population of this study includes 60 architecture students at Azad College of Tehran (North Branch) in Iran (24 males & 36 females; M=21.15) and 80 architecture students at Konya Technical University in Turkey (46 males & 34 females; M=20.75). A total of 140 students (35 students from Basic Design 2 course, 35 students from Design Studio 2 course, 35 students from Design Studio 5 course, and 35 students from Design Studio 7 course) volunteered to participate in this study. In a first step, Kember et al. (2000) reflective thinking questionnaire was used to measure reflective thinking. The corresponding questionnaire includes 16 measures and 4 components related to habitat action, understanding, reflection, and critical reflection. The habitat action component includes questions 1 to 4, understanding includes questions 5 to 8, reflection includes questions 9 to 11, and critical reflection includes questions 12 to 16, which are recorded on a five-point Likert scale (strongly agree= 1 to strongly disagree=5). The Cronbach reliability coefficient of Kember's reflective thinking questionnaire is 0.73 in different studies, and the Cronbach reliability coefficient of the habitat, comprehension, reflection, and critical reflection components are 0.53, 0.58, 0.67, and 0.67, respectively. In this study, the reliability of the reflective thinking questionnaire based on Cronbach's alpha index for habitat action is 0.69, comprehension is 0.79, reflection is 0.81, and critical reflection is 0.74.

In the second step, to measure the learning style, the Learning Styles Questionnaire by Kolb (2005) was used, which contains 12 questions, for each of which 4 answers are suggested. Based on this questionnaire, the suggested answers were ranked from 1 to 4 depending on the learning style (if the suggested answer completely

corresponds to learning: 4; if the suggested answer corresponds to learning to some extent: 3; if the suggested answer corresponds to learning a little: 2; if it corresponds very little: 1). The sum of the points of these options gives four points, representing four learning styles. Thus, the first option in each question is the learning style of concrete experience, the second option is the learning style of reflective observation, the third option is the learning style of abstract conceptualization, and the fourth option is the learning style of active experimentation. Two scores are obtained from the two-to-two difference of these styles, i.e., the difference between the scores for abstract conceptualization and concrete experience and the difference between the scores for active experimentation and reflective observation. These two scores are arranged on two coordinate axes (corresponding to the negative and positive outcome scores). A vertical axis includes concrete experience at the top of the axis and abstract conceptualization at the bottom, and a horizontal axis includes reflective observation on the right and active experimentation on the left (see Figure 1). These two coordinate axes form four quadrants, and four learning styles, labelled divergent, convergent, assimilative, and accommodative, are placed in one of the quadrants. Based on previous studies, the reliability of Kolb's learning styles questionnaire was calculated using Cronbach's alpha: concrete experience 0.82, reflective observation 0.73, abstract conceptualization 0.83, active experimentation 0.87, concrete experience-abstract conceptualization 0.88, and reflective observation-active experimentation 0.81 (Karvan, 2021: 33).

FINDINGS AND DISCUSSION

The number of students and the distribution of the corresponding frequencies are shown as follows:

Table 1. Frequency distribution by gender of students

		Gender	
Year	**Number**	**Male**	**Female**
1 Freshman	35	19 (54.29%)	16 (45.71%)
2 Sophomore	35	20 (57.14%)	15 (42.86%)
3 Junior	35	16 (45.71%)	19 (54.29%)
4 Senior	35	15 (40%)	20 (60%)
Total	140	70 (50%)	70 (50%)

Pearson's correlation coefficient test and regression analysis were used to analyse the data. To compare the way of understanding and processing information in male and female students, an independent t-test was also performed. The comparison of how male and female students understand, and process information shows that the mean scores of male students are higher than those of female students in the method of abstract conceptualization (M=34.25) and active experimentation (M=30.48). On the other hand, the mean scores of female students in reflective observation (M=33.65) and concrete experience (M=30.22) are higher than those of male students.

Table 2. Comparison of learning styles among male and female students

Learning Style	Gender	Mean	SD	t	Sig
Concrete Experience	Male	27.39	4.02	1.07	0.742
	Female	30.22	4.09		
Reflective Observation	Male	29.21	4.07	1.33	0.869
	Female	33.65	6.67		
Abstract Conceptualization	Male	34.25	6.91	1.41	0.768
	Female	26.33	5.68		
Active Experimentation	Male	30.48	4.12	1.02	0.814
	Female	27.32	4.01		

The following table shows students' preferred learning styles by year of entry into the university and by gender. The results show that architecture students prefer the divergent (N=42), the assimilative (N=35), the accommodative (N=33), and the convergent (N=30) styles, respectively. The convergent and accommodative styles are preferred by men. In this context, according to Kolb's definition of convergent and accommodative learning styles, which are composed of abstract conceptualization and active experimentation steps, the results show that male students approach the design process in a ratiocinate and logical manner (see Table 2; abstract conceptualization, M=34.25). They are also more likely to be concerned with the technical and structural aspects of the design (see Table 2; active experimentation, M=30.47). On the other hand, the data in Table 3 support such a finding and are consistent with the data in Table 2, which show high scores for convergent (N=23) and accommodative (N=25) learning styles for all fourth-year male students. For females, the results show that they are more likely to use divergent (N=42) and accommodative (N=35) learning styles. Using the definition of divergent and assimilative styles, which is the combination of concrete experience and reflective observation, it is concluded that female students are introverted, emotional (see Table 2; concrete experience, M=30.22), theoretical, and planning (see Table 2; reflective observation, M=33.65) in their approach to the design process. In this regard, the data presented in Table 3 support such a finding and are consistent with the data presented in Table 2, which show a high value for divergent (N=30) and assimilative (N=27) learning styles for all fourth-year female students.

Table 3. Distribution of students' preferred learning style based on gender

Year	N	Preferred Learning Style							
		Divergent		Assimilator		Convergent		Accommodator	
		M	*F*	*M*	*F*	*M*	*F*	*M*	*F*
1 Freshman	35	4	8	4	6	3	1	2	1
		12 (34.29%)		10 (28.57%)		4 (11.43%)		3 (8.57%)	
2 Sophomore	35	3	6	2	6	5	2	4	2
		9 (25.71%)		8 (22.86%)		7 (20%)		6 (17.14%)	
3 Junior	35	3	7	1	8	7	1	9	3
		10 (28.57%)		9 (25.71%)		8 (22.86%)		12 (34.29%)	
4 Senior	35	2	9	1	7	8	3	10	2
		11 (31.43%)		8 (22.86%)		11 (31.43%)		12 (34.29%)	
Total	140	12	30	8	27	23	7	25	8
		42 (30%)		35 (25%)		30 (21.43%)		33 (23.57%)	

To answer the questions raised in the introduction, the present study aimed to test the following hypotheses:

1. Reflective thinking and learning styles predict students' design products.
2. There is a relationship between reflective thinking and students' design products.
3. There is a relationship between learning styles and students' design products.

To assess students' design product, the researcher evaluated semester project design issues in 12 stages, from idea to presentation. Each scale was graded from 0 to 10, resulting in a range of scores ranging from 0 to 120: 1. The design concept, 2. Research and design integration, 3. Site plan, 4. Functional designing, 5. Spatial qualities, 6. Form (proportion of building mass and space), 7. Aesthetic, 8. Structure, 9. Materials, 10. Environmental conditions, 11. Rendering, 12. Maquette. As seen in the following table, the correlation coefficient between reflective thinking and design product is $r=0.843$ and $p<0.01$; that is, there is a direct and strong relationship between reflective thinking and students' design products. Higher scores for reflective thinking scores mean that the evaluation score of the students' design product is higher. The correlation between the variables of divergent learning style and design product is $r=0.811$ and $p<0.01$, as well as the correlation between assimilative learning style and design product is $r=0.764$ and $p<0.01$. In other words, there is a direct and significant correlation between divergent learning style and assimilative learning style with the design product of female students, that is, the higher the values of these learning styles, the higher the quality of the design product. Furthermore, the correlation between the variables of convergent learning style and design product is $r=0.731$ and $p<0.01$, as well as accommodator learning style and design product, is $r=0.752$ and $p<0.01$; In other words, there is a direct and significant relationship between the convergent learning style

and accommodator learning style with the male students' design product, that is the higher scores of these learning styles show the higher quality of design product.

Table 4. Pearson's correlation coefficient between reflective thinking and learning styles with product design

Variable		Design Product	
		r	p
Learning Styles	Divergent Learning Style	0.811	0.0001
	Assimilator Learning Style	0.764	0.0001
	Convergent Learning Style	0.731	0.0001
	Accommodator Learning Style	0.752	0.0001
Reflective Thinking		0.843	0.0001

To test hypothesis 1, stepwise regression analysis was used. The results in the following table show that reflective thinking was assessed in the first step and learning styles were assessed in the second step by the stepwise regression analysis. The adjusted squared results of the multiple Pearson correlation coefficient show that based on the first model, reflective thinking determines 0.73, or 73%, and based on the second model, reflective thinking and learning styles determine 0.67, or 67%, of the variance of the design product. Thus, it can be argued that reflective thinking and learning styles can explain or predict students' design product. The regression analysis results show that based on the first model of reflective thinking ($F=426.137$, $p<0.01$) and based on the second model of reflective thinking and learning styles ($F=226.401$, $p<0.01$), the design product can be significantly predicted and there is a relationship between reflective thinking and learning styles with students' design products.

Table 5. A: The regression model of reflective thinking and learning styles on the level of the design product; B: The variance analysis for the significance test of the regression model of criterion predictor variables.

Variable	R	R^2	SE	
Reflective Thinking	0.84	0.73	9.61	
Reflective Thinking Learning Styles	0.78	0.67	9.32	
Model	**Variables Source**	**Total Squares**	**F**	**Significance Level**
1	Regression	2412.616	426.137	0.0001
2	Regression	1662.660	226.401	0.0001

CONCLUSION

The study of the field of educational sciences and their efforts to introduce necessary solutions to improve education shows the neglected points of this field in architectural education and design process. One of the ways to facilitate and mitigate these deficiencies is to address learning styles and the need for alignment between learning styles and educational programs. In this context, to develop a design process in architectural education and improve students' quality level, the present study investigated the role of Kolb's learning styles by examining a suitable model of learning styles applicable to architectural design courses. In general, according to the results, it is expected that the type of assignments given to students will result in a higher quality design product if they are consistent with their learning styles. Thus, it seems that the reflection-based (thinking-oriented) educational program significantly impacts architecture students' learning rate. Considering this importance, the present study's results showed a relationship between reflective thinking and learning styles with students' design products By examining the components of reflective thinking, including reflection (understanding and paying attention, continuous and active attention to any idea with deep thinking) and critical thinking (awareness of problems), it can be claimed that reflective processes have a profound effect on the way of looking at problems and mental perceptions. In other words, people with reflective thinking make their decisions based on scientific and experimental approaches and using the collected information and its analysis and are better able to evaluate the situation.

Specifically, the results of the present study show that the predominant learning styles of architecture students are accommodative for males and divergent for females, which can be attributed to the logical and executive thinking of males and the emotional and detailed thinking of females in the design process. It was also found that female architecture students use divergent and assimilative styles during their four years of study. Male architecture students prefer the convergent style in the first two years of study and the accommodative style in the last two years. This result not only sheds light on the distribution of learning styles in the field, but also indicates the possibility of flexibility and changeability of learning styles among students. Architecture students use a specific style and coordinate different styles with different situations and tasks. The content of the architecture field includes two aspects: of construction engineering and arts. Therefore, the learning styles required for this field are mostly divergent (to strengthen the artistic dimension) and convergent (to strengthen the engineering dimension) based on Kolb's learning styles. The results of this study show that current architectural education influences students' learning styles and tends to convergent-assimilative styles for males and divergent-accommodative styles for females. Then, it is worth noting that efficient architects should use all four learning styles to succeed That is, they should engage in experiences (concrete experience) and be able to observe and reflect on experiences from different perspectives (reflective observation). They should also form concepts and hypothesise or present an appropriate plan from their field observations (abstract conceptualisation) and take these hypotheses and plans to the stage of proof and implementation and make decisions to solve problems (active experimentation). This theme aligns with architecture's interdisciplinary nature and the need to acquire information in other sciences and use other disciplines' learning methods.

To identify students' learning styles and match teaching patterns to them, it is proposed to test students' learning styles in the early stages of architectural studies to find appropriate solutions. In architecture schools, students are divided into different workshop groups to continue and focus the activities; this division can be done according to students' learning styles and criteria. In this regard, it is necessary for teachers to continuously teach different materials and content according to the needs of learners so that, considering their preferred different teaching styles, their effective learning opportunities are provided. This kind of teaching benefits from the interaction between the learner and the teacher and tries to take into account learners' individual needs, their different attitudes, intellectual abilities, personalities and learning styles to create favorable conditions for understanding and learning. To strengthen their motivation to learn and their academic progress.

Authors' Contributions

The author contributed 100%.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval dated 07.04.2023 and numbered 04/01 was obtained for the study titled "Students' challenges in architectural design process" from Selçuk University.

REFERENCES

Aljojo, N. (2017). Differences in styles of thinking 'In light of Sternberg's theory': A case study of different educational levels in Saudi Arabia. *Journal of Technology and Science Education, 7*(3), 333-346. https://doi.org/10.3926/jotse.291

Babich, B. (2016). On Heidegger on education and questioning. In Peters, M. (Eds). *Encyclopedia of Educational Philosophy and Theory*. Springer, Singapore. https://doi.org/10.1007/978-981-287-532-7_151-1

Bastani, M., Mahmoodi, A. S. M. (2019). Learning styles and analogical thinking method during the design process of architecture. *Honar-Ha-Ye-Ziba: Memary Va Shahrsazi*, *24*(1), 71-84. https://doi.org/10.22059/jfaup.2019.261784.672064

Clara, M. (2015). What is reflection? Looking for clarity in an ambiguous notion. *Journal of Teacher Education, 66*(3), 261-271. https://doi.org/10.1177/0022487114552028

De Bono, E. (2020). *How to have a beautiful mind: (Vermilion life essentials)*. Vermilion.

DeWitt, D., Alias, N., Siraj, S. (2016). Problem solving strategies of Malaysian secondary school teachers. *Educational Technology to Improve Quality and Access of Education to Prosperous Society*, Universitas Negeri Jakarta, Bali, 1-14.

Díaz, M. J. F., Santaolalla, R. C., González, A. G. (2010). Faculty attitudes and training needs to respond the new European Higher Education challenges. *Higher Education, 60*(1), 101-118. https://doi.org/10.1007/s10734-009-9282-1

Faizi, M. & Dezhpasand, S. (2019). Analysis of learning styles to improve architectural education (Case study: Architecture students of Urmia University). *JIAS Journal of Iranian Architecture Studies, 7*(14), 149-169. https://doi.org/10.22052/1.14.149

Farzian, M., Karbasi, A. (2014). Handcrafts - personal experience learning by doing in architectural design education. *Honar-Ha-Ye-Ziba: Memary Va Shahrsazi*, *19*(3), 87-96. https://doi.org/10.22059/jfaup.2014.55411

Hosseini, E. S., Falamaki, M. M., Hojat, I. (2021). Explaining pattern of individual-centered design process and Architectural design training model based on learners' cognitive differences. *Hoviatshahr*, *15*(3), 43-58. https://doi.org/10.30495/hoviatshahr.2021.16357

Kamarudin, M. Y., Mohd, N., Nik, R., Ahmad, H. Y., Abdul Ghani, K. (2016). Inculcation of higher order thinking skills (HOTS) in Arabic language teaching at Malaysian primary schools. *Creative Education* (*Scientific Research Publishing)*, *7*(2), 307-314. https://doi.org/10.4236/ce.2016.72030

Karvan, F. (2021). Design process: From idea to presentation, based on reflective thought and learning styles in architecture students, *Soffeh, 31*(93), 23-38.

Kember, D., McKay, J., Sinclair, K., Wong,F. K. (2008). A four-category scheme forcoding and assessing the level of reflectionin written work. *Assessment & Evaluationin Higher Education, 33*(4), 369-379. https://doi.org/10.1080/02602930701293355

Kember, D., Leung, D. Y. P., Jones, A., Loke, A. Y., McKay, J., Sinclair, K., Tse, H., Webb, C., Kam Yuet Wong, F., Wong, M., Yeung, E. (2000). Development of a questionnaire to measure the level of reflective thinking. *Assessment & Evaluation in Higher Education, 25*(4), 381-395. https://doi.org/10.1080/713611442

Kolb, A.Y., Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education, 4*(2), 193-212. http://dx.doi.org/10.5465/AMLE.2005.17268566

Kolb, D. A. (1984). *Experimental learning*. Englewood Cliffs, Prentice Hall.

Labib, W., Pesina, I., Abdelhadi, A., Bayram, G., Nuruunabi, M. (2019). Learning style preferences of architecture and interior design students in Saudi Arabia: A survey. *MethodsX, 6*, 961-967. https://doi.org/10.1016/j.mex.2019.04.021

Lang, J. T. (2004). *Creating architectural theory: The role of the behavioral sciences in environmental design* (A. Aeinifar, Trans.). Tehran University Publishing.

Lawson, B. (2006). *How designers think*. Routledge.

Lawson, B. 91994). *Design in mind*. Butterworth Architecture.

Lin, X. (2001). Designing metacognitive activities. *Educational Technology Research and Development, 49*(2), 23-40. https://www.jstor.org/stable/30220309

Lindh, I., Thorgren, S. (2016). Critical event recognition: An extended view of reflective learning. *Management Learning, 47*(5), 525-542. https://doi.org/10.1177/1350507615618600

Pakzad, J. Bozorg, H. (2012). *Alefba-e-Mohit Baraye Tarahan*. Armanshahr, Tehran.

Soslo, R. (2006). *Cognitive psychology*. Allyn and Bacon.

Sternberg, R. J. (2016). Styles of thinking and learning. *Canadian Journal of School Psychology, 13*(2), 15-40. https://doi.org/10.1177/082957359801300204

Zolfagharian, M., Aminbeidokhti, A., Jafari, S. (2018). Structural relationship of faculty-student interaction and faculty's active teaching method with students' competencies development by mediating the knowledge acquisition. *Journal of Research in Educational Science, 12*(40), 181-204. https://doi.org/10.22034/jiera.2018.65182

Figure References

Figure 1. Kurt, S. (2021, 1 April). *Adaptive learning: What is it, what are its benefits and how does it work?* Educational Technology. https://educationaltechnology.net/adaptive-learning-what-is-it-what-are-its-benefits-and-how-does-it-work/ (09.04.2023)

Figure 2. Produced by author.

Author's Biography

Navid Khaleghimoghaddam holds a doctorate in architecture. He works as an assistant professor at the Department of Interior Architecture at Konya Food and Agriculture University. In general, he works on key topics in architecture and neuroscience with psychological and physiological approaches, such as the study of the brain's perceptual mechanism and emotional behavior, spaces of worship and healing, neuroarchitecture, cognitive psychology, environmental psychology, and architectural education.

International Design and Art Journal

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Modern mimari yapılar üzerinden temel tasarım ilkelerini okumak

Reading basic design principles through modern architectural structures

Asst. Prof. İpek Yıldırım Coruk[1*]

[1]Fenerbahçe University, Faculty of Engineering and Architecture, Department of Interior Architecture and Enviromental Design, İstanbul, Turkey.
ipek.coruk@fbu.edu.tr

*Corresponding Author

Received: 01.03.2023
Accepted: 26.04.2023

Citation:
Yıldırım Coruk, İ. (2023). Modern mimari yapılar üzerinden temel tasarım ilkelerini okumak. *IDA: International Design and Art Journal*, *5*(1), 99-119.

Özet
Temel tasarım ilkeleri, ilk yıl stüdyolarında temel tasarım eğitimi kapsamında öğretilen konular arasındadır. Temel tasarım eğitimi ve içeriği, yapısı gereği öğrencinin daha önce almış olduğu eğitim sisteminden farklı boyutlar barındırmaktadır. Öğrenci için yeni bir dil, yeni bir literatür içermesi, çoğunlukla soyut eğitsel içeriklere sahip olması sebebiyle de zor kavranmaktadır. Öte yandan öğrenciler bu derste edindikleri bilgilerden ilerleyen yıllarda ve meslek hayatlarında ne şekilde faydalanabileceklerini sorgulamaktadır. Bu durumdan hareketle çalışmada amaç; modern mimari yapılar üzerinden temel tasarım ilkelerini analiz etmektir. Nitel araştırma metoduyla oluşturulan çalışmada veriler, belirlenen örneklerde bahsedilen ilkelerinin analiziyle elde edilmiştir. Bu örnekler temel tasarım ilkelerinin ortaya çıktığı Bauhaus Okulu'nun modern mimarlığın yayılmasındaki rolü de düşünülerek Bauhaus ve sonrası modern yapılar arasından seçilerek çalışmanın kapsamı oluşturulmuştur. Çalışma sonucunda, belirlenen örnekler üzerinden temel tasarım ilkelerinin somut kullanımları ve karşılıkları ortaya konulmuştur. Böylece öğrencilerin temel tasarım ilkelerinden eğitimlerinin devam eden yıllarında ve meslek hayatlarında nerede ve nasıl faydalanacaklarına yönelik somut uygulamaları görmeleri sağlanmaktadır. Ayrıca çalışma sonucunda elde edilen bu verilerden temel tasarım eğitimi ders içeriklerinde de faydalanılabilecek olması sebebiyle çalışmanın katkı sağlayıcı olduğu düşünülmektedir.

Anahtar Kelimeler: Modern mimarlık, Bauhaus Okulu, Temel tasarım eğitimi, Temel tasarım ilkeleri

Abstract
Basic design principles are taught within the scope of basic design education in the first-year studios. Basic design education and its content have different dimensions from the education system the student previously received due to its structure and difficulty comprehending because it contains new literature for the student and often has abstract educational content. On the other hand, the students have difficulty perceiving the information acquired in this course and question how they can benefit from it in the following years and professional life. Therefore, the aim of the study is to analyze the basic design principles through modern architectural structures. In the study created by qualitative research method, the data were obtained by analyzing the principles mentioned in the determined examples. These examples were selected among the Bauhaus and later modern buildings by considering the role of the Bauhaus school, where the basic design principles emerged in the spread of modern architecture, and the scope of the study was created. As a result of the study, concrete uses and equivalents of basic design principles were revealed with the determined examples. Thus, data on how students will benefit from basic design principles have been revealed.

Keywords: Modern architecture, Bauhaus School, Basic design education, Basic design principles

Extended Abstract

Introduction: Basic design education, the first step of design education, is the first environment that introduces students to the design world. In this education, which includes topics such as design elements, design principles, and perception

principles, basic design principles play a role in planning and analyzing the design. For this reason, students have to benefit from these phenomena both in their education and professional lives, consciously or unconsciously. Although basic design education is a visual aspect-based thought system in the first stage of design education, this education is not used as necessary in the ongoing stages of design education. Therefore, it is seen that there is a gap in the relationship between education and practice in this direction (Araz Ustaömeroğlu, 1998: 2). As supported by the literature, basic design education is not fully understood by the students, so this information cannot be actively used in the ongoing course processes (Kılıç & Arabacığlu, 2021:132). In other words, students often need to learn why they use this abstract information and clarify the intended learning outcomes or how to evaluate them (Sawyer, 2017: 110).

Purpose and scope: Based on all these problems in the literature, the study starts from the problem that basic design principles are not understandable due to their abstract applications and that the students generally do not understand how they can benefit from these phenomena in their education and professional life. In order to answer this problem, it is aimed to reveal the concrete reflections of basic design principles by analyzing them through architectural structures. The study considered the role of the Bauhaus School in the emergence of modernism and basic design principles. The examples were limited to the field of modern architecture in the Bauhaus period after and after the scope of the study was established.

Method: The study was created by using a qualitative research method. Qualitative research is a multifaceted method that includes an interpretive, naturalistic approach. This means that qualitative research examines events in their natural environments and tries to make sense of and interpret phenomena in terms of the meanings that people attribute to them (Groat & Wang, 2013: 218). Document collection, one of the techniques used in the qualitative research method, includes all kinds of recorded information, written or unwritten, and contributes to the researcher's more efficient interpretation of the data obtained by other methods. Photographs, diaries, newspapers, letters, magazines, works of art, objects, video and audio recordings, and all kinds of recorded information can be a rich database for qualitative research methods (Buran, 2021: 48). In this study, obtaining the data, visual information and photographs from qualitative research techniques were used together with literature analysis. Through these, the design principles were analyzed through the samples determined.

Findings and conclusion: It was seen that a different basic design principle existed in each of the samples determined by the study. Accordingly, the Salk Institute, designed by Louis Kahn, and the Cathedral of Brasilia, designed by Oscar Niemeyer, reflect the principle of repetition. The Edith Farnsworth House and Landhouse Lemke, designed by Ludwig Mies Van Der Rohe, contains features corresponding to the principle of balance. The Kubuswoningen structure designed by Piet Blom reflects the rhythm principle. Designed by Kenzo Tange, Fuji Broadcasting Center, and JFK Presidental Library, designed by I.M. Pei reflects contrast principles from design principles. Another example is the Solomon R. Guggenheim Museum, designed by Frank Lloyd Wright, and Royal National Theatre, designed by Denys Lasdun reflect the integrity principle of basic design principles. The Guggenheim Bilbao Museum, designed by Frank Gehry, and Lotus Temple, designed by Fariborz Sahba, reflect the principle of harmony from basic design principles. The Weizmann House, designed by Erich Mendelsohn, and Fallingwater House, designed by Frank Lloyd Wright, have referenced the principle of domination. Another work by Kenzo Tange, the St. Mary Cathedral, and Seeley Historical Library, designed by James Stirling, reflect symmetry from basic design principles. The Pompidou Centre, designed by Renzo Piano-Richard Rogers, reflects the principle of emphasis. Villa Savoye, designed by Le Corbusier, has referenced the principle of proportion, one of the basic design principles. Finally, the Sydney Opera House and Centre Culturel Jean-Marie Tjibaou reflect the hierarchy of basic design principles with gradation between elements. The data obtained by the study reveal the concrete applications of basic design principles. Although it is not the study's primary purpose, it emphasizes the importance of basic design education and the content that constitutes this education because this information learned in the first years of education will be used even in professional life. Although this awareness was not gained in the first years of design education, it was revealed that the basic design principles have concrete uses and counterparts with the study. For other research to be carried out based on the study findings, it is recommended to expand the information pool by diversifying these samples.

Keywords: Modern architecture, Bauhaus School, Basic design education, Basic design principles

GİRİŞ

Tasarım eğitiminin ilk basamağı olan temel tasarım eğitimi, öğrencileri tasarım dünyasıyla tanıştıran ilk ortamdır. Tasarım ögeleri, tasarım ilkeleri ve algı ilkeleri gibi konu başlıklarını içeren bu eğitimde temel tasarım ilkeleri, tasarımın planlanması ve nasıl planlandığının çözümlenmesinde rol oynamaktadır. Bu sebeple öğrenciler hem eğitim hem de meslek hayatlarında farkında olarak ya da olmayarak bu olgulardan faydalanmak durumunda kalmaktadır. Temel tasarım eğitimi her ne kadar tasarım eğitiminin ilk aşamasında yer alan görsel

yönü ağırlıklı bir düşünü sistemi olsa da bu eğitimin ve bu eğitimi oluşturan içeriğin tasarım eğitiminin devam eden aşamalarında gerektiğince kullanılmadığı, bu nedenle de eğitim ve uygulama arasındaki ilişkide bu doğrultuda bir boşluk bulunduğu görülmektedir. Günümüzde tasarım eğitimi veren kurumlarda sürdürülen temel tasarım eğitimi derslerinin içeriğini tasarım ilkeleri yanı sıra ölçü, oran, biçim, renk, doku, organizasyon ilkeleri başlıkları oluştursa da bu içeriğin, yani temel tasarım bilgilerinin uygulamalarda düşünülerek kullanılmadığı, tasarım sürecinde etkili olamadığı ya da farkında olunmadan tasarımlara yansıtıldığı, bu nedenle eğitimle uygulama arasında temel tasarım yönüyle bir boşluğun yer aldığı bilinmektedir (Araz Ustaömeroğlu, 1998: 2).

Bir diğer yönden literatürle desteklendiği şekliyle temel tasarım eğitimi öğrenciler tarafından tam olarak anlaşılamamakta, bu nedenle de devam eden ders süreçlerinde bu bilgiler aktif olarak kullanılamamaktadır (Kılıç & Arabacığlu, 2021: 132). Başka bir deyişle; öğrenciler genellikle bu bilgileri neden kullanıldıklarını bilmemekte, amaçlanan öğrenme çıktıları veya bunların nasıl değerlendirileceği konusunda kafa karışıklığı yaşamaktadırlar (Sawyer, 2017: 110). Öte yandan dersin stüdyo ortamında veriliyor olması, kritik alma süreci, değerlendirmelerin jüri sistemiyle yapılması gibi yeni olgular öğrencilere yabancı gelmektedir. Ayrıca eğitsel metotların sezgisel olarak yürütülmesi sebebiyle de temel tasarım dersleri üniversite eğitiminin ilk döneminde tasarım öğrencilerinin en çok zorlandığı dersler arasında yer almaktadır (Sarıoğlu Erdoğdu, 2016:7). Bir diğer veriye göre temel tasarım dersini oluşturan içerikte öğrencilerin deneyimlediği maketler, kompozisyonlar ve diğer soyut çalışmalar bu süreçte zorlandıkları başlıklar arasındadır (Kılıç & Arabacığlu, 2021: 132). Literatürde yer verilen tüm bu problemlerden hareketle, bu çalışmada temel tasarım ilkelerinin soyut uygulamaları sebebiyle anlaşılır olmaması ve öğrencilerin genel anlamda bu olgulardan eğitim ve meslek hayatlarında ne şekilde faydalanacaklarını kavrayamamaları probleminden yola çıkılmıştır. Bu probleme cevap verebilmek adına temel tasarım ilkelerinin somut yansımalarını mimari yapılar üzerinden analiz ederek ortaya koymak hedeflenmiştir. Bunu yaparken de çalışmada temel tasarım ilkeleri gibi modernizmin ortaya çıkışında da Bauhaus Okulu'nun rolü göz önünde bulundurulmuş ve örnekler Bauhaus dönemi ve sonrası modern mimarlık alanı ile sınırlandırılarak çalışmanın kapsamı oluşturulmuştur.

Alanyazında yer alan ve benzer bağlamda oluşturulan çalışmalarda ise Eroğlu ve Aksu (2019) tasarım ilkelerinden tekrarın güncel mimarideki yerini çağdaş mimarların tasarım yaklaşımları üzerinden okuyarak dönemsel olarak bu ilkede meydana gelen değişimleri saptamaya çalışmıştır. Kuljici tarafından 2019 yılında gerçekleştirilen tez çalışmasında modern konut yapıları, temel tasarım ögeleri ve ilkeleri aracılığıyla mekân kompozisyonu açısından analiz edilmiştir. Bir diğer çalışmada ise Özel ve Sağsöz (2021), temel tasarım ilkelerinin düzenleme yaparken kolaylaştırıcı rolünden hareketle, Antalya Kaleiçi'nde belirlenen yapıları simetri, ritim, denge ve zıtlık ilkeleri yönüyle analiz etmiştir. İncelenen çalışmalarda, tasarım ilkelerinin bir ya da birkaçının kısıtlanarak analizlerinin yapıldığı ya da tasarım ilkelerinin tamamından faydalanılsa da örneklerin konut yapıları olarak iç mekân ölçeğinde sınırlandırıldığı görülmektedir. Bu çalışma, hem temel tasarım ilkelerinin tamamını, yapı türü sınırlandırması olmadan farklı işlevlerde modern mimari yapılar üzerinden analiz ediyor olması hem de bu analizi eğitsel kaygılarla gerçekleştiriyor olması yönüyle diğer çalışmalardan farklılaşmaktadır. Bu doğrultuda çalışma ile ortaya konulan verilerle öğrenciler temel tasarım ilkelerini ne şekilde kullanabileceklerine yönelik somut bir bilgi edinebilecek, aynı zamanda da modern mimari kavramı ve örneklerine aşina olabileceklerdir. Çalışmanın bu yönüyle yol gösterici olacağı ve temel tasarım eğitimi ders içerikleri için örnek teşkil edeceği düşünülmektedir.

Kuramsal Çerçeve

Kavramsal ve tarihsel bir izlekte tarif edildiğinde modern mimarlık 20. yüzyıl başına ve bu yüzyılda yükselen öncü uygulamaların da temelinde yer alan toplumun sosyal ve ekonomik açıdan yeni açılımlara yönelim istencine işaret etmektedir. Birinci Dünya Savaşı'nın beraberinde getirdiği kaos ortamı, gündelik hayatı iyileştirme ya da idealleştirme arayışlarını pekiştirmiştir. Beraberindeyse tasarım ve sanatın toplumun her kesimine yönelik bir hak ve sosyal edim olması fikri, 19. yüzyıl sonunda başlamış, I. Dünya Savaşı sonrasına denk gelen dönemi de kapsayan kültürel, sosyal, ekonomik iklimde çok kez evirilerek formel anlamda modern mimarinin olgunlaşmasına ortam hazırlamıştır (Sezer, 2019: 48). 20. yüzyıl mimarisini büyük oranda etkileyen modernizm kavramı, çeşitli bilim ve kuramların evrimiyle ilişkili karmaşık bir kavram olup, anlam olarak 20. yüzyılın ilk yarısında geleneksel teknik ve değerleri reddeden, bireysel deneyimin önemine işaret eden bir sanat hareketidir. Mimari anlamda modernite ise 19. yüzyıl ikinci yarısı sonrasında ortaya çıkan sanatsal

hareketlerden meydana gelen ve dönemin teknik yeniliklerinin mimari ürünlere yansıtılmasına dayanan bir eğilimdir (Şahin, 2022: 6).

Modern mimarlık, 19. yüzyılda meydana gelen endüstri devriminin tetiklediği gelişmeler sonucu tarihsel eğilimlere tepki şeklinde gündeme gelerek 20. yüzyılın ilk yarısında yaygınlaşmaya başlayan, çağın gerekliliklerine, yapı teknolojisine, sanat anlayışına uyan dolaysız çözümler arayışında olan bir mimarlık anlayışıdır (Hasol, 2010: 327). 20. yüzyıl mimarlığı şeklinde de ele alınan modern mimarlık düşünsel alt yapısı ve şekillenme yönüyle yüz yıldır süregelen uzun bir süreçtir (Şahin, 2022: 6-7). Modern mimarlığın gelişim sürecinde uygulamalı alandaki denemelerle mekân ihtiyaçlarının mevcut koşullara cevap verecek şekilde giderilmesine yönelik motivasyonlar önemli olsa da tüm bunların pedagojik olarak formüle edilmesi, bu yollarla öğretilebilir olması ve yaygınlaşması noktasında Bauhaus Okulu'nun rolü büyüktür. 1919 yılında Almanya Weimar'da kurulan, 1926 yılına gelindiğinde Dessau'ya, 1932'de ise Berlin'e taşınan okul 1933 yılında kapanmak durumunda kalmıştır. Kapanışına dek geçen zaman diliminde tasarım, sanat, mimarlık gibi alanlarda kuramsal, uygulamalı ve deneysel yönlerden temellenen eğitim planı çerçevesinde pek çok eğitimci, sanatçı, tasarımcı ve öğrencinin, içerisinde bulunulan dönemin estetik kültürü ve üretim tekniklerine katkı sağlamasına ortam hazırlamıştır (Sezer, 2019: 48). Tüm bu yönleriyle Bauhaus, aktif bir tasarım okulu olsa da Nazi etkisiyle yok olmuş ancak eğitim felsefesi ve yöntemleri hayatta kalmış, hatta farklı ülkelere yayılmıştır (Lloyd Jones, 1969: 156). 1919-1922 yılları arasında Itten, 1923-1928 yılları arasında Moholy-Nagy yürütücülüğünde gerçekleştirilen pedagojik program 1920 yılından günümüze endüstriyel tasarım ve mimarlık alanlarında önemini artırarak süregelmiştir. 1925-1926 yılları arasında Adolf Meyer ve Walter Gropius öncülüğünde Dessau'ya taşınan Bauhaus Okulu; kullanılan kısıtlı ve kompleks malzemelerle ve programa ilişkin ihtiyaçlar çerçevesinde verimli yapım yöntemleriyle gitgide daha çok kabul görmüş ve bu yaklaşım bir mimari forma dönüşerek büyük yankı uyandırmıştır (Sezer, 2019: 49). Özetle, modern mimarlığın yapılı çevredeki sorunlara toplum refahını sağlamak ve estetik anlamda iyileştirme yapmak amacıyla sorduğu sorulara 1919-1933 yılları arasında Bauhaus Okulu eğiticileri ve öğrencileri tarafından yanıtlar aranmıştır. Bu sayede, okulun ortaya koyduğu etik anlayış yanı sıra birlik, eşitlik, özgürlük gibi kavramlar Bauhaus anlayışındaki modern mimarlığı yalnızca bir üslup olarak sınırlamayıp, dünya genelinde farklı bölgelerde ortak bir kültür ögesi olmasını sağlamıştır (Sezer, 2019: 51-53).

Modern dönem ayrıca idealize edilen stil üretimlerinin meydana gelmesine sahne olmuş, aynı zamanda mimari form oluşumunda tekrar, aralık gibi ilkeler ve seri üretim anahtar kavramlar olarak ortaya çıkmıştır. Biçimdeki ya da biçimle oluşturulan tekrar, düzeni sağlamak için pratik bir ilke olarak görülmüştür (Eroğlu & Aksu, 2019: 95). Modern mimarlık, Avrupa'nın tamamında birkaç mimar ve grup öncülüğünde başlamıştır. Paris'te Le Corbusier, Bauhaus, Weimar ve Dessau'da Gropius; Berlin'de Bruno Taut, Mendelsohn, Mies Van Der Rohe; Hollanda'da De Stil grubu ve son olarak Rusya'da yapısalcılar modern mimariye öncülük ederek bu alanda etkili olmuştur. Bu yeni mimari hareketin yöntemleri ve ilkeleriyle her ülkede farklı bakış açıları oluşturulmuş ve o zamana dek var olan biçimler değişime uğramıştır. Bu sebeple modern mimari olarak adlandırılan süreç ve dönem her ülke için farklı özellikler ve adlandırmalar içermektedir (Şahin, 2022: 8-9). Bu bilgilerden hareketle Bauhaus olgusunun sıklıkla bir okul, öncü bir akım, bir pedagoji, bir stil, bir estetik olarak ele alındığı söylenebilir. Fakat bunların da ötesinde bir anlayış, kavrayış ve anlamlandırma stilidir. Bu nedenle Bauhaus Okulu modernleşmenin beraberinde getirdiği toplumsal örgütlenmenin gerçekleştirilmesi sürecinde bir dönüşüm politikası ve kültürel politikadır (Artun, 2009: 193).

Tüm bunlarla birlikte Bauhaus; içerisinde bulunan süreçte teknik, araç ve malzeme alanında meydana gelen değişimler ve seri üretim gibi kavramlar sebebiyle üzerinde fazla düşünülmeyen yapıların ortaya konulması sorununa da önlem almayı hedeflemiş, temel tasarım disiplini de bu tehlikelere engel olmak amacıyla okul programına konulmuştur. Temel tasarımın ortaya ilk çıkışı, görsel sanatlar ve mimarlıkta yer bulması da Bauhaus Okulu ile olmuştur (Araz Ustaömeroğlu, 1998: 2). Bir amacı gerçekleştirmek için yaratıcı eylemlerin zihinde oluşturularak kâğıt yüzeyine aktarılmasına tasarım, tasarımcının bu süreçte gerçekleştirdiği yetileri eğiten bilim dalına ise temel tasarım denir. Temel tasarım eğitimi yaratıcı bireylerin eğitilmesi amacı, kapsamı ve programına sahiptir. Temel tasarım eğitimi teknik bir öğretimden ziyade yapısı gereği, bilme, düşünme, görsel algı, estetik canlandırma, buluş, esin, el-göz-beyin yetilerinin geliştirilmesi, yaratıcılık süreçleri ve sezgisel güçlerin aktifleştirilmesi eğitimi ve öğretimidir (Atalayer & Üstün, 2000: 51). Bu özellikleri nedeniyle, estetik anlamda temel tasarım öge ve ilkelerinden hareketle, birtakım kuralları uygulamak yapı ve

çevresinin pozitif olarak algılanmasını sağlamıştır. Öte yandan biçime ait parçaların uyum içinde bir arada yer almaları ve birlik oluşturmaları, uygun ölçek, oran kullanımı, renk ve ışığın bilimsel anlamda ortaya konulan genel beğenileri yansıtacak doğrultuda kullanılması şeklinde yaklaşımlar da bu algıyı desteklemiştir. Kısacası tasarım eğitiminin ilk yıllarında ve sonraki yıllarında konularla ilişkili olarak temel tasarım ilkelerinin proje derslerinde kullanımının soyut olarak öğrenilen bu ilkelerin somut olarak deneyimlenebilmesine ya da ortaya konulmasına imkân sağlayacak olması sebebiyle eğitim ve uygulama arasında yer aldığı belirtilen boşluğu doldurabileceği düşünülmektedir (Araz Ustaömeroğlu, 1998: 3).

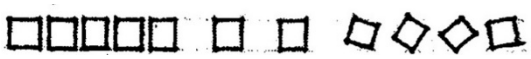
Endüstrileşme sonucu meydana gelen tasarım sorunlarını ele alan Bauhaus Okulu'nda temellenen temel tasarım eğitimi, tasarım ve sanat eğitimi süreçlerinin ilk adımını oluşturmaktadır. Tasarım elemanları ve ilkelerinin öğretilmesi yönüyle kuramsal, tasarımlama eyleminin gerçekleştirmesi yönüyle ise uygulama anlamında içeriğe sahip bütüncül bir eğitim yaklaşımıdır. Bireyi özgürleştirmek, sınırlılıklarını ve potansiyellerini görmesini sağlamak, yaratıcılığını ortaya çıkarmak, malzemelerin fiziksel doğası ve potansiyellerini anlamak için tasarımın temel yasalarının kavranmasına yardımcı olabilecek teorik çalışmalar ve uygulama çalışmaları, temel tasarım eğitiminin içeriğini oluşturmaktadır. Bu içerikler öğrencilerin kendini tanıması, yaratıcılığının farkına varması ve sanat dalını belirlemesi sebepleriyle ele alınmıştır. Bauhaus Okulu'nda ön ders yaklaşımıyla ortaya çıkan temel tasarım eğitimi okulun kapanmasının ardından buradan ayrılan sanatçı ve eğitmenlerin farklı ülkelere göç etmesiyle yayılmıştır. Böylelikle temel tasarım eğitimi dersi çağdaş bir disiplin haline gelmiş, endüstri dönemi sonrası dünyanın farklı yerlerinde pek çok okulda örgün eğitim konusu olmuştur. Ülkemizde ise ilk olarak Tatbiki Güzel Sanatlar Yüksek Okulu'nun programında 1957 yılında yer almıştır. Günümüzde tasarım ve sanat alanında eğitim veren kurumlarda uygulamasına devam edilmektedir (Hasırcı & Coşkun Onan, 2020: 101-102). Bauhaus Okulunun temel tasarım eğitimine en büyük katkısı, ilkeleri olan, farkında olarak düzenlenen, aynı zamanda uygulamalı ve kavrayıcı bir giriş dersi olması ve bu dersin modernist bir yaklaşımla, sanatla iç içe olacak bir öğretim programıyla kurgulanmış olmasıdır. Temel tasarım dersinde yapılan çalışmalar tasarım ilkelerinin kimi zaman tümevarım, kimi zaman da tümdengelim yöntemiyle parça bütün ilişkisine yansıyacak şekilde kurgulanmıştır (Hasgül & Birer, 2019: 27).

Tasarımla ilgili disiplinlerin programlarında yer bulan temel tasarım eğitimi dersinin içeriğini genel olarak Gestalt algı ilkeleri, tasarım ilkeleri, tasarım ögeleri ve üç boyutlu çalışmalar oluşturmaktadır. Temel tasarım eğitimi içeriği öğrencilerde görsel dilin oluşmasını sağlamakta ve bu dilin oluşması için de görsel düzenleme becerilerini geliştirmek adına bu dilin kavramları, kuralları ve ilkeleriyle donanmak durumundadırlar. Bu nedenle derste genel anlamda temel tasarım bilgisi sunmak hedeflenmektedir. Bu bilgi sunulurken de genel olarak ders programında yer verilen başlıklar şu şekildedir: tasarım ögeleri; ışık, doku, renk, nokta, çizgi, düzlem (yüzey), hacim, algı ilkeleri; şekil zemin ilişkisi, benzerlik, yakınlık, iyi şekil özellikleri başlılarıyla yer almaktadır. Son olarak tasarım ilkeleri ise uyum, tekrar, zıtlık, denge, egemenlik, koram (hiyerarşi), simetri, vurgu, bütünlük, oran, ritim başlıklarıyla yer bulmaktadır (Akbulut, 2014: 24-25). Çalışma kurgusunda ise temel tasarım eğitimi içeriğini oluşturan bu başlıklardan tasarım ilkelerine odaklanılmakta ve bu ilkelerin somut uygulamalar üzerinden, sınırlandırılan örnekler aracılığıyla okunması hedeflenmektedir.

Temel Tasarım İlkeleri

Tasarı ortaya koyma sürecinde kolaylaştırıcı olan temel tasarım ilkeleri, problem çözme sürecini de kolaylaştırmaktadır. Tasarım aşamasında olduğu kadar ortaya konulan ürün ya da eserin eleştirisi ve değerlendirmesinde de önemli olan bu ilkeler tasarım ve sanat eğitiminin her alanında iki boyutlu çalışmalarla birlikte üç boyutlu olarak gerçekleştirilen çalışmalar için de önemli ve gereklidir (Civcir, 2015: 317). Tasarımın nasıl planlandığının çözümlenmesinde rol oynayan, farklı kaynaklarda farklı şekillerde ele alınan bu ilkeler, bu çalışmada denge, tekrar, ritim, uyum, zıtlık, bütünlük, egemenlik, koram (hiyerarşi), vurgu, oran ve simetri (Ertok Atmaca, 2014: 63) başlıklarıyla ele alınmaktadır.

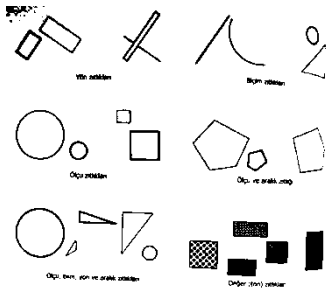
Ritim: Daha çok müziğin bir kriteri olsa da bir ögenin belirli aralıklarla yinelenmesi, tekrarı veya belirli bir düzen ilişkisiyle birbirini takip etmesi olarak tanımlanabilmekte ya da bir eserde yer alan ögelerin kendi aralarında meydana getirdikleri ardışık zaman ve mekân aralıklarının belirlemiş olduğu düzen şeklinde ifade edilmektedir (Seylan, 2005: 151-152). Ching'in tanımladığı şekliyle ritim, ögelerin mekân ve zaman içerisinde tekrarına dayanmaktadır. Bu tekrarla hem görsel bütünlük oluşmakta hem de ritmik hareket süreklilik yaratmaktadır (Ching, 2011: 150).



Görsel 1. Ritim ilkesi

Denge: Fizik temelli bir kavram olan denge; birbirine karşıt olan iki ağırlığın ya da iki gücün eşitliğiyle oluşan durma hali, yerleşik konum ya da çatışan güçler, karşıt elemanlar arasındaki uyumu, durgunluğu sağlayan doğru orantı şeklinde tanımlanmaktadır. Çatışan güçlerin bir durgunluğa ulaşmasıyla açıklanmaya çalışılan denge olgusu statik bir durumu ya da hareketsizliği ifade etmektedir (Seylan, 2005: 152). Öte yandan Seylan tasarımda denge kavramının sezgisel olduğunu, denge uyumunun yerini alabilecek rasyonel bir hesaplama yaklaşımının olmadığı belirtmektedir. Sanat ve tasarım alanlarında denge arayışı niceliksel ve niteliksel yönden yüzeyde ya da uzamda bir düzen oluşturma şeklinde değerlendirilebilmektedir. Bu düzen çabası, sürece dâhil edilen elemanların sadece biçimsel olarak düzenli dağılımlarını ifade etmemekte, her bir ögenin algısal olarak ifade ettiği dağılım ve bu dağılım sonucunda oluşan karşılıklı ilişkiler düzeninin toplu etkisini içermektedir (Seylan, 2005: 153-155).

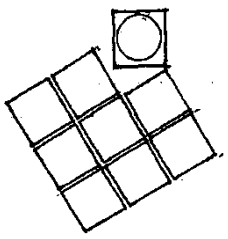
Zıtlık: Cisimler arasında herhangi bir yönden ortak ya da birbirine yakın nitelikler bulunmadığında bunlar arasında ilişki kurmak zorlaşmakta ve bu durum zıtlık olarak yorumlanmaktadır (Güngör, 2005: 136). Başka bir deyişle zıtlık, düzensizlikleri doğuran ve ortak değerlerin bulunmadığı durumlarda, objeler arasında bağ kurulamadığında oluşmaktadır (Civcir, 2015: 361). Ancak zıtlık bir yönden tasarımda uyuşmazlık ya da dağınıklık yaratmaktayken, öte yandan renk, doku, değer, yön, biçim, ölçü, aralık vb. özelliklerinden bir ya da birkaçının olmasıyla oluşabilen zıtlık, kişilerin beklenmedik etkilerle karşılaşıyor olması sebebiyle tasarıma ilgi ve canlılık katmaktadır (Güngör, 2005: 136).



Görsel 2. Zıtlık ilkesi

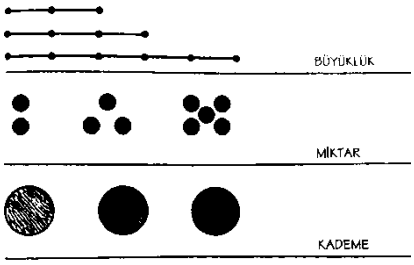
Uyum: Birlik, düzen ve uygunluk anlamına gelmektedir. Birden fazla ögenin kaynaşması ya da anlamlı bir ilişkiyle bir arada olmasıyla oluşan düzenli birliktir. Bu sebeple, uyum bir bütünün parçalarıyla uygunluğunu dile getirmektedir (Seylan, 2005: 155). Uyum, bir kompozisyonda yer alan parçaların veya parçaların bireşiminin hoşa giden birlikteliği ya da ahengi şeklinde tanımlanabilir. Uyum; ortak bir özellik taşımak, benzer büyüklükler, benzer şekiller, benzer yönlendirme, benzer renkler ve tonlar, benzer malzemeler ve benzer detay özellikleri ile sağlanabilmektedir (Ching, 2011: 146).

Egemenlik: Bir biçim ya da mekânın anlamı ya da öneminin boyut, şekil ya da yerleşim yoluyla, genel kompozisyon içerisindeki diğer öge, biçim veya mekânların önüne çıkarılmasını ifade etmektedir (Ching, 2011: 321). Güngör'ün de belirttiği şekliyle bir tasarımda tutarlı bir dengenin oluşabilmesi için, bazı kısımlarda görsel algılama yönüyle daha baskın bir unsur olması gerekmektedir. Egemenlik sadece ölçü yönüyle değil renk, doku, değer yönleriyle de sağlanabilmektedir (2005: 142). Özetle bir tasarımda ya da kompozisyonda kullanılan ögelerin biri ya da bir kısmının diğer ögelerden baskın olmasıdır (Civcir, 2015: 374).



Görsel 3. Egemenlik ilkesi

Oran: Nicelik, büyüklük ya da derece açısından iki şey veya parça-bütün arasındaki bağıntıyı ifade etmekteyken orantı ise bir şeyi oluşturan parçaların kendi aralarında ya da bütünle aralarındaki uygunluğunu, karşılaştırılabilir ilişkilerini tanımlamaktadır (Seylan, 2005: 158). Ching'in kısaca özetlediği şekliyle ise oran bir parçanın bir diğer parçayla ya da bütünle kurduğu ilişki ya da bir nesnenin bir diğer nesneyle büyüklük, kademe ya da miktar yönleriyle kurduğu ilişkidir (Ching, 2011: 191).

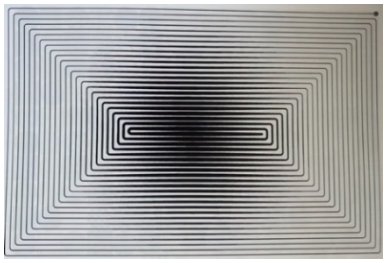


Görsel 4. Oran ilkesi

Bütünlük: Birlik ya da bütünlük benzer ya da farklı ögelerin, mekânların, yapıların veya cisimlerin birlikteliği sonucu dengeli bir bütün oluşturmalarıyla gerçekleştirilen tasarım ilkesidir (Güngör, 2005: 152). Tasarı meydana getiren tüm elemanlarının birer öge olarak gözükmekten çıkarak bir görsel bütün haline gelmesi ile oluşmaktadır (Denel, 1970: 64).

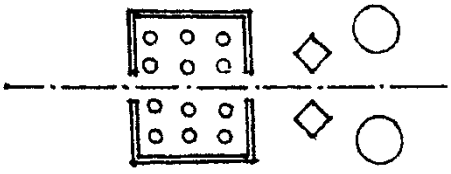
Görsel 5. Bütünlük ilkesi

Tekrar: Kompozisyonda ya da tasarımda bir veya daha fazla ögenin birden fazla kullanılmasıdır. Birbirinin aynı ya da benzer ögelerin yan yana getirilmesi benzer etkiler uyandırdığı için tekrar sayesinde bu etki bağlayıcı ve güçlendirici olmaktadır (Civcir, 2015: 318).



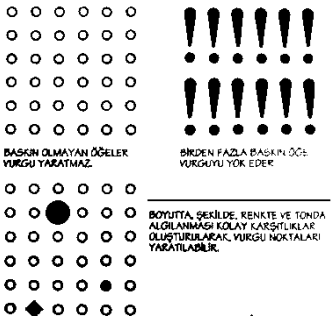
Görsel 6. Tekrar ilkesi

Simetri: Birbirine denk biçim ya da mekânların, kendilerini ayıran bir çizgi ya da düzlemin her iki yanında veya bir eksenin, merkezin etrafında dengeli bir biçimde dağılımı (Ching, 2011: 321) şeklinde ifade edilmektedir.



Görsel 7. Simetri ilkesi

Vurgu: Tasarımda ya da kompozisyonda bir unsurun diğerlerine kıyasla daha baskın olması sonucunda oluşan tasarım ilkesidir. Ching'in de belirttiği şekliyle önemli bir unsur ya da özelliğin, kendine özgü bir şekille, anlamlı derecede boyutlandırma ile ya da mekâna, kompozisyona karşıt doku, ton, renk gibi özelliklerle görsel anlamda ön plana çıkarılmasıdır (Ching, 2011: 154).



Görsel 8. Vurgu ilkesi

Koram (Hiyerarşi): İki karşıt uç arasında uyumlu bir geçiş sağlamak amacıyla uygun kademeler aracılığıyla oluşturulan tasarım ilkesidir. Bu tasarım ilkesi bir tasarımı meydana getiren ögelerin önem derecelerine göre sıralanmasıyla meydana gelmektedir. Vurgu derecesine göre sıralanan unsurlar bu sayede bir dizi ya da dizilim etkisi oluşturmaktadır. Eksensel, merkezsel ve çevresel koram olmak üzere üçe ayrılan bu tasarım ilkesine göre eksensel koram, biçimlerin bir eksen üzerinde dizilmesiyle oluşmaktadır. Merkezel koram ise biçimlerin koram ilkesini oluşturacak şekilde birleştirilmesi sonucu merkez noktası meydana getirmesiyle oluşmaktadır. Bir diğer başlık olan çevresel koram, biçimlerin bir çevre üzerinde kademelenmesiyle oluşmaktadır (Güngör, 2005:138-141).

YÖNTEM

Çalışma nitel araştırma yönteminden faydalanılarak oluşturulmuştur. Nitel araştırma, natüralist bir yaklaşımı barındıran, yorumlayıcı, çok yönlü bir araştırma yöntemidir. Bu durum nitel araştırmaların olayları doğal ortamlarında inceledikleri ve olguları insanların onlara yükledikleri anlamlar açısından anlamlandırmaya ve yorumlamaya çalıştıkları anlamına gelmektedir (Groat & Wang, 2013: 218). Nitel araştırma stratejisi, belirli ve tanımlanmış bir bağlamla insanların gerçek dünyadaki durumlarda çevrelerini ve kendilerini nasıl anlamlandırdıklarına dair bir anlayış kazanmayı içerir ve araştırmacının toplanan verileri yorumlamasına bağlıdır (Groat & Wang, 2013: 222). Bu yöntemin veri toplama taktiklerinin çeşitli tanımlayıcıları arasında ise röportajlar, gözlemler, belgeler ve görsel-işitsel bilgiler yer almaktadır (Groat & Wang, 2013: 244). Temel özellikleri yönüyle; uygun kuram ve yöntemlerin doğru seçimi, araştırmacının araştırmaya yönelik düşüncelerinin bilgi üretim sürecinin bir parçası olması, farklı bakış açılarının tanımlanarak analiz edilmesi şeklinde özellikler, bu araştırma yöntemindeki teknik ve yaklaşımların çeşitliliğini ortaya koymaktadır (Seggie & Bayyurt, 2021: 15).

Nitel araştırmada faydalanılabilecek çeşitli veri toplama teknikleri bulunmaktadır. Bu teknikler arasından; vaka çalışması, görüşme, gözlem ve doküman analizi yöntemi yaygın olarak kullanılmaktadır. Her yöntemin kendine has güçlü ve kısıtlayıcı yönleri bulunmaktadır. Veri toplama aracı olan bu teknikler görüşme, gözlem, görsel ve işitsel materyaller ve dokümanlar şeklinde gruplanabilmektedir. Çalışmalar planlanırken de araştırma yöntemi bilgilerin nasıl toplanacağı ve organize edileceğine karar verilerek belirlenmektedir (Seggie & Akbulut Yıldırmış, 2021: 29). Nitel araştırma yönteminde faydalanılan tekniklerden doküman toplama yazılı ya da yazılı olmayan her türden kayıtlı bilgiyi kapsayarak araştırmacı için diğer yöntemlerle elde ettiği verileri daha verimli yorumlamada katkı sağlar. Fotoğraf, günlükler, gazeteler, mektuplar, dergiler, sanat eserler, objeler, video ve ses kayıtları, özetle kayıt altına alınmış her tür bilgi nitel araştırma yöntemi için zengin bir veri tabanı olabilmektedir (Buran, 2021: 48).

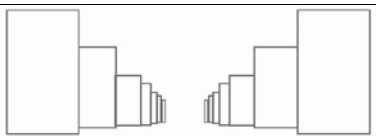
Bu çalışmada ise veriler elde edilirken literatür analiziyle birlikte nitel araştırmada kullanılan veri toplama tekniklerinden olan görsel bilgiler ve fotoğraflardan faydalanılmıştır. Bunlar aracılığıyla da belirlenen örnekler

üzerinden tasarım ilkelerinin analizi gerçekleştirilmiştir. Bu analiz gerçekleştirilirken bazı yapı örneklerinde ilkelerin nasıl okunduğunu gösteren açılımlara yer verilmiş, bazılarında ise yapıda ilgili ilkeyi oluşturan ögelerin bu ilkeyi nasıl sağladığı ifade edilerek detaylı analizler oluşturulmuştur. Özetle, literatürden elde edilen ve temel tasarım ilkelerini yansıtan ilişki dili, belirlenen modern yapı örneklerinde de aranarak analizler sonucu bu yapılardaki tasarım ilkeleri ortaya konulmuştur.

BULGULAR

Çalışma doğrultusunda belirlenen örneklerin her birinde temel tasarım ilkelerinden bir ya da birkaçının mevcut olduğu görülmektedir. Tablo 1-20'de bu örnekler üzerinden temel tasarım ilkelerinin yansımalarına yer verilmiş ve bahsi geçen ilkeler analiz edilmiştir.

Tablo 1. Tekrar ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Salk Institute, Louis Kahn 1965/ABD	a  b 	Tekrar
	c 	Tekrar ilkesini oluşturan örüntü

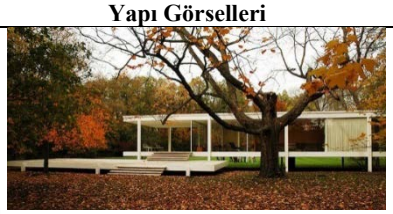
Buna göre Tablo 1'de yer alan ve Louis Kahn tarafından tasarlanan Salk Institute'de yapı bütünü aynı özellikte yinelenen bloklardan oluşmaktadır. Birbirinin aynı olarak yer verilen bu blokların birden fazla kullanılmasıyla oluşturulan ilişki temel tasarım ilkelerinden tekrara referans vermektedir. Bu ilkenin nasıl oluşturulduğunu yansıtan örüntü dili analizi de Tablo 1c'de yer almaktadır.

Tablo 2. Tekrar ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Cathedral of Brasilia Oscar Niemeyer 1960/Brezilya	a  b 	Tekrar

Tekrar ilkesini yansıtan bir diğer örnek olan Cathedral of Brasilia'da (Tablo 2) yapı strüktürünü oluşturan çizgisel elemanların yinelenmesi bu ilkeyi meydana getirmektedir.

Tablo 3. Denge ilkesinin yansıması

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Edith Farnsworth House Ludwig Mies Van Der Rohe 1951/ABD	a  b 	Denge

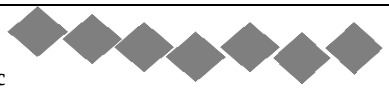
Ludwig Mies Van Der Rohe tarafından tasarlanan Edith Farnsworth House (Tablo 3) herhangi bir baskın unsur barındırmaması ve sürece dâhil edilen elemanların hem biçimsel hem de algısal yönden ifade ettiği dağılım yönleriyle temel tasarım ilkelerinden denge ilkesine karşılık gelebilecek özellikler içermektedir.

Tablo 4. Denge ilkesinin yansıması

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Landhouse Lemke Ludwig Mies Van Der Rohe 1933/Almanya	a  b 	Denge

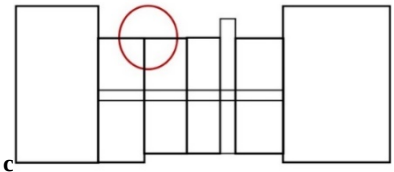
Tablo 4'te yer verilen ve Mies Van Der Rohe'nin bir diğer eseri olan Landhouse Lemke de benzer şekilde, yapıyı meydana getiren unsurlar arasında herhangi bir yönden baskınlık bulunmaması ve ifade ettiği dağılım sebebiyle temel tasarım ilkelerinden dengeye referans vermektedir.

Tablo 5. Ritim ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Kubuswoningen Piet Blom 1984/Hollanda	a  b 	Ritim
	c 	Ritim ilkesini oluşturan örüntü

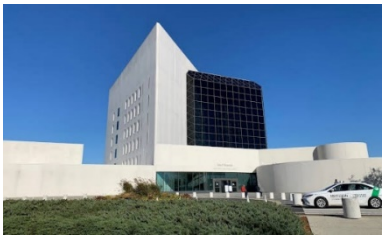
Piet Blom tarafından tasarlanan (Tablo 5) Kubuswoningen yapısı birbirinin aynı olan ve belirli aralıklarla tekrar eden elemanlar sayesinde tasarım ilkelerinden ritmi yansıtmaktadır. Bu ilkeyi oluşturan örüntü dilinin analizi ise Tablo 5c'de yer almaktadır.

Tablo 6. Zıtlık ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Fuji Broadcasting Center Kenzo Tange 1996/Japonya	a  b 	Zıtlık
	c 	Zıtlık ilkesini oluşturan örüntü

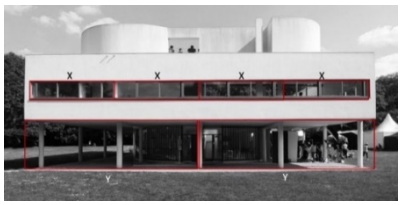
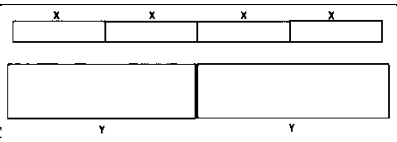
Kenzo Tange tarafından tasarlanan Tablo 6'daki Fuji Broadcasting Center binasında ise şekil yönüyle zıtlık bulunmaktadır. Yapıda tüm elemanlar dikdörtgen formlarda oluşturulmuşken sadece bir elemana dairesel olarak yer verilmesi temel tasarım ilkelerinden zıtlığı, şekil yönüyle zıtlık özelinde yansıtmaktadır. Bu ilkeyi oluşturan örüntü dili analizi ise Tablo 6c'de ifade edilmektedir.

Tablo 7. Zıtlık ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
JFK Presidental Library I.M. Pei 1979/ABD	a  b 	Zıtlık

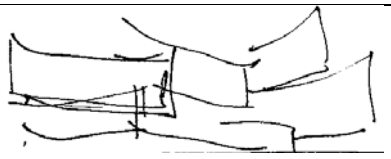
Zıtlık ilkesine referans veren bir diğer örnek ise Tablo 7'deki JFK Presidental Library'dir. Bu örnekte hem yapıyı meydana getiren ögelerden sadece birinin siyah, geriye kalan birimlerin beyaz olması yönüyle renk zıtlığı; hem de silindir, dikdörtgen, üçgen gibi farklı formların kullanılması yönüyle şekil zıtlığı bulunmaktadır.

Tablo 8. Oran ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Villa Savoye Le Corbusier 1931/Fransa	a  b 	Oran
	c 	Oran ilkesini oluşturan örüntü

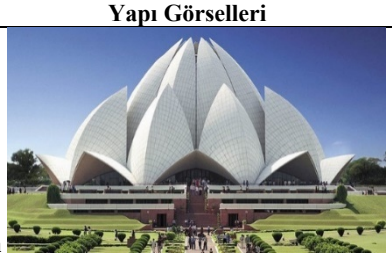
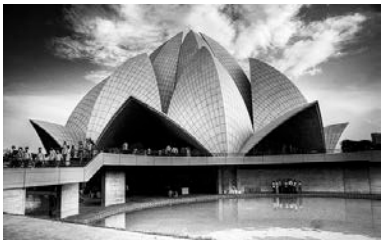
Le Corbusier tarafından tasarlanan Villa Savoye'da yapının genel açıklıkları, pencere gibi donatıları ve yapı sağ-sol kısmını oluşturan elemanların benzer ve ilişkisel boyutlarda olması temel tasarım ilkelerinden orana referans vermektedir. Oran ilkesini sağlayan ilişkinin analizi ise Tablo 8c'deki açılımla ifade edilmektedir.

Tablo 9. Uyum ilkesinin yansıması

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Guggenheim Bilbao Museum Frank Gehry 1997/İspanya	a  b 	Uyum
	c 	Uyum ilkesini oluşturan örüntü

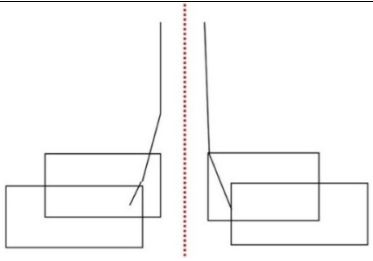
Frank Gehry'nin tasarladığı Guggenheim Bilbao Museum (Tablo 9) ise birden çok ve benzer geometrik etkiye sahip birimlerden meydana gelmesi ve ortaya çıkan bütünün de bu birimlerle ortak özellikler taşıyor olması yönüyle temel tasarım ilkelerinden uyuma referans vermektedir. Birimler ve ortaya çıkan sonuç ürün arasındaki geometrik etkinin benzer olmasıyla oluşan bu ilkenin analizini yansıtan örüntü dili Tablo 9c'de ifade edilmiştir.

Tablo 10. Uyum ilkesinin yansıması

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Lotus Temple Fariborz Sahba 1996/Hindistan	a  b 	Uyum
	c 	Uyum ilkesini oluşturan örüntü

Guggenheim Bilbao Museum ile benzer şekilde Tablo 10'da yer alan Lotus Temple örneğinde de yapıyı meydana getiren ögelerle yapı bütününün benzer geometrik özellikler taşıyor olması temel tasarım ilkelerinden uyuma referans vermektedir. Bu ilkeyi oluşturan örüntü dili ise Tablo 10c'de yer almaktadır.

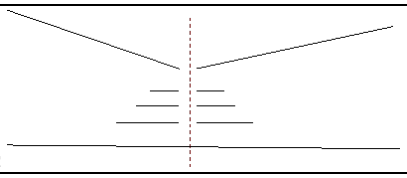
Tablo 11. Simetri ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
St. Mary Cathedral Kenzo Tange 1964/Japonya	a  b 	Uyum
	c 	Simetri ilkesini oluşturan örüntü

Kenzo Tange'in bir diğer eseri olan St. Mary Cathedral (Tablo 11) dikey eksende kesildiğinde yapının iki yönündeki ögelerin benzer ve dengeli bir şekilde dağılım sağlıyor olması temel tasarım ilkelerinden simetriyi

yansıtmaktadır. Birbirine denk elemanların bir eksen etrafında dengeli dağılımıyla oluşturulan bu ilkenin örüntü analizi Tablo 11c'de ifade edilmiştir.

Tablo 12. Simetri ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Seeley Historical Library James Stirling 1968/İngiltere	a 	Simetri
	c 	Simetri ilkesini oluşturan örüntü

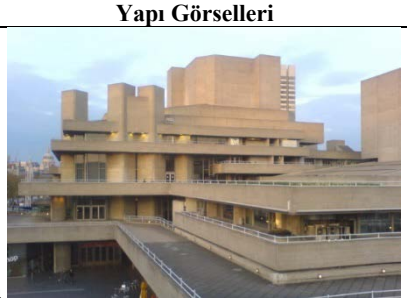
Benzer şekilde James Stirling'in eseri Seeley Historical Library de (Tablo 12) dikey eksende ayrıldığında yapının sağ ve sol kısımları birbirine denk elemanlar barındırmaktadır. Bu durum temel tasarım ilkelerinden simetriyi yansıtmakta ve bu ilkeyi meydana getiren örüntü Tablo 12b'de yer almaktadır. Öte yandan Tablo 1'de yer alan Salk Institute örneğinde yapı, orta noktasından bir eksenle ayrıldığında her iki yönde de benzer özellikte ögeleri barındırması sebebiyle temel tasarım ilkelerinden simetriyi yansıtmaktadır. Benzer şekilde Tablo 10'da yer alan Lotus Temple örneği de merkezi bir eksen çizgisiyle iki parçaya ayrıldığında yapının her iki yönündeki ögeler birbirine özdeş olacağı için tasarım ilkelerinden simetriyi de barındırmaktadır.

Tablo 13. Bütünlük ilkesinin yansıması

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Solomon R. Guggenheim Museum Frank Lloyd Wright 1959/ABD	a  b 	Bütünlük

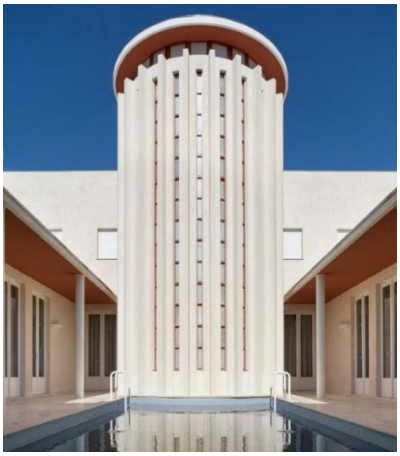
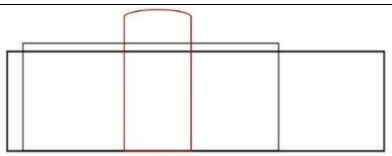
Tablo 13'te yer verilen Frank Lloyd Wright'ın tasarladığı Solomon R. Guggenheim Museum, yapı kabuğundan iç mekânına dek devam eden benzer geometrik şekillerin/unsurların bir araya getirilmesi ve bu sayede yapı bütününün oluşum ve biçim yönlerinden aynı dili paylaşması yönüyle temel tasarım ilkelerinden bütünlüğü yansıtmaktadır.

Tablo 14. Bütünlük ilkesinin yansıması

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Royal National Theatre Denys Lasdun 1976/ABD	a  b 	Bütünlük

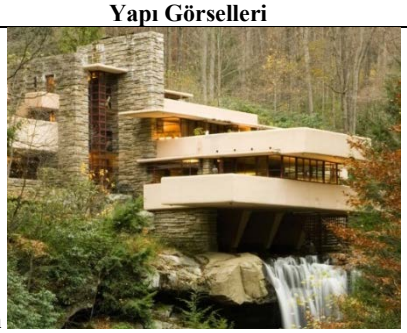
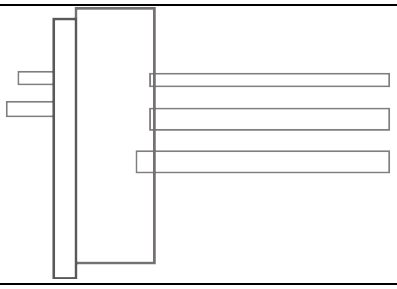
Denys Lasdun tarafından tasarlanan Royal National Theatre örneğinde de (Tablo 14) yapıyı meydana getiren birimlerin genel olarak köşeli hatlara sahip olması ve dolu kütlelerden oluşması, aynı ilişki ve form dilinin iç mekânda da devam etmesi yönüyle temel tasarım ilkelerinden bütünlüğü yansıtmaktadır.

Tablo 15. Egemenlik ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Weizmann House Erich Mendelsohn 1937/İsrail	a  b 	Egemenlik
	c 	Egemenlik ilkesini oluşturan örüntü

Tablo 15'te yer alan, Erich Mendelsohn tarafından tasarlanan Weizmann House'da ise yapı bütününde yer alan unsurlar arasından silindir şeklindeki ögenin hem şekil hem de boyut yönüyle genel kompozisyona göre baskın olması egemenlik ilkesine referans vermektedir. Kompozisyonu oluşturan bir unsurun şekil ve boyut yönüyle farklılaştırılmasıyla oluşan bu ilkenin analizini yansıtan örüntü dili Tablo 15c'de yer almaktadır.

Tablo 16. Egemenlik ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Fallingwater House Frank Lloyd Wright 1939/ABD	**a** 	Egemenlik
	c 	Egemenlik ilkesini oluşturan örüntü

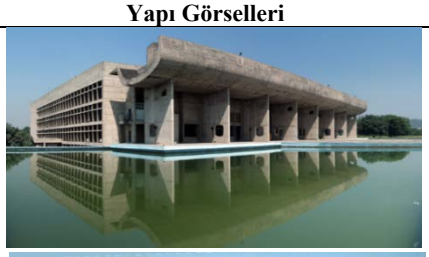
Egemenlik ilkesine referans veren bir diğer örnek ise Frank Llyod Wright tarafından tasarlanan Fallingwater House'dur (Tablo 16). Yapıda elemanların büyük bir çoğunluğu yatay şekilde yönlenmekteyken bir elemanın dikey olarak yerleştirilmesi, aynı zamanda da doku yönüyle diğerlerinden farklılaşması ile bu ilke sağlanmaktadır. Fallingwater House örneğinde egemenlik ilkesini oluşturan örüntü dili ise Tablo 16c'de yer almaktadır. Bununla birlikte Fuji Broadcasting Center (Tablo 6) örneğinde de dairesel formun diğer unsurlara baskın olması temel tasarım ilkelerinden egemenliği ifade etmektedir.

Tablo 17. Vurgu ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Pompidou Centre Renzo Piano-Richard Rogers 1977/Fransa	**a**  **b** 	Vurgu

Renzo Piano-Richard Rogers tarafınca tasarımı yapılan Tablo 17'de yer verilen Pompidou Centre ise yapı cephesinde yer alan ögenin ön plana çıkarılmış olması sebebiyle tasarım ilkelerinden vurguyu yansıtmaktadır. Vurgu ve egemenlik benzer ilkeler gibi görülmekteyken egemenlik ilkesinde bir baskınlık söz konusudur. Burada ise vurguyu sağlayan unsur yapı geneline baskın olmayıp sadece yapı cephesine alınmış olması ve yapının genel kurgusunda faydalanılan geometrik formlardan farklı olması yönüyle bu ilkeyi yansıtmaktadır. Boyutta, şekilde, renkte ve tonda algılanması kolay karşıtlıklar oluşturularak yaratılabilen vurgu ilkesi bu örnekte hem şeklin farklılığıyla hem de öne alınmasıyla sağlanmıştır. Palace of the Assembly (Tablo 18) örneği de benzer şekilde yapı cephesinde farklılaşan biçimsel eleman yönüyle temel tasarım ilkelerinden vurguyu yansıtmaktadır.

Tablo 18. Vurgu ilkesinin analizi

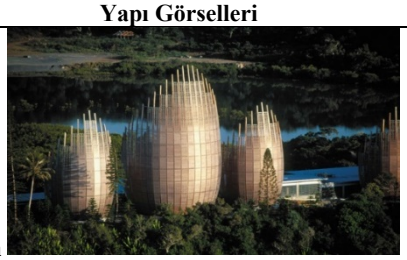
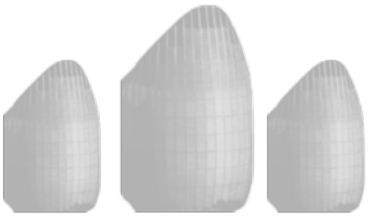
Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Palace of the Assembly LeCorbusier 1963/Hindistan	a  b 	Vurgu

Tablo 19. Koram (Hiyerarşi) ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Sydney Opera House Jorn Utsons 1973/Avustralya	a  b 	Koram (Hiyerarşi)
	c 	Koram (Hiyerarşi) ilkesini oluşturan örüntü

Son olarak Tablo 19'da yer alan Sydney Opera House ve Tablo 20'de yer alan Centre Culturel Jean-Marie Tjibaou yapıları bütünü meydana getiren elemanlar arasındaki kademelenme ile temel tasarım ilkelerinden korama (hiyerarşi) referans vermektedir. Buradaki elemanların bir eksen üzerinde sıralanması koram türlerinden merkezsel koramı yansıtmaktadır. Vurgu derecesine göre sıralanan unsurlarla bir dizi ya da dizilim etkisi oluşturulan bu ilkenin analizini yansıtan örüntü dili de Tablo 19c ve 20c'de ifade edilmiştir.

Tablo 20. Koram (Hiyerarşi) ilkesinin analizi

Yapı Künyesi	Yapı Görselleri	Tasarım İlkesi
Centre Culturel Jean-Marie Tjibaou Renzo Piano 1998/ Yeni Kaledonya	**a**  **b** 	Koram (Hiyerarşi)
	c 	Koram (Hiyerarşi) ilkesini oluşturan örüntü

SONUÇ

Literatürde sıklıkla yer bulan, barındırdığı farklı boyutlar ve soyut uygulamalar sebebiyle öğrencilerin temel tasarım eğitimi ve içeriklerini kavramakta zorlanması problemine tasarım ilkeleri özelinde yaklaşan çalışma, bu soruna çözüm önerebilmek adına temel tasarım ilkelerini modern mimari yapılardaki somut yansımalar üzerinden analiz etmeyi hedeflemiştir. Bu doğrultuda çalışma ile belirlenen örnekler üzerinden tasarım ilkelerinin yansımaları ve bu yansımaların nasıl meydana geldiği açıklamalar ve örüntü ilişkileriyle ortaya konulmuştur. Öğrencilerin kavramakta ve eğitim hayatlarının ilerleyen yıllarına ya da meslek hayatlarına transfer etmekte zorlandığı bu temel bilgilere yönelik uygulamalı örnekler üzerinden görsel analizleriyle birlikte veriler ortaya konulmuştur. Çalışma sonucunda elde edilen veriler temel tasarım ilkelerinin somut uygulamalarını ortaya koymakta, çalışmanın öncelikli amacı olmasa da temel tasarım eğitimi ve bu eğitimi oluşturan içeriğin önemini, meslek hayatında dahi eğitime başlanılan ilk yıllarda öğrenilen bu bilgilerin kullanılacak olması yönüyle vurgulamaktadır. Her ne kadar tasarım eğitiminin ilk yıllarında bu farkındalık kazanılmasa da çalışma ile temel tasarım ilkelerinin somut kullanımları ve karşılıkları, örnek uygulamalar üzerinden görünür kılınmıştır. Bu sayede temel tasarım ilkelerinin yapılara nasıl yansıtıldığı, yansıtılabileceği ya da bu ilkelerin nasıl okunabileceğine yönelik veriler ortaya konulmuştur. İlkeleri meydana getiren ilişki örüntülerin analizi ile de örneklerin öğrenciler için daha açıklayıcı olması hedeflenmiştir. Çalışma hem bu analizler ve örnekleri ortaya koyması yönüyle hem de bunu yaparken öğrencilerde ünlü mimarlar ve eserleri konusunda farkındalık sağlayacak olması sebebiyle önem taşımaktadır. Çalışma bulgularından temellendirilerek gerçekleştirilecek diğer araştırmalar için bu örneklerin çeşitlendirilerek bilgi havuzunun genişletilmesi, aynı zamanda temel tasarım ilkelerinin yansımalarının ilk yıl sonrası tasarım stüdyosu ortamlarında öğrenci projeleri üzerinden okunması ve bu yönde kritikler verilmesinin katkı sağlayacağı düşünülmekte ve önerilmektedir. Öte yandan çalışmanın, ortaya koyduğu verilerle temel tasarım eğitimini oluşturan içeriklerde, izlencelerde yer bulmasının katkı sağlayıcı olacağı düşünülmektedir.

Authors' Contributions

The author contributed 100%.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study doesn't require ethics committee approval.

REFERENCES

Akbulut, D. (2014). Tasarımda temel etkileşim: Temel tasarım eğitiminde bütünleşik ortak zemin. *Sanat ve Tasarım Dergisi, 1*(13), 23-40. https://doi.org/10.18603/std.46561

Araz Ustaömeroğlu, A. (1998). *Mimari analiz için temel tasarım öğe ve ilkelerinin kullanımı ile oluşturulan estetik ağırlıklı bir yöntem araştırması* (Yayın no. 78167) [Yüksek Lisans Tezi, Karadeniz Teknik Üniversitesi].

Artun, A. (2009). Geometrik modernlik: Bauhaus enternasyonali ve Türkiye'de sanat. A. Artun, & E. Aliçavuşoğlu (Eds.), *Bauhaus: Modernleşmenin tasarımı* (s. 183-199). İletişim Yayınları.

Atalayer, F., Üstün, B. (2000). Temel tasarım eğitim ve öğretimi. *Mimarlık Dergisi,* (293), 51-52.

Buran, A. (2021). Nitel araştırmada veri toplama. F. N. Seggie, & Y. Bayyurt (Eds.), *Nitel araştırma: Yöntem, teknik, analiz ve yaklaşımları* (s. 43-58). Anı Yayıncılık.

Ching, F. (2011). *İç mekan tasarımı*. Yem Yayınevi.

Civcir, E. (2015). *Temel tasarım ve tasarım ilkeleri.* Akademisyen Kitabevi.

Denel, B. (1970). *Tasarım üzerine bir deneme.* Yükselen Matbaacılık.

Eroğlu, E., Aksu, A. (2019). Çağdaş mimarlıkta 'tekrar' üzerine bir değerlendirme. *Yedi: Sanat, Tasarım ve Bilim Dergisi*, (22), 91-101. https://doi.org/10.17484/yedi.536102

Ertok Atmaca, A. (2014). *Temel tasarım.* Nobel Akademik Yayıncılık.

Güngör, H. (2005). *Görsel sanatlar ve mimarlık için temel tasar* (Cilt Genişletilmiş 3.baskı). Eren Ofset Matbaası.

Groat, L., & Wang, D. (2013). *Architectural research methods.* Wiley.

Hasırcı, Z., Coşkun Onan, B. (2020). Anasanat atölye seçimleri ve tutumlar bağlamında temel tasarım dersini değerlendirmek. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi, 39*(2), 101-122. https://doi.org/10.7822/omuefd.638705

Hasgül , E., Birer, E. (2019). Temel tasarım eğitiminde Bauhaus Okulunun mekan üretimine etkisi. *SDÜ ART-E Güzel Sanatlar Fakültesi Sanat Dergisi, 12*(23), 26-42. https://doi.org/10.21602/sduarte.538954

Hasol, D. (2010). *Ansiklopedik mimarlık sözlüğü.* YEM Yayınevi.

Kılıç, S., Arabacıoğlu, B. C. (2021). Lisans düzeyinde uzaktan eğitim ile gerçekleştirilen çalıştay: Temel tasarım dersinde örüntüye dayalı parametrik model kullanımı. *Modular Journal, 4*(2), 131-151.

Kuljici, F. (2019). *Modern mimarlık konut yapılarında iç mekân tasarımı ve kompozisyon ögelerinin kullanımının karşılaştırmalı bir okuması* (Yayın no.561527) [Yüksek Lisans Tezi, Mimar Sinan Güzel Sanatlar Üniversitesi].

Lloyd Jones, P. (1969). The failure of basic design. *Leonardo, 2*, 155-160.

Özel, E., Sağsöz, A. (2021). Geleneksel konutların sürdürülebilir tasarım bağlamında temel tasarım ilkeleri ile incelenmesi: Kaleiçi/Antalya örneği. *Uluslararası Sosyal Araştırmalar Dergisi/The Journal of International Social Research, 14*(78), 162-175.

Sarıoğlu Erdoğdu, G. (2016). Temel tasarım eğitimi: Bir ders planı örneği. *Planlama, 26*(1), 7-19. https://doi.org/10.5505/planlama.2016.52714

Sawyer, K. (2017). Teaching creativity in art and design studio classes: A systematic literature review. *Educational Research Review, 22*(2017), 99-113. https://doi.org/10.1016/j.edurev.2017.07.002

Seggie, F. N., Akbulut Yıldırmış, M. (2021). Nitel araştırmaların desenlenmesi. F. N. Seggie, & Y. Bayyurt (Eds.), *Nitel araştırma: Yöntem, teknik, analiz ve yaklaşımları* (s. 23-35). Anı Yayıncılık.

Seggie, F. N., Bayyurt, Y. (2021). Nitel araştırma yöntemi. F. N. Seggie, & Y. Bayyurt (Eds.), *Nitel araştırma: Yöntem, teknik, analiz ve yaklaşımları* (s. 11-23). Anı Yayıncılık.

Seylan, A. (2005). *Temel tasarım.* İletişim Yayınları.

Sezer, Ö. (2019). Bauhaus'un modern mimari kültürünün yayılmasındaki rolü. *Mimarist, 2*, 48-55.

Şahin, S. T. (2022). *1930-1980 yılları arasında üretilen Gaziantep modern mimarlık yapılarının cephe ve kütle özelliklerinin incelenmesi* (Yayın no. 721150) [Yüksek Lisans Tezi, Necmettin Erbakan Üniversitesi].

Görsel Kaynakçası

Görsel 1-3-4-7-8: Ching, F. (2011). *İç mekân tasarımı.* Yem Yayınevi, s. 150, 321, 191, 321, 154.

Görsel 2: Güngör, H. (2005). *Görsel sanatlar ve mimarlık için temel tasar* (Cilt Genişletilmiş 3.baskı). Eren Ofset Matbaası, s. 136.

Görsel 5: Denel, B. (1970). *Tasarım üzerine bir deneme.* Yükselen Matbaacılık, s. 64.

Görsel 6: Civcir, E. (2015). *Temel tasarım ve tasarım ilkeleri.* Akademisyen Kitabevi, s. 318.

Tablo 1a-b: Fiederer, L. (2017, Ağustos 27). *AD classics: Salk Institute / Louis Kahn.* Archdaily. https://www.archdaily.com/61288/ad-classics-salk-institute-louis-kahn/5037df8528ba0d599b000124-ad-classics-salk-institute-louis-kahnphoto?next-project=no (17.02.2023).

Tablo 2a: Dolanbay, İ. (2021, Şubat 21). *Brezilya Katedrali.* Archi101. https://archi101.com/yapilar/brezilya-katedrali/ (17.02.2023).

Tablo 2b: Sveiven, M. (2011, Ocak 5). *AD classics: Cathedral of Brasilia / Oscar Niemeyer.* Archdaily. https://www.archdaily.com/101516/ad-classics-cathedral-of-brasilia-oscar-niemeyer?ad_medium=gallery (17.02.2023).

Tablo 3a-b: Perez, A. (2010, Mayıs 13). *AD classics: The Farnsworth House / Mies van der Rohe.* Archdaily. https://www.archdaily.com/59719/ad-classics-the-farnsworth-house-mies-van derrohe/5037ddac28ba0d599b000077-ad-classics-the-farnsworth-house-mies-van-der-rohe- image?next_project=yes (17.02.2023).

Tablo 4a: Winstanley, T. (2011, Ağustos 8). *AD cassics: Landhaus Lemke / Mies van der Rohe.* Archdaily. https://www.archdaily.com/152464/ad-classics-landhaus-lemke-mies-van-der-rohe/5038101b28ba0d599b000c25-ad-classics-landhaus-lemke-mies-van-der-rohe-image (17.02.2023).

Tablo 4b: GTM. (t.y.). *Lemke House, Berlin.* GTM. https://www.grandtourofmodernism.com/magazine/the-bauhaus/magazine-bauhaus100/lemke-house-berlin/ (25.04.2023).

Tablo 5a-b: Pascucci, D. (2014, Mart 5). *AD classics: Kubuswoningen / Piet Blom.* Archdaily. https://www.archdaily.com/482339/ad-classics-kubuswoningen-piet-blom/53123ad7c07a80208000002e-ad-classics-kubuswoningen-piet-blom-photo (17.02.2023).

Tablo 6 a: Wikipedia. (2022, Ekim 21). *Fuji Broadcasting Center.* Wikipedia. https://en.wikipedia.org/wiki/Fuji_Broadcasting_Center#/media/File:2018_FCG_Headquarters_Building_2.jpg (17.02.2023).

Tablo 6 b: Simpler, M. (t.y.). *Fuji Television Japan Broadcast Center Building, Tokyo, Japan.* Pinterest. https://tr.pinterest.com/pin/552113235539446502/ (17.02.2023).

Tablo 7a: Lemaire, G. (2011, Ağustos 7). *AD classics: JFK Presidential Library / I.M. Pei.* Archdaily. https://www.archdaily.com/153285/ad-classics-jfk-presidential-library-i-m-pei/5107facdb3fc4b272000005a-ad-classics-jfk-presidential-library-i-m-pei-image?next_project=no (17.02.2023).

Tablo 7b: Listenfelt, C. (t.y.). *John F. Kennedy Başkanlık Kütüphanesi ve Müzesi.* Google. https://www.google.com.tr/travel/entity/key/ChYIpLzd_KrBw42RARoJL20vMDRmZ3BsEAQ?ved=0CAAQ5JsGahcKEwigoIvtpsT-AhUAAAAAHQAAAAAQBQ&ts=CAESABoECgIaACoECgAaAA (25.04.2023).

Tablo 8a: Arkitektuel. (2017, Şubat 15). *Villa Savoye.* Arkitektuel. https://www.arkitektuel.com/villa-savoye-2/ (18.02.2023).

Tablo 8b: Regensdorf, L. (2019, Ağustos 23). *With a new dance series, Le Corbusier's Villa Savoye becomes an unlikely stage.* Vogue. https://www.vogue.com/slideshow/le-corbusier-villa-savoye-dance-series (18.02.2023).

Tablo 9a: Pagnotta, B. (2013, Eylül 1). *AD classics: The Guggenheim Museum Bilbao / Gehry Partners.* Archdaily. https://www.archdaily.com/422470/ad-classics-the-guggenheim-museum-bilbao-frank-gehry/521fa097e8e44eb94a000038-ad-classics-the-guggenheim-museum-bilbao-frank-gehry-photo (18.02.2023).

Tablo 9b: Guggenheim Bilbao. *The Guggenheim Museum Bilbao.* Guggenheim Bilbao. https://www.guggenheim-bilbao.eus/en/the-building#gallery-2 (18.02.2023).

Tablo 10a-b: Rizor, J. (2011, Ağustos 21). *AD classics: Lotus Temple / Fariborz Sahba.* Archdaily. https://www.archdaily.com/158522/ad-classics-lotus-temple-fariborz-sahba (18.02.2023).

Tablo 11a-b: Giannotti, A. (2011, Şubat 23). *AD classics: St. Mary Cathedral / Kenzo Tange.* Archdaily. https://www.archdaily.com/114435/ad-classics-st-mary-cathedral-kenzo-tange/5038028928ba0d599b0008d2-ad-classics-st-mary-cathedral-kenzo-tange-photo (18.02.2023).

Tablo 12a: Arkitektüel. (2018, Mart 10). *Seeley Tarih Kütüphanesi.* Arkitektüel. https://www.arkitektuel.com/seeley-tarih-kutuphanesi/ (18.02.2023).

Tablo 13a-b: Arkitektüel. (2007, Eylül 28). *Solomon R. Guggenheim Müzesi.* Arkitektüel. https://www.arkitektuel.com/solomon-r-guggenheim-muzesi/ (17.02.2023).

Tablo 14a-b: Douglass-Jaimes, D. (2015, Ekim 8). *AD classics: Royal National Theatre / Denys Lasdun.* Archdaily. https://www.archdaily.com/772979/ad-classics-royal-national-theatre-denys-lasdun (18.02.2023).

Tablo 15a-b: Shah, D. (2018, Mayıs 31). *Iconic house: Weizmann House in Rehovot, Israel designed by Erich Mendelsohn.* Architecturaldigest. https://www.architecturaldigest.in/content/iconic-house-erich-weizmann-israel/ (18.02.2023).

Tablo 16a: Keller, H. (2017, Temmuz 17). *Flood Causes Damage at Frank Lloyd Wright's Fallingwater.* ADPRO. https://www.architecturaldigest.com/story/flood-causes-damage-at-frank-lloyd-wrights-fallingwater-jacques-lipchitz (18.02.2023).

Tablo 17a-b: Arkitektüel. (2017, Mart 2). *Centre Pompidou*. Arkitektuel. https://www.arkitektuel.com/centre-pompidou/ (18.02.2023).

Tablo 18a: Zykov, A. (t.y.). *Palace of Assembly.* Archello. https://archello.com/project/palace-of-assembly (18.02.2023).

Tablo 18b: Fracalossi, I. (2011, Ağustos 10). *AD classics: Palace of the Assembly / Le Corbusier.* Archdaily. https://www.archdaily.com/155922/ad-classics-ad-classics-palace-of-the-assembly-le-corbusier?ad_medium=gallery (18.02.2023).

Tablo 19a: Newcomb, A. (2016, Nisan 27). *Google Launches Virtual Tour Inside Sydney Opera House.* Abcnews. https://abcnews.go.com/OnCampus/google-launches-virtual-tour-inside-sydney-opera-house/story?id=38703007 (18.02.2023).

Tablo 19b: Miller, R. (2018, Ekim 8). *Sydney Opera House wasn't meant to be an ivory tower, so why not advertise on it?* News. https://www.abc.net.au/news/2018-10-08/opera-house-wasnt-meant-to-be-an-ivory-tower/10352042 (18.02.2023).

Tablo 20a: Yavuz, A. (2019, Eylül 15). *Jean-Marie Tijbaou Kültür Merkezi.* Arkitektüel. https://www.arkitektuel.com/jean-marie-tijbaou-kultur-merkezi/ (18.02.2023).

Tablo 20b: Langdon, D. (2015, Ağustos, 4). *AD classics: Centre Culturel Jean-Marie Tjibaou / Renzo Piano Building Workshop.* Archdaily. https://www.archdaily.com/600641/ad-classics-centre-culturel-jean-marie-tjibaou-renzo-piano (18.02.2023).

Author's Biography

İpek Yıldırım Coruk received her B.Arch (2015), MSc. (2018) and PhD (2022) from Hacettepe University, Department of Interior Architecture & Environmental Design. Currently works as an Assistant Professor at Fenerbahçe University. Major research interests include space design education, basic design education, design thinking and digital storytelling.

International Design and Art Journal

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

Examining the space in science fiction movies between 1902-1968 through the dilemmas and opponents in Edward W. Said's Orientalism Theory

Ekin Can Seyhan[1*], Prof. Dr. Adnan Tepecik[2]

[1]Baskent University, Institute of Social Sciences, PhD Student, Ankara, Turkey.
ekincanseyhan@gmail.com

[2]Baskent University, Faculty of Fine Arts, Design and Architecture, Ankara, Turkey.
atepecik@baskent.edu.tr

*Corresponding Author
**This study is prepared from the an ongoing thesis titled "1977'den 2019'a Star Wars filmlerinde mekân üzerinden Edward W. Said Oryantalizmi analizi" which was accepted as the PhD Thesis of the Department of Interior Architecture and Environmental Design at Başkent University Institute of Social Sciences in 2021.

Received: 27.02.2023
Accepted: 28.04.2023

Citation:
Seyhan, E. C., Tepecik, A. (2023). Examining the space in science fiction movies between 1902-1968 through the dilemmas and opponents in Edward W. Said's Orientalism Theory. *IDA: International Design and Art Journal*, *5*(1), 120-133.

Abstract
This article aims to analyze the concept of Orientalism by considering Edward W. Said's theories on this subject and its critics through science fiction movies. A Trip to the Moon (1902) can be considered as the first movie ever made and also the first science fiction movie. Thus it is an ideal example for the historical reading of science fiction movies. As in previous examples, this study examines the relationship between movies and science fiction to deal with the effect of social events. Therefore, while analyzing the history of science fiction movies, this study aims to examine the transfer of cultural conflict to space. In order to achieve this goal, Edward W. Said's perspective has been selected, a controversial figure whose works are still influential. In this study, the qualitative research method is used and the observation and interpretation of space in science-fiction movies is discussed. Consequently, this study was developed according to these readings, and it has been derived that there is no evidence of "Said's Orientalism concept" in the design of Science Fiction Movies.

Keywords: Orientalism, Edward W. Said, Science fiction, Movie, Design

Extended Abstract

Introduction: The purpose of this article is to explore the concept of Orientalism through the lens of science fiction movies, considering the dilemma of Edward W. Said's main theory and its critics. While movies are considered a form of art combining elements from various fields such as painting, literature, and music, architecture needs to be addressed in general readings, even though it significantly impacts the production of movies, particularly space fiction. Science fiction has its roots in literature, with Mary Shelley's Frankenstein (1818) which is considered as the first work of science fiction. However, the first motion picture with a science fiction theme was Georges Méliès' A Trip to the Moon (1902). The connection between science fiction and movies progressed rapidly, and it is evident that science fiction has played a crucial role in reading historical changes in movies. On the other hand, Orientalism refers to Western cultural researchers studying Eastern cultures. Edward W. Said's concept of Orientalism argues that it is a biased reading of Westerners and has been widely accepted in the cultural studies community. However, scholars have debated whether Said's perspective is accurate, with some arguing that Orientalism can have neutral and positive meanings. This article aims to investigate whether Said's concept can be supported through science fiction in movies, specifically by examining the representation of different classes and cultures in movie settings, as Said inferred about the ideas and prejudices of easterners from western society. The boundaries of east-west representations will also be examined in this view. Overall, this article

highlights the importance of architecture in the space design of fictional movies and its potential as a field of study, as well as the close relationship between science fiction and movies. It also sheds light on the ongoing debate regarding the accuracy of Edward W. Said's concept of Orientalism and aims to explore its applicability in the context of science fiction in movies.

Purpose and scope: The concept of Orientalism developed by Edward W. Said will be examined by considering whether representations of eastern societies by the west are negative. Reading through themes of space is aimed at sci-fi movies. The movies to be discussed in this paper start with the first science fiction movie, *A Trip to the Moon* (1902). Until the 1970s, many western science fiction movies featured space themes. After examining the movie that initiated the space theme featured in *A Trip to the Moon*, movies such as *Metropolis* and *Things to Come* will be examined in relation with the historical developments in science fictions. The latter two movies do not have a space theme but were important in the evolution of science fiction at the time.

Method: This paper aims to explore the observation and interpretation of space in science fiction movies through qualitative research methods. The selected movies will be reviewed using tables depicting the films' entire spatial setup. The paper also aims to explain the dilemma in Orientalism by contrasting Edward W. Said's views on the concept with the observable representations of Orientalism in the movies. The selected movies will be examined in the light of four different categories in order to determine the category they belong to. These categories include; readable representations in line with Said's discourse in the representation of Orientalism, readable representations in contrast to Said's discourse in the representation of Orientalism, no readable representations on Orientalism, and balanced representations of Orientalism. The classification will be based on analyzing the cultural identities of the characters and the places they have used in the movies. The research aims to determine whether Orientalism can be applied to representations of space in science fiction movies. The paper covers the history of filmmaking, starting from primitive movie representation, and evaluates the scale of the space fiction presented by the movie. There will be no limitation on the scale of space fiction as space is a developing element in the history of filmmaking.

Findings and conclusion: This paper aims to explore the evolution of science fiction movies set in space, from the beginning of the medium's history to the 1970s, through the lens of Said's concept of Orientalism. The paper demonstrates that readings can be made in different sociological fields using a spatial setup.

Keywords: Orientalism, Edward W. Said, Science fiction, Movie, Design

INTRODUCTION

Orientalism in the Dilemma of Edward W. Said and Its Critics

Orientalism has a very different meaning outside of Said's concept. "Orientalist" originally referred to people who specialized in Eastern people, their language, customs, traditions, religions, and literature. In addition, artists who depicted the Eastern world were called orientalist painters (Thorton, 1983: 13). Contrary to what is currently perceived, and this discourse provides a positive assessment of understanding. Orientalism was initially defined as academic admiration and interest based on different cultures (Mackenzie, 1995: 11). In 1691, Anthony Wood described Samuel Clark as an Oriental who knew Oriental languages. This is the first time the term was used to describe a person engaged in Oriental languages and literature (Arberry, 1943: 8). Orientalism, which was first used as a word in 1779 and became a concept in 1838, described studies of both the Near and Far East (Bulut, 2004: 4). In 1838, the French language acquired the Far East and East as words, as reported by Bulut (Endress, 1988: 11). In 1939, Aime Cesaire's poetry was referenced in a book of criticism against Orientalism (Clifford, 1988: 1). It is said that when pre-Said debates were shaped by experts in the Marxist environment who observed universalist criticism, Said moved away from materialist criticism and strengthened his studies (Halliday, 1993: 6). Said did not view Orientalism only as a research concept but based it on the ontological and epistemological division between the East and West. The song describes, teaches, inhabits, and manages (Said, 1989: 15, 16) and indicates that Orientalism is not only a concept but also a description of the purpose of description.

Based on a break with Said regarding Orientalism, he wrote that it is impossible to compile pure research and transmission (Clifford, 1988: 3). He also provided examples of Arab representation in the social sciences through popular images. In these examples, the "Arab" speaks of what started as something shameful in 1967 and how it evolved into something threatening after 1973 (Said, 1989: 299). Lewis, on the other hand, contradicts Said. The use of the word "Orientalist" was banned at the 29th International Congress of

Orientalists held in Paris in 1973 (Lewis, 1982: 50). Based on this prohibition, the negative meaning of the word Orientalist was decided. Lewis argues that Orientalists are not people with hostile approaches, as Said conveys (Lewis, 1982: 49). Harari, who can be considered supportive of Said's discourse on culturalism, defends Said with his concept of being Western. Harari stated that Europe entered the 1900s, emphasizing the military, political, economic, and cultural developments from the 15th century. It was at the top of the world economy and dictated how most countries should be governed (Harari, 2014: 278). Harari wrote that the people of the 20th century who live in Europe are "Europeans," regardless of their original identity (Harari, 2014: 279).

Following this argument, it is possible to infer in the following sections that Europe followed the colonial system as it spread throughout the world. The perception of the positive aspects of being European or Western emerged. For example, Belgians who traveled to the Congo aimed to colonize it. By mentioning this, Harari revealed the dilemma of the situation using examples in which he may be correct in his two separate views (Harari, 2014: 327). Edward W. Said's understanding of Orientalism is that the West views the East as different, with certain limitations and prejudices. He argued that Americans dominated the Orient after World War II (Said, 1989: 14). Curtis argued that the most explicit criticism of impartiality is in art, literature, music, theater, and movies. He adds that, in these depictions, even if he admits the existence of negative behaviors of Eastern life at certain points, aesthetics is ignored (Curtis, 2009: 14, 15). Lewis critiques the concept of Orientalism as an exaggeration. He provides a scathing example of the intense interest in past research on Greek mythology that was rejected and opposed by Greek patriots. According to him, elements such as Greek history, language, and literature in American education are not intended to trample the Greeks but to defend the critics of Said. He argues that defending the situation through Greek classicists would be absurd, but through the Orientalists, this situation turned into a fantasy and mystery (Lewis, 1993). While some political scientists and anthropologists oppose Said's concept of Orientalism, they agree that the East is represented as passive and cannot react to depictions. Although these scholars agree with Said, they say that subjects are overrepresented (Parla, 1985: 13). Based on this discourse, even researchers who do not agree with Said are not against his concept of Orientalism but have turned to formal discussions of representation. From this inference, the importance of the concept of Orientalism that Said established could be understood. Orientalism also mentions that the East is an oil resource and an anti-Arab Zionist. In addition, the Eastern man is represented as either a lecherous Arab or a bloodthirsty rascal. Said discusses his representation as a sexually immoral person capable of creative, tricky tricks but is basically a sadistic, perfidious man (Said, 1989: 300).

This study examines the concept of Orientalism as conceived by Edward W. Said, who claimed that the "Western" views are opposite to "Eastern" and other distant societies' views. It also argues that the critiques of Orientalism are cultural readings. In line with this controversial perspective, this study analyzes the content of western movies about other societies in science fiction movies made between 1902 and 1968. This study considers Edward W. Said's perspective as the main point of departure. Accordingly, to Said, the West views itself as a developed race that explores other cultures while making modern and primitive comparisons. The primitive region (except for Western historical representations) is considered as the area where Eastern societies live, and the modern region is where Western people live (e.g., if the same region needs to be compared with the pre-medieval lines, advanced lines, the primitive representation, and the modern reading was done the representation). One approached this discussion by considering Said's perspective and Orientalism and by considering these viewpoints.

METHOD

This study employed a qualitative research methodology to examine the cultural relations between East and West by analyzing the representations of good and bad characters in the movies discussed. Furthermore, in order to reach a precise conclusion, cultural identities of places that integrate with "Good" and "Bad" characters have been studied. Conclude with the cultural identities of the places that integrate this method with the "Good Character"; the cultural identities will be based on places that integrate with the "Bad Character". It is also done in an overall review of the representation concerns of all venues. At the end of the research, the scope of representations in space designs is analyzed.

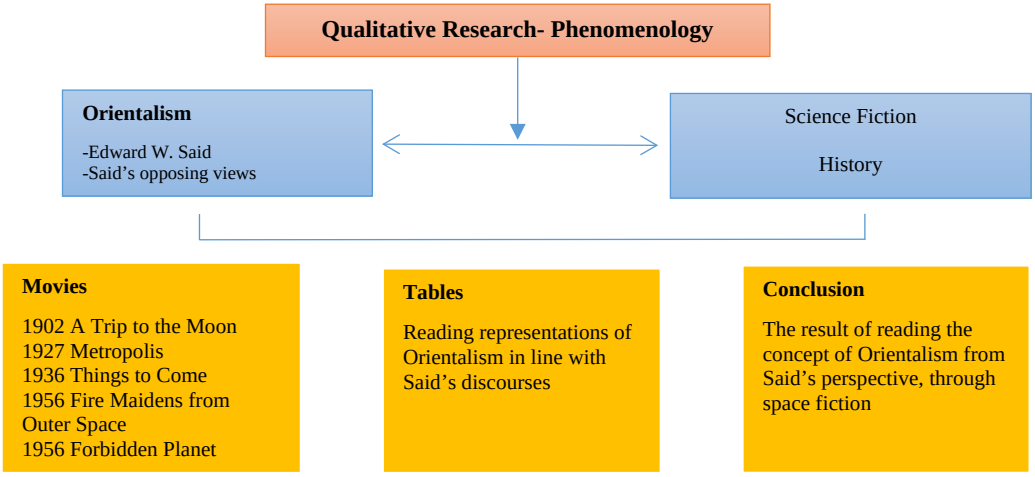


Figure 1. Research procedure of the study

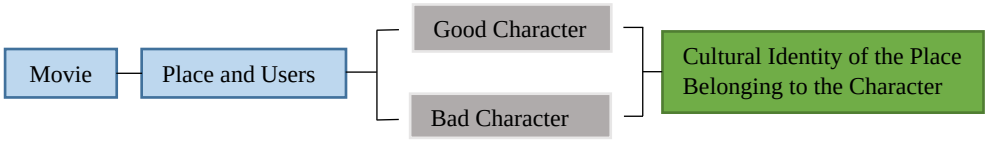


Figure 2. Research method of cultural identity

While discussing the regions of orientalism in the study, Said mentions that the new period of orientalism understanding has passed from Europe to America. He says that a method that will keep the researcher away from the living conditions, a class, a group of beliefs, a social community - consciously or unconsciously - or acting as a mere member of the society on culture has not been yet developed (Said, 1989: 19). In this context while keeping the research focused on America-based movies, the European/Western concept will be maintained.

Purpose of the Study

Based on Said's discourse, this study examines the science fiction theme through movies in space. For this purpose, the set designers' approaches will be examined based on the concept of Orientalism. There are negative perceptions of Orientalism in science fiction movies. The perception changes in these movies are chronologically examined by evaluating the relation between space and the context of opposing character representations.

ORIENTALISM IN SCIENCE FICTION MOVIES

Origin of Science Fiction

No fiction emerges out of nowhere in the literary world, and science fiction is no different. Considering primitive societies' imaginary travels and utopias, it is possible to state that science fiction has existed since prehistoric times (Baudou, 2003: 16). In these writings, Said saw the evolution of Baudou's science-fiction genre. He considered the roles played by the two species in this process important. From these examples, he saw the story of the Greek writer Lukianos of Samsat presented as real, telling writers about one hundred extraordinary events. In the adventures of a ship thrown to the moon due to a storm, Lukianos describes the handling of subjects, such as an interplanetary war, a magic alien community, a well where everything that happens in the world is heard, and the mirror he sees.

Later, he has seen imaginary travels as Charles Garnier's 36-volume collection of "novels about dreams, secret visions, and demons" that he collected from 1787 to 1789. Similar fantasy works include *Gulliver's Travels* and *Robinson Crusoe* and Milord Ceton's trips to seven planets as scientific stops (Baudou, 2003: 17, 18). In these works, although the writers' main purpose was to tell stories of satirical or philosophical genres, Baudou

handled works in which they perceived the possibility of their fantasies and imaginations. With its evolution, the concept of dystopia includes anti-utopia and counter-utopia. Instead of being represented in the fictional world, it depicts the feared world when looking at details (Baudou, 2003: 18, 19).

Fiction in science fiction is defined as imagining the future in line with the limitations and possibilities of science and knowledge. He says that whatever the story of science fiction, even if it produces extreme variations, will always be science at its core, even when it becomes unrecognizable (Meillassoux, 2015: 12). Thus, it differs from fantasy literature. The narrative style, which starts with dream trips and utopias, has evolved. It clings to reality at one point, keeping science at its core. This reality is the point that separates science fiction from fantasy. Therefore, while Mary Shelley pioneered the genre, continuing fiction is moving towards a new formulation different from its original conception. Science fiction can be read as a reflection of the totalitarian aspects of humanity. This reflects what one's species sees as destructive or constitutive of beauty. The main purpose of science fiction is to show the importance of human beings in an effort to be right. Humans are depicted as egocentric. *Close Encounters of the Third Kind*, as an example of science fiction dating back to the 1970s until the research period, is seen as a reading that can break people's arrogance and open new doors that can move them away from human-centrism; on the contrary, it is emphasized in its document (Vassaf, 1999: 187, 188).

Harari, also inferred the importance of science fiction. It is viewed as the most important art form of the 21st century. Only some people read academic articles on machine learning technology or genetics as their backup. Movies like *The Matrix* and TV shows like *Westworld* and *Black Mirror* portray an age shaped by the most important technological, social, and economic developments (Harari, 2018: 226). When reading in this direction, the selfish view of science fiction continues to be discussed at every scale. This view is of great importance to the aim of this research, which examines the representation of science fiction. It can be concluded that the fiction of the movie will not be able to escape culturally superior race fiction. In this context, it can be deduced that Western representation, the default representation of mainstream movies, cannot escape the egocentric view of Eastern representation.

The History of Science Fiction

The foundation of science fiction is commonly accepted as *Frankenstein*. In this novel, while portraying the monster of Frankenstein, the mystery of the monster's creation is left incomplete. It is an important distinction that it comes alive with some electrical interventions and that it gives life to the monster and makes it fiction. This story was produced by seeking a scientific answer, unlike the monsters born mystically before it (Baudou, 2003: 20; Duijsens, 2011: 252; Ersümer, 2013: 10; Scalzi, 2005: 7). Behind this story, a new type of story–science fiction–was created.

A Trip to the Moon (1902)

It is commonly accepted that *A Trip to the Moon* is the first motion picture in the history of filmmaking. Although there was footage of a short moving train scene and boxing cats before, it is accepted by scholars as the first movie to be considered fictional and kinetic movie (Leigh, 2016: 12, 13; Schneider, 2020: 20). In this sense, *A Trip to the Moon* is not only the first example of a science fiction movie, but also one in which the importance of science fiction in the birth of a movie is seen.

Figure 3. Méliès, G. (Director). (1902). *A trip to the moon* [Movie]. Star Film Company.
Meeting area of scientists; production section of the spacecraft; launch of the vehicle to go to the moon.

The short movie has very few scenes. In the opening scene, a space set up with scientists, which was used as a board meeting area, is observed. Here, scientists are presented as somewhat comical and confusing. The spaces they occupy can be perceived as Western libraries. In the second scene, a rocket is produced. The spaces

here have a more serious interpretation of the period. The glass ceiling and details of the glass space are visible against the background of the rocket production room. The glass ceiling and the details of the place are similar to a building called the Crystal Palace, which was considered the pioneer of modernism. The movie begins with the moon scenes depicting the natives living on the moon, and their homes are represented as primitive. In this sense, the astronaut and the representation of space are represented in the movie in a way that is both hostile and primitive and has similar lines to the continent of Africa. The indigenous representations in this movie may be considered harmful, with an aggressive attitude toward humanity. With this interpretation, *A Trip to the Moon*, the first science fiction movie, has an Orientalist perspective, following Said.

Metropolis (1927)

Metropolis is not only an example of an early science fiction movie, but it also has an important place in the movie history. Before the emergence of American and French films, movies made in Germany were popular, and Metropolis is one of the most famous examples (Green, 2016: 18). It fits in with the devastating impact of the movie Metropolis on individuals in New York's large and impressive modern city (Çoker, 2016: 31).

Figure 4. Lang, F. (Director). (1927). *Metropolis* [Movie]. Babelsber Studios; Paramount Pictures Universum Film AG. Representation of the city of the upper-class; representation of the city where the lower-class lives.

In a commentary on the general architecture of the movie, it is said that it was designed as a space city far beyond its time and inspired by Pieter Brueghel's painting the *Tower of Babel* (1563) (Coker, 2016: 31). The high architectural structures under which humans disappear are repeated in the lower-class layer. However, the representations of buildings in this layer are far from the magnificence and resplendence of the upper one. The structures in the lower layer are soulless and monotonous. A modern and advanced representation of the upper layer in the representations of the lower- and upper-class structures is shown in Figure 4. The same developments and differences were observed in the interior through modern furniture and bedroom lighting. Many modern representational readings can be obtained.

Figure 5. Lang, F. (Director). (1927). *Metropolis* [Movie]. Babelsber Studios; Paramount Pictures Universum Film AG. Upper class interior representations; Lower class interior representation.

In the lower layer, primitive structures combined with spiritual symbols belonging to the working class are seen in the interiors. In contrast to the upper floor, the mudbrick walls and carved openings exhibit backwardness regarding construction technology. On the other hand, the doctor's office is represented as upper-class and modern. In addition to the lower and upper class two-layer structure of the movie, there is a representation of the villain creator in the role of the doctor.

In these scenes, there is a reference to *Frankenstein*, which is considered to have inspired *Metropolis*. This has been reflected in the moment of the robot's revival. The scene in which the industry sees its true face. This place becomes a reflection of the representation, similar to the representations of temples built for ancient gods. Representations reminiscent of Egyptian sphinxes, in which the upper classes had lived, are shown.

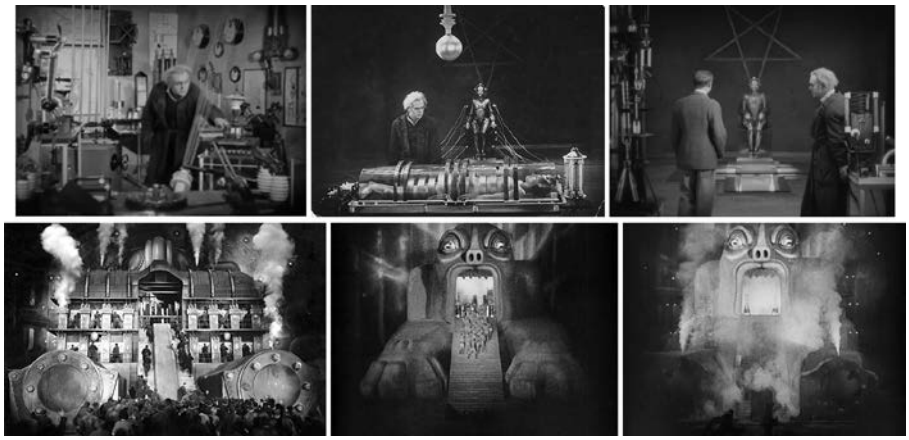


Figure 6. Lang, F. (Director). (1927). *Metropolis* [Movie]. Babelsber Studios; Paramount Pictures Universum Film AG. Representation of machinery; laboratory of the scientist.

The good and bad characters of the movie are not clear at one point. Although it initially represents the upper-class characters as bad, the person who makes peace with the lower-class and factory boss is the son of the upper-class city boss. Even though the lower-class characters are considered good, when they revolt, they are depicted as an angry group that harms the upper class, themselves, and their children.

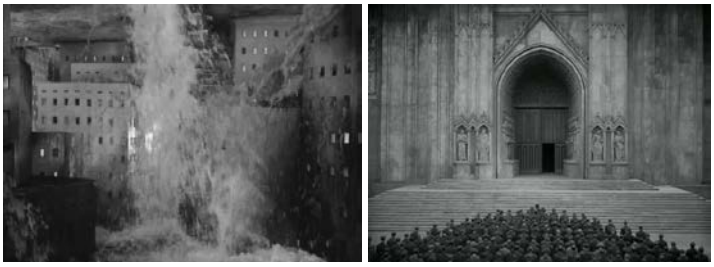


Figure 7. Lang, F. (Director). (1927). *Metropolis* [Movie]. Babelsber Studios; Paramount Pictures Universum Film AG. Closing scene; characteristics of the machines and layering of both the top and bottom layers.

Although he is not regarded as good or bad, the doctor's character created the robot that caused the chaos in the movie. In the end, the villain is the robot. Although the enslavement system is likened to ancient Egyptian traditions, it is seen that the negative representation based on the doctor is not an Orientalist view but a modern and Western representation. While the representation of modern and developed Western society is negative, backward society has a possibility that is true while remaining in its essence. In this sense, it can be regarded as a counter example of Said's Orientalism.

Things to Come (1936)

In his 2011 book *Sapiens: A Brief History of Humankind*, Harari wrote "in 1500, humans were limited to the surface of the earth, they could build towers or climb mountains, but the sky was reserved for birds, angels and gods" (Harari, 2014: 248). The relationship between this primitive society and the sky was observed in the postwar society of *Things to Come* in 1936. The sky is seen as a hard-to-reach fiction in a world that is in decline after the war.

Figure 8. Menzies, W. C. (Director). (1936). *Things to Come* [Movie]. London Film Productions.
Upper band Everytown pre-war representation; lower band Everytown post-war representation.

In addition, a developed society is represented by sky people. Flying and being in the sky is inaccessible to them. It can be seen that the representation of space in these people, unlike primitive people, does not tend to go up from the surface, but to the bottom of the surface and underground.

Figure 9. Menzies, W. C. (Director). (1936). *Things to Come* [Movie]. London Film Productions.
Everytown living areas; Sky people representation.

The sky overlooked many places in Everytown, where the movie was the set, with the first step of its enterance of a man. While discovering the region, the readings of the spatial representations show that productions in the last period are aging and have been used by primitive living things. Although these people who had previously produced furniture, lost their order and their use of the space has also changed. Products such as tables and chairs, made by people of the same period, are evaluated in a way that a primitive society can evaluate. In the following scenes, the development of the sky life is seen. More of the regular life that Everytown people could not establish on Earth is seen even in the planes of the sky people.

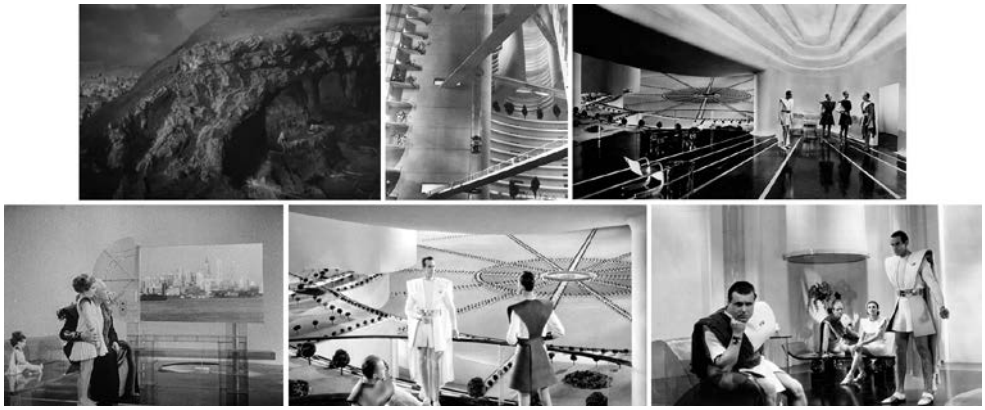


Figure 10. Menzies, W. C. (Director). (1936). *Things to Come* [Movie]. London Film Productions.
Everytown development after sky people; Developed society indoor representations.

After the sky, Everytown's habitat began to develop. Contrary to Metropolis, which was an important representation before it, this movie develops toward the underground, not toward the sky. Everytown develops improved products to replace rough furnishings. Transparent furnishing representations begin to form more frequently than usual. Seating units and glass tables, which have never been seen before, are in harmony with details such as railings and elevators throughout the city.

The most important change in the representation of Everytown is its development, but the organization reaches a unity. After passing through the primitive period, each product is placed randomly. The development of the sky in the movie *Metropolis* is a sample of representation to the contrary of undeveloped and lower class. Although the representation of every good and bad character in the movie shows primitive or modern changes, there is no Orientalist element in the Western representation in either period.

Fire Maidens from Outer Space (1956)

The main subject of the movie's script: Taking the journey called friendly scientific exploration, this movie takes an important step in the theme of space exploration. The scientific discovery that occurs here is an important emphasis on discovering other cultures. This emphasis can be considered a positive supporter of the dilemma of Orientalism. The scene of the researchers trying to understand the newly discovered space in the movie supports this thesis. While trying to understand their location in New Atlantis, they try to decide through the methods of reading space and architecture. While talking about the period to which this architecture should belong, the native Atlanteans say that they burned and belonged to Atlantis.

Figure 11. Movie Roth, C. (Director). (1956). *Fire Maidens of Outer Space* [Movie]. Great Britan's Criterion Films. World space representations in the space capsule.

The movie opens with a dialogue between a group of researchers in the spacecraft and a team of researchers in the world with whom they are in contact. Here, representations of the spaces are in unity with each other, as similar designs can be observed.

Figure 12. Movie Roth, C. (Director). (1956). *Fire Maidens of Outer Space* [Movie]. Great Britan's Criterion Films. Temple ghost and staircase; New Atlantis interior representations.

The design of the New Atlantis stands out for its much more primitive representation than that of Earth. Building interior materials, primitive stone, and other materials such as torches are seen as lighting elements. As mentioned in the movie dialogue, the representation of New Atlantis is similar to representations of ancient cultures of the world. In addition to similarities in spatial setups, there are also very different representations

of the world. Researchers who wake up first in their rooms see technologies with which they are unfamiliar, such as the fact that the rooms have no doors and that walls are not transparent. Based on this, modern and contemporary fiction exists in the spatial representations of this period. It was observed in the introduction that the main element in the movie is a positive interpretation of Orientalism. In addition, although there were primitive periods in this movie, these representations were made in the West. The Greek examples provided by Lewis in his discourse can also be interpreted as different supportive readings.

Forbidden Planet (1956)

This movie covers a period when humans explored the entire solar system in 2200 AD. It deals with the adventure of a group of scientists who set out to rescue captives on planet Alt air 4.

Figure 13. Wilcox, F. M. (Director). (1956). *Forbidden Planet* [Movie]. Metro-Goldwyn-Mayer. Interior representations.

The most outstanding aspect of the spacecraft that was researched is that it was designed with different machine aesthetics. The entire control mechanism is placed on a sphere in the middle. In previous examples, it was observed that the vehicle control system, which was collected in a single center, started to look for different purposes. In contrast to the vehicles used in previous movies, more functional setups were considered apart from interior aesthetics. The representations are vehicles that reach the location where the user travels only through the stage. Forbidden Planet interpreted these vehicles as not only cars but accommodation units during long journeys and showed how human needs were met.

Figure 14. Wilcox, F. M. (Director). (1956). *Forbidden Planet* [Movie]. Metro-Goldwyn-Mayer. Modern representation of alien house; interior representation; room of Morbius.

A robot picks up researchers from their vehicle and takes them to the survivor named Morbius. When the robot takes them away, researchers encounter the representation of a modern house and shelter. This is seen as a representation of a house, considered in detail in terms of design beyond an ordinary accommodation unit. Materials in the house are made of old wood. Unlike other materials, they have modern representations of industrial production. Seats belong to the modern installations of the period. In Morbius' inaccessible room, there is a modern house at the first entrance. However, it is a windowless room. The scene transitions to a different area with a door in the next scene. This pass represents a cave that provides clues to the Kreel people at the planet's base. The Krell race is one million years ahead of humans and is mixed with the land. The design elements change the spaces belonging to this race.

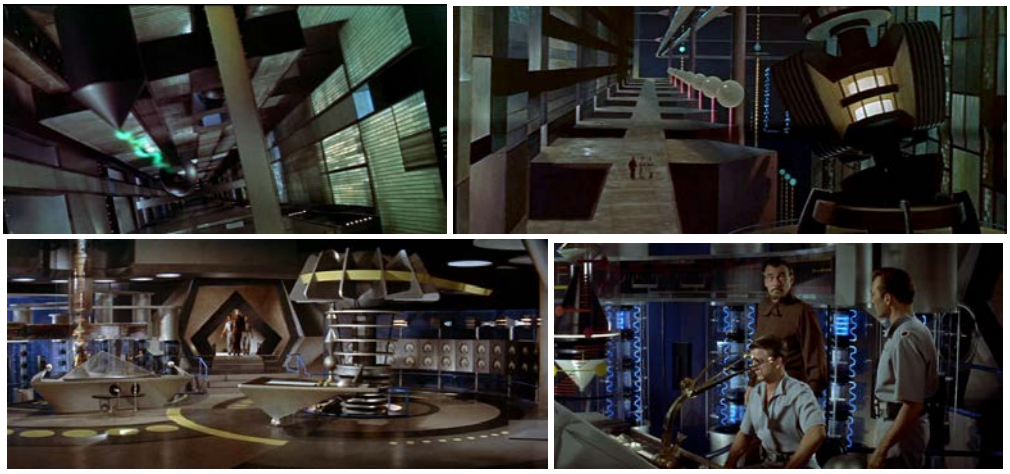


Figure 15. Wilcox, F. M. (Director). (1956). *Forbidden Planet* [Movie]. Metro-Goldwyn-Mayer.
Interior representations. Spatial representations of the Krell race on the alien planet, interior representations of the Kreel race on the alien planet.

At the same time, these spaces are machines themselves. In the film Forbidden Planet, the location of the Kreel race is 60 square meters in total and is located deep underground. This is where the architecture differences between races start to become apparent, particularly in terms of size. The physical differences in size between the Krell races are represented in their architecture. For instance, the computer in the laboratory, which Morbius wears on his head, remains large in scale. The movie incorporates different physical features and ergonomic details to represent the different races. Morbius even mentions that his obsession with designing the perfect fit for the Kreel race led to these ergonomic changes. Therefore, the film portrays the first examples of ergonomic changes based on race in science fiction movies. Until this scene, space has always been rendered humanely to represent the primitive and the technological. The Kreel race of *Forbidden Planet* creates a new representation through its search for different ergonomics. This representation cannot be considered a cultural reflection of Orientalism. However, house representation is Western. A positive point can be said to be in Lewis's view.

Barbarella (1968)

In the movie Barbarella, social issues such as war are portrayed as being far behind in a futuristic society. The state no longer requires police or soldiers due to their advanced development. However, the issue of weapon production is still present, and Barbarella is assigned to investigate it. She is the main character of the movie, portrayed as an erotic female figure.

Figure 16. Vadim, R. (Director). (1968). *Barbarella* [Movie]. Marianne Production**.**
Space ship interior representation.

The movie begins with a shuttle in which Barbarella is traveling. At first glance, the interior of this shuttle contains many objects that have been added for aesthetic purposes. On the other hand, sculptures and paintings on the ship serve as functional features. It is seen that the sculpture and also the frames of the walls are computers. In these representations, no cultural reading can be made of the space.

After this scene, the planets and vehicle representation are left out, and the housing city becomes the representative. She travels searching for a citizen of the world republic named Doctor Durand Durand. The community settlement on the planet is a city called SoGo. This living space was built on a living lake consisting of many layers. It produces energy using the evil. Thus, the city receives electrical energy. There is a labyrinth at the entrance of the lake. Subsequently, different representations are observed in SoGo's class spaces.

Figure 17. Vadim, R. (Director). (1968). *Barbarella* [Movie]. Marianne Production**.**
Representation of *Barbarella's* SoGos and their relation to the labyrinth; representation of the interior and city *Barbarella's* SoGos.

Sogo has an entrance similar to the Minotaur and Labyrinth representations, among the oldest representations in mythology. The labyrinth theme is integrated with the story of the Minotaur in the oldest representation of Greek civilization. In this sense, the use of the labyrinth in the backward part of Greek society of the modern people of Sogo can be read as a situation against Orientalism. The representation of the Sogo people after the maze is much more modern. These modern representations include transparent Western modern architecture, Shishas, and other elements. It features representations of gigantic spaces where it merges with representations integrated with Eastern cultures. This can be interpreted as anti-Orientalism, with a common approach to both sides over these combinations. Representations of *Barbarella* are virtually unseen, except in the maze, where she uses fragments from ancient customary societies. Contrastingly, efforts to create different spaces within their identities can be read. In this sense, one can see the influence of *Star Trek*. In addition to this, it can be read that these new spatial identities and anti-Orientalism representations are included.

FINDINGS AND DISCUSSION

Orientalism and Design Relations Findings in the History of Science Fiction Movies

In *A Trip to the Moon,* there are offensive representations of moon people and Africa. This is represented by showing integrity with the locals in the region. In this sense, it is possible to create a supportive reading of a backward society integrated with the primitive tribe and the backwardness of non-Western societies in Said's theory.

In *Metropolis,* the underground people who remain in the background may represent societies exploited by Westerners. In this sense, while Western representation is shown as colonialist, the backward society is glorified. In this sense, Said's perspective can be interpreted as the opposite representation.

In *Things to Come,* there is no representation that can be read as Eastern. Since the representations are completely Western-oriented, it is not possible to read them through Said and his opponents.

In *Fire Maidens from Outer Space,* there are too many Greek mythological representations in the architecture of the planet where the main characters encounter evil. While this contradicts Said, it supports Lewis's strong objections.

In *Forbidden Planet,* no matter how the representation of the Western house is, it is developed by the user. Unlike cultural transmission in representations of alien races, there are different ergonomics. The aim of the design application is to represent it without identity. It is not possible to interpret the movie through Said and his opponents. In addition, detailed designs were presented with representations of different races for the first time.

Regarding *Barbarella*, it has been read that he applied a balanced representation by using both Western and Eastern representations in the designs.

Table 1. Results of Orientalism relationship in movies

Movie	Representation of orientalism, legible representations in line with Said's discourses	In the representation of orientalism, readable representations contrary to Said's discourses	Lack of readable representations on orientalism	Balanced representations on orientalism
A Trip to the Moon	X			
Metropolis		X		
Things to Come			X	
Fire Maidens from Outer Space		X		
Forbidden Planet			X	
Barbarella				X
Total:	**1**	**2**	**2**	**1**

The relationship between the history of science fiction and Orientalism is examined in the above table. At the same time, two items support Said's statements, and four support Lewis's discourse that contradicts Said. In addition, it was determined that, in two items, cultural elements could not be interpreted in the spatial setup. In the other two items, they were used in a balanced manner. According to these examinations of the scenes, only one readable representation of Orientalism was found in line with Said's discourse, while two were found in the representation of Orientalism's contrary perspective of Said's discourse.

CONCLUSION

Expanding on the notion of an anti-Said perspective in analyzing Orientalism through spatial design, it is important to acknowledge that this stance is more comprehensive than scholarly discourse. The development of science fiction films serves as a compelling case study on how popular culture can mirror and challenge dominant narratives pertaining to the East and the West. Through an exploration of film readings, it becomes evident that design fiction, beyond Orientalism, has led to considerable advancements in set design over time, creating elaborate and imaginative worlds that are not necessarily tied to any specific cultural tradition. Instead, these film sets often draw on various influences, amalgamating elements from different cultures in imaginative and unforeseen ways. The dynamic landscape of science fiction movies presents an intriguing lens through which to investigate how design can reinforce and contest Orientalist discourses. By conducting a more detailed analysis of these films, we can gain a more profound comprehension of design's role in shaping our perceptions of the world and its potential to serve as a tool for subversion and resistance. While previous research has predominantly concentrated on design-focused inquiries, it has become clear that historical research can be carried out using a design-oriented lens without solely remaining within the realm of design. It has been ascertained that an analysis aligned with Said's perspective cannot be formed based solely on the spaces depicted in the films examined throughout this study. This discovery has only emerged through an evaluation of the spaces themselves, which represent a single aspect of the films. Based on this analysis of spaces, other elements, such as characters and their roles, can be scrutinized and analyzed through alternative perspectives.

Authors' Contributions

First Author is PhD student and Second Author is Advisor of thesis. The 1st author contributed %55 and the second author contributed %45.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study is not requires to ethics committee approval.

REFERENCES

Arberry, A. J. (1943). *British orientalists*. William Collins.

Baudou, J. (2003). *La science-fiction*. Presses Universitaries de France.

Bulut, Y. (2004). *Oryantalizmin kısa tarihi*. Küre Yayınları.

Curtis, M. (2009). *Orientalism and Islam*. Cambridge Universtiy.

Clifford, J. (1988). *The predicamen of culture*. Harvard University Press.

Çoker, N. B. (2016). *Bilim kurgu sineması 1900-1970*. Seyyah Kitap.

Green, D. (2016). *The movie book: Big ideas simply explained*. DK Publising.

Duijsens, F., & Borden, D. (2011). *Film*. NTV Başvuru Kitapları.

Endress, G. (1988). *An introductiın to Islam*. Edinburgh University Press.

Ersümer, O. (2013). *Bilimkurgu sinemasında Cyberpunk*. Altıkırkbeş Yayınları.

Harari, Y. N. (2014). *Sapiens: A brief history of humankind*. Vintage Publishing.

Harari, Y. N. (2018). *21 lessons for the 21st century*. Random House.

Halliday, F. (1993). Oriantalism and critisiers. *British Journal of Middle Eastern Studies, 20*(2), 145-163.

Lewis, B. (1982). *The question of orientalism*. New York Rewiev Books.

Lewis, B. (1993). *Islam and the West*. Oxford University.

Thornton, L. (1983). *The orientalists: painter- travelers 1829-1908*. Art Creation Realisation.

Meillassoux, Q. (2015). *Science fiction and extro-science fiction*. Univocal Publishing.

Parla, J. (2018). *Efendlik, şarkiyatçılık, kölelik*. İletişim Yayınları.

Said, E. (1979). *Orientalism*. Vintage Books Edition.

Said, E. (1989). *Oryantalizm: Sömürgeciliğin keşif kolu*. Pınar Yayınları.

Scalzi, J. (2005). *The rough guide to sci-fi movies*. Penguin Publishing.

Vassaf, G. (2009). *Cehenneme övgü: Gündelik hayatta totalitarizm*. İletişim Yayınları.

Figure References

Figure 3: Melies, G. (Director). (1902). *A trip to the moon* [Movie]. Star Film Company.

Figure 4-7: Lang, F. (Director). (1927). *Metropolis* [Movie]. Babelsber Studios; Paramount Pictures, Universum Film AG.

Figure 8-10: Menzies, W. C. (Director). (1936). *Things to Come* [Movie]. London Film Productions.

Figure 11-12: Roth, C. (Director). (1956). *Fire Maidens of Outer Space* [Movie]. Great Britan's Criterion Films.

Figure 13-15: Wilcox, F. M. (Director). (1956). *Forbidden Planet* [Movie]. Metro-Goldwyn-Mayer.

Figure 16-17: Vadim, R. (Director). (1968). *Barbarella* [Movie]. Marianne Production**.**

Authors' Biographies

Ekin Can Seyhan continues his education in Başkent University Interior Architecture and Environmental Design PhD Program.

Adnan Tepecik continues his duty as the dean of Baskent University, Faculty of Fine Arts, Design and Architecture.

International Design and Art Journal

IDA: International Design and Art Journal
ISSN: 2687-5373
Volume: 5, Issue: 1 / 2023

Research Article

The mapping of photographer's studio in Izmir 1900-1950: From Frank Street to Kemeraltı

Asst. Prof. Dr. Sevinç Alkan Korkmaz[1*], Asst. Prof. Dr. Nilay Özcan Uslu [2], Deniz Coşkun Akdoğan[3]

[1]Toros University, Faculty of Fine Arts, Design and Architecture, Interior Architecture Department, Mersin, Turkey.
sevinc.alkan@toros.edu.tr

[2]İzmir Kavram Vocational School, Department of Design, Interior Design Program, İzmir, Turkey.
nilay.ozcanuslu@kavram.edu.tr

[3]METU, Graduate School of Social Sciences, PhD Student, Ankara, Turkey
sdenizcoskun@gmail.com

*Corresponding Author

Received: 25.11.2022
Accepted: 30.04.2023

Citation:
Alkan Korkmaz, S., Özcan Uslu, N., Coşkun Akdoğan, D. (2023). The mapping of photographer's studio in Izmir 1900-1950: From Frank Street to Kemeraltı. *IDA: International Design and Art Journal, 5*(1), 134-146.

Abstract
The purpose of this study is to discuss the link between the photographer and the city based on a close reading of the historical dislocation and the transformation of urban space. Therefore, it is possible to say that both in the past and today, migrations are changing urban spaces by influencing the social, cultural, and economic structures in cities. In this context, the study focuses on the mappings produced in photographer's studios in Izmir between 1900 and 1950. Mapping is a creative method that accommodates various representation possibilities and that consequently propounds unpredictable relationships. In this framework, in order to show both the experiences of the exile and their reflection in urban spaces, the network of photographers in the city have been visually analyzed. Before 1922, 62 photographers were active in İzmir. Around half of them were from Levantine or Armenian origin who settled in Izmir, and their studios were situated on the Frank and the Rose Streets of the city. After 1922, Turkish-Muslim photographers replaced them. Most of these Turkish-Muslim immigrant photographers preferred to open their studios around Kemeraltı as a significant commercial zone. Habits of urban space use and the Kemeraltı region were reshaped and defined together with the existence of these immigrants.

Keywords: Photographer's studios, İzmir, Mapping, Exile, Urban culture

Extended Abstract

Introduction: In consideration of the density of photography studios in Anatolia at the end of the 19th century and the beginning of the 20th century, Izmir province comes second, following Istanbul. It is not known who established the first local photography studio in Izmir. However, during this period the active local photography studios were operated by Levantine, Greek, and Armenian photographers, outnumbered by Levantine photographers. The studios are concentrated around the Frank Quarter and Gül Street, where non-Muslims reside, just as in Pera, Istanbul (Atay, 1997; Özendes, 1995; Daşçı, 2012; Sezer, 2018). In 1922, photography studios in the city were damaged along with the Frank Quarter, and most of them were destroyed together with their archives. The extent of the disaster, which was recorded in history as the Great Fire of Smyrna 1922, was revealed only at the end of the fire. Such a disaster has left behind a devastated urban fabric and, accordingly, huge problems regarding fundamental needs such as housing, nutrition, health, and education. In addition to these fundamental issues with such human extents, considering the disruption of the trade cycle, which is the livelihood of the city, it is seen that the city experienced a multifaceted collapse in spatial, cultural, and economic contexts. The fire damaged both the appearance and the people of the city. This period of change continued with the mandatory exchange of population known as Mübadele (Compulsory Population Exchange). There is no data on the newly established studios or those that continued to operate between 1922 and 1924. It can be said that the photography studios, along with their equipment and archives, were damaged, even destroyed due to the fire and that the above mentioned non-Muslim local photographers had to leave the city in conjunction with the compulsory population exchange. The city that immigrant photographers see when they arrived to Izmir, was trying to dress its wounds in all areas. Not only the changing demographic structure but also the idle fire zone at the heart of the city impelled daily life practices and locations to change. Since the 17th century, the use of urban space, especially focusing on trade and entertainment, has been radically

interrupted. At this point, immigrant photographers were positioned around Kemeraltı as a significant commercial zone. Habits of urban space use and the Kemeraltı region were reshaped and defined together with the new immigrants.

Purpose and scope: There are few studies focusing on photographers and their studios operating in Izmir before 1922. The first study on this subject was published by Fabio Tito and forum members affiliated with the Levantine Heritage Foundation in 2010. According to this research, it was determined that "62 photography studios" belonging to Levantines were operated in Izmir between 1860 and 1922. The complete list of these studios is provided with the source information (Tito, 2010). In the book of Engin Özendes titled "Photography in the Ottoman Empire," published in 1995, 47 photographers were listed as actively operating in Izmir between 1839-1919. Along with local photographers, also the visiting photographers from Istanbul who came for short-term activities, took place in this list. In her 2012 study, Semra Daşçı listed 14 photography studios and regarding information that are mentioned in four trade yearbooks issued regularly between 1893-1896. Thus these three significant sources which incorporate the data on photographers and photography studios, have been the primary sources of this study. The data were arranged in parallel with the literature search, and a single list was obtained. Based on this list, a study was conducted focusing on the address information of the photography studios or data on their locations within the city. In the scope of the paper, the city's dramatic change is read through the relations of the local photography studios with the city and their selection of places in the city.

Method: James Corner (1999) defined that the mapping is a creative method which accommodates various representation possibilities and thereby propounds the unexpected relationships. He classifies the creative mapping processes and discusses the four basic techniques as drift, layering, game-board and rhizome. The rhizome technique defined by Corner is the latest technique, which was initially improved by Gilles Deleuze and Felix Guattari. This technique represents an environment, which propounds the plural spatial readings, spatial usages and their effects along with multivariate and complex combinations. Through this mapping process in point, which is also a quantitative method, it is possible to re-read the compiled data by visualization. In this study, the relation of urban space and its usage with multiple variables is presented on the basis of studio locations of the 1900-1950 period.

Findings and conclusion: As a result, the photography studios, mostly belonging to European immigrants that appeared on Frank Street, left their place to new immigrants during the fire and the subsequent migration process. This *new immigrants* were mostly Turkish-Muslim photographers who came to Anatolia from Europe during the compulsory exchange period. Thus the existing photography studios' owners have been changed by passing the control of one ethnic group to another one. This should be addressed both as a result of the population exchange process and the great fire. It seems that the consequences of the exchange process associated within the new formation of the city, would be different if the fire in 1922 did not occur.

Keywords: Photographer's studios, Izmir, Mapping, Exile, Urban culture

INTRODUCTION

The formation of identity is a historical phenomenon associated with physical space. This is not a one-sided relationship, it is a mutual interaction. Space is shaped by activities and shapes them. At this point, studies focusing on groups outside the mainstream allow re-readings on spatial analysis. Within the scope of the study, the change in the spatial preferences of photographers as a craftsman group in the city is discussed together with historical breaks. Thus, a re-reading of the change in the use of urban space is presented.

In Frenk Street, where İzmir's first photography studio is located, the functional and cultural continuity was interrupted both by the Great Fire of Smyrna in 1922 and the population exchange process. Then, during the reconstruction process involving the new city-dwellers (or migrants from Greece), the traces of Frank Street were washed away; and the commercial character of the Kemeraltı area, which was previously a secondary commercial area, has evolved. The aim of the study is not to reveal an unknown relationship between photographers and Izmir city history. As one of the many developments brought about by the historical environment in a certain period, it focuses on the photographer's changing identity and location preferences.

METHOD

In the scope of the article, the city's dramatic change is read through the relations of the local photography studios with the city and their selection of places in the city. James Corner (1999: 213, 228-250) defined *mapping* as a creative method that accommodates various representation possibilities and thus propounds

unexpected relationships. He classifies the creative mapping processes and discusses the four basic techniques as drift, layering, game-board, and rhizome. The rhizome technique defined by Corner is the latest and has initially been improved by Gilles Deleuze and Felix Guattari. It represents an environment that propounds plural spatial readings, spatial usages, and their effects, along with multivariate and complex combinations.

Within the scope of this study, the mapping process, which is also a quantitative method, has been possible to re-read the compiled data through visualizing. Based on the Goad plan of 1905, architectural elements on Frank Street that have survived or do not currently exist but can be located were determined, and a layered city map was created in line with these determined traces. The data on local photography studios working actively between 1900 and 1950 have been compiled, and their locations were marked on the map. In parallel with the city's changing demographic structure, the location preferences of the photographers in the city have been revealed. The identity and spatial shifts caused by the Great Fire (1922) and the Population Exchange (1923) processes that resulted in permanent spatial changes and transformations in Izmir were scrutinized. Visualized data not only provides a scientific result but also provides the ground for new questions and research. Thus, spatial re-readings and inferences are possible, especially in the intersection of urban and art history.

FINDINGS: FRANK STREET AND PHOTOGRAPHY HOUSES

Rauf Beyru describes in his book *Life in Izmir during the 19th Century (19. Yüzyılda İzmir'de Yaşam)* published in 2010, a group of people whose arrival in the city dates back to the early 15th century and who were called as "Franks" or sometimes as "Levantines". Some others consider the Franks or Levantines as an accumulation of various races transported or moved to Izmir, since all foreigners of European origin during the Ottoman period were described with these names. Although there is no consensus on the exact definition, it is accepted that all people who came from a European family and settled in this country are called Levantines. On the other hand, Frank is a name given to all foreign subjects. According to Cadoux (2003), in the Ottoman Empire, non-Muslims of Western origin, other than Greeks, Armenians, Jews, were called Franks because at the end of the 13th century these people lived in Izmir's area between the Mimar Kemalettin Street and Alsancak at present, which was known as the "Frank Quarter". The foundations of this area (i.e. the Frank Quarter) have been laid during the Byzantine period.

According to Doğan Kuban (2001), the Latins, who had the privilege of settling and trading in the city in the 13th century, settled around the port and in the part that would later become the Frank Quarter, making the city a center of trade and culture. In the 15th and 16th centuries, the city's settlement pattern that was formed in the previous centuries did not change, the Latins continued to live and trade around the harbor, and the Turks continued to live in the upper parts of the city. Emel Kayın (2010: 346) stated that the central trade in the 17th century was concentrated in the Kemeraltı region, where the inner port is located. By the 19th century, this Eastern style bazaar grew on the filled port area, and in the Frank Quarter and following the developing commercial activities on Frank Street, the Frank Bazaar was found, where European goods were sold. It is possible to say that by the end of the 19th century and the beginning of the 20th century, the most developed and vital regions of Izmir, in terms of trade, were the Frank Quarter and Fasula Square. By a rough description, this region is located at the intersection of Frank Street (Sultaniye Street) and Teşrifiye Avenue, about 100 meters behind the Italian Girls' School built in 1905 (Figure 1). Due to its proximity to the port and the dock, its nature as a commercial center, and the fact that it is a living space for the population interested in photography, the first photography studios in Izmir were opened in this region (Figure 1).

Izmir was first photographed on February 8, 1840. Following the arrival of the French painters Horace Vernet, Charles Marie Bouton, and Frederic Goupil Fesquet to Izmir on February 8, 1840, on their return from the Far East travel, Anatolia and therefore Izmir was photographed for the first time. Later on it has been understood from the photographs in periodic albums that the city was photographed by various people at different times and contexts. In this framework, the French writer Maxime du Camp recorded the vicinity of Izmir and Ephesus in 1843. The city of Izmir and the ruins of Ephesus were among the Anatolian cities where A. De Moustier took photos in 1862. In 1893, the album work prepared upon Sultan Abdulhamit's request, featuring students of schools in Anatolian sanjaks (districts), was also shot in Izmir (Sezer, 2018: 68-69; Özendes, 1999: 10-12). It is also known that Pascal Sebah and Abdullah Brothers from Istanbul came to Izmir at various times and

took studio photos (Atay, 1997; Tito, 2010). In 1842, foreign photographers started to sell photography equipment and instructed people in using these equipment in Izmir, along with Istanbul (Hannoosh, 2016: 4).

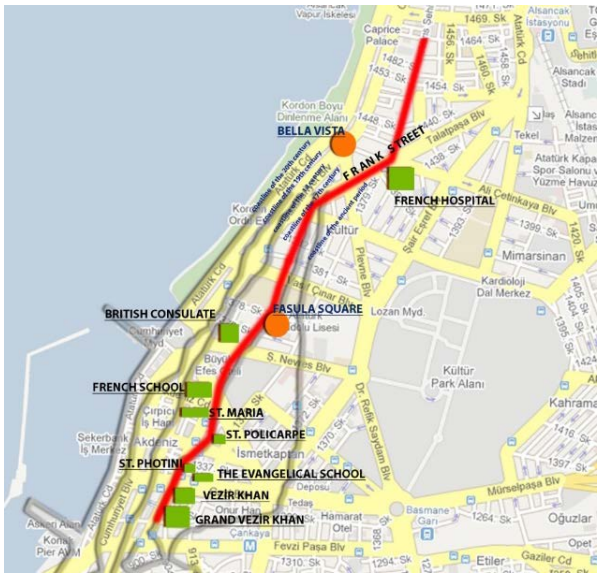


Figure 1. Frank Street in the 19th century

On the other hand, there are few studies focusing on photographers and studios operating in Izmir before 1922. The first data come from the research results published by Fabio Tito and forum members in 2010 affiliated with the Levantine Heritage Foundation. According to this research, it was determined that "62 photography studios" belonging to Levantines were operated in Izmir between 1860 and 1922. The complete list of these studios is provided with the source information (Tito, 2010). In the book of Engin Özendes (1995: 59-60) titled "Photography in the Ottoman Empire", 47 photographers were listed as actively operating in Izmir between 1839-1919. Not only the names of local photographers but also the names of the visiting photographers from Istanbul who come for short-term activities, were listed. In her 2012 dated study, Semra Daşçı listed 14 photography studios and related information that are mentioned in 4 trade yearbooks issued regularly between 1893-1896. Within the scope of this study, the data on photographers and photography studios from these three sources were assembled. The data were arranged in parallel with the literature search, and a single list was obtained. Based on this list, a study was conducted focusing on the address information of the photography studios or data on their locations within the city (Table 1).

Table 1. Listing of pre-1922 photographer studios

	Photographer / Studio (Özendes, 1995)		**Photographer / Studio (Tito, 2010)**		**Photographer / Studio (Tito, 2010)**		**Photographer / Studio (Tito, 2010)**	**Photographer / Studio (Özendes, 1995)**
1	Frith, Francis	**20**	E. Sarti	**41**	H. Bakas	**61**	C. Abdullah and A. Zilpoch	Abdullah, Cosmi
2	Kessirbachian, Kirkor Zaki	**21**	D. Iskender & B. Zirbdji	**42**	D.S. Athanassiades	**62**	Antoine Zilpoche	Zilpoch, Antoine
3	Lorent, J acob August	**22**	F. Reiser	**43**	El. Racas	**63**	Photographie El-Beder & Cie	El-Beder (Chiclian, B.)
4	Makinistyan, L.	**23**	S. Dragonetti & M. Sergio	**44**	X. Caracalos	**64**	Castania Frères	Castania Freres
5	Marathan	**24**	El Veder	**45**	B. Chichlian	**65**	F. W. Krabon	Krabow, F.W.
6	Matisian	**25**	Konstantinopulos A.B.	**46**	Ghéralis	**66**	A. (Alexander) Svoboda	Svoboda, A.
7	Mavyan, Mardiros	**26**	Ilias Bakos	**47**	Hadjélis	**67**	Rubellin père & fils	Pere, Rubellin
8	Pateraky Freres	**27**	T.G. Nesesian	**48**	Photographie l'Agnello	**68**	N.S. Athanassiades	Athanassiades, N.L.
9	Ragnello, R.	**28**	M. Chazelis	**49**	Photographie Soleil	**69**	G. Sosiadis	Sociades, Georges
10	Adjemian	**29**	N. Theodoru	**50**	I. Antovik	**70**	Spiro Calighéris	Galligheris, S.

11	Asfarian, T.F	**30**	Sislian	**51**	Baindirli	**71**	Carlo Bukmedjian	Bukmedjian, Carlo
12	Atjemian	**31**	S. Kalligeris	**52**	P. Geralis	**72**	Dhiamandopoulo Periclis	Dhiamantopoulos, Periklis
13	Bacas, E.	**32**	Michel	**53**	K. Doumanian	**73**	Sarian I.	Sarian, I.
14	Basmadj ian, Ch.	**33**	N. Zambat	**54**	I. Zografos	**74**	Sociades Emm.	Sociades, Em.
15	Bed ford, Francis	**34**	J. Zilpoche-Ch. Bukmedjian	**55**	G. Kalligeris	**75**	D. Zades	Zade, D.
16	Berggren, Guillaume	**35**	B. Chieïilian	**56**	I. Kalligeris	**76**	A. Boyadjian	Boyadjian, A.
17	Bonfils, Felix	**36**	J. Minerva Nisso	**57**	S. Kalligeris	**77**	X. Karacolos	Karacalos, X.
18	d'Andria, D.J.	**37**	N. Pantzopoulos	**58**	A. Kokonis	**78**	Jules Lind	Lind, Jules
19	de Nerval, Gerard	**38**	Pierre D'andria	**59**	Danielo	**79**	Photographie l'Acropole	Acropoli
		39	Photographie L'agneau	**60**	I. Lind	**80**	N. Zographos	Zografos, Niko
		40	Ks. Karakalos					

When the density of studios in Anatolia at the end of the 19th century and the beginning of the 20th century is considered, Izmir province comes second, following Istanbul. Who established the first local photography studio in Izmir is unknown. However, the active local photography studios were operated by Levantine, Greek, and Armenian photographers. The most populous group here was constituted by Levantine photographers. The studios were concentrated around the Frank Quarter and Gül Street, where non-Muslims reside, just as in Pera, Istanbul (Atay, 1997; Özendes, 1995; Daşçı, 2012; Sezer, 2018). Among these photographers, it is necessary to mention Alphonse Rubellin specifically. Rubellin, thought to be a Levantine of French descent, opened a studio called "Rubellin Péré et Fils-Photographie Parisienne" in Saruhan passage on the Frank Street, around 1860-1870. The recordings of the studio can be traced back to 1913. Most of the photographs of Izmir dated before 1922 that reached today were shot by Rubellin, and some of these photos have been printed as postcards later on (Tatlıbal, 2017: 163; Saygı Genç, 2018: 11; Daşçı, 2012: 49).

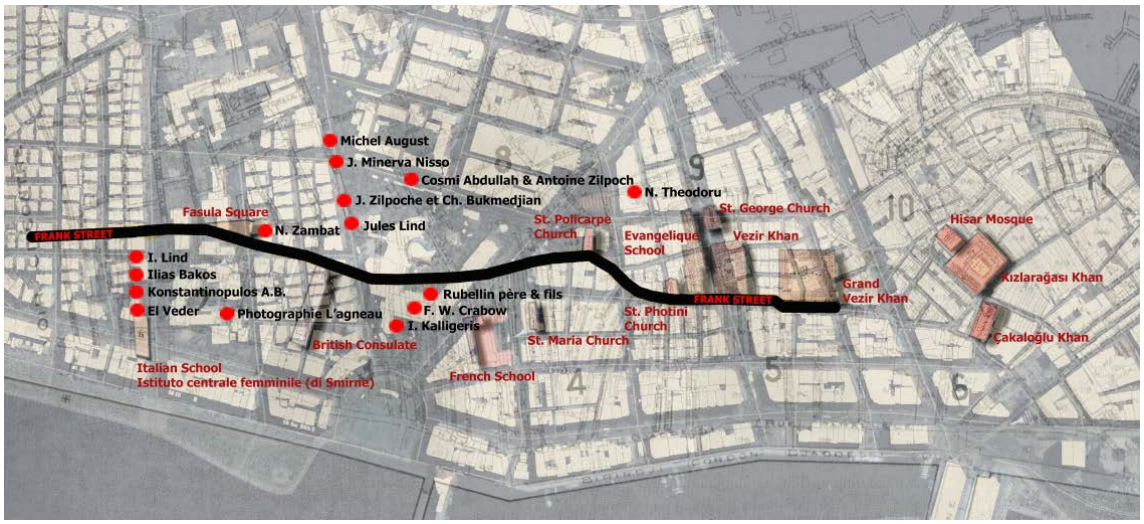


Figure 2. Non-Muslim photographers and their studios around Frank Street before 1922

During this period, photography studios primarily serve in the field of portrait and commercial photography. In sources such as trade yearbooks, one can find the pricing of the studios and brief information on the type and details of the service they offer. For example, in Izmir Trade Yearbooks of 1893 and 1894, the following explanation is given for the studio named Michel, located at Gül Street No. 47: "Large group portraits and all kinds of reproductions. ½ dozen commemorative portraits for ¼ Mecidiye. Natural-sized portraits for 1 Turkish lira" (Daşçı, 2012: 49). The photographer full name was mentioned as "Michel August" in the yearbook of 1895 (Tito, 2010).

In his book *Izmir during the Armistice - Before and After* Nail Moralı mentions the photographer Zografos while conveying his own memories of the pre-fire period. "In the Frank Quarter, photographer Zografos was

a very successful artist with his aquarelle enlargements. I liked a colorful enlargement of Zografos and bought it on the condition that it was not displayed" (2002: 103). The Levantine Heritage Foundation list mentions I. Zografos working at Rue Stamou and N. Zographos working at Rue Franque (Tito, 2010). In his book, Özendes (1990: 60) only mentions the name of Niko Zografos. Also, what Nail Moralı mentions is probably the studio of Niko Zografos.

In 1922, photography studios in the city were damaged along with the Frank Quarter, and most of them were destroyed together with their archives (Table 2) (Figure 2). Etem Tem, a photographer alongside Mustafa Kemal during the war between 1919-1922, also mentions the fire and the burning photography studios in the interview he told about his entrance to Izmir and its aftermath.

> Then we entered the city in cars. My first move was to find a photographer. I gave seven or eight rolls of films I shot in Kocatepe to a Rum (Greek of Turkish origin) photographer. We turned and walked around a little to pass the time… Then we came back. When the photographer saw us coming in, he shouted, "Your photos are amazing". I looked, the photos were still wet... I looked at them... they were really great. I've been waiting for this moment all the way from Uşak to Izmir. It took another day for the photos to dry out and be ready. We returned to headquarters, Bornova, to come and get it the next day. The next morning we got to Izmir by car... the nation spilled on the roads... there was a holiday spirit... "Mustafa Kemal will come soon", we said... You should have seen that moment... Izmir was burning... Either friend or enemy was obvious... Izmir was burning... we could barely get to the place where the photographer's shop was. But what should we see?.. The shop burned down... I had a few films left that I could develop on that barn-like place in Uşak... all the others burned down along with the photographer's shop [Sonra otomobillerle şehre girdik. İlk işim bir fotoğrafçı bulmak oldu. Kocatepe'de çektiğim yedi sekiz rulo filmi bir Rum fotoğrafçıya verdim. Zaman geçirmek için etrafta biraz döndük, dolaştık… Sonra yeniden geldik. Fotoğrafçı geldiğimizi, içeri girdiğimizi görünce, 'fotoğraflarınız bir harika' diye bağırdı. Baktım, fotoğraflar daha yaştı… Doya doya baktım… Hakikaten birer harikaydı. Taa Uşak'tan İzmir'e kadar bu anı bekliyordum. Fotoğrafların kuruyup, hazır olması için bir gün daha lazımdı. Ertesi günü gelip almak üzere karargaha, Bornova'ya döndük. Ertesi sabah otomobille indik İzmir'e… Millet yollara dökülmüştü… Bayram vardı… 'Biraz sonra Mustafa Kemal gelecek,' dedik… Görmeliydiniz o anı… İzmir yanıyordu… Ne dost ne düşman belliydi… Cayır cayır yanıyordu İzmir… Fotoğrafçı dükkanının olduğu yere güçlükle varabildik. Fakat ne görelim?.. Dükkan yanmıştı… Uşak'ta o ahır bozması yerde yıkayabildiğim birkaç film kalmıştı elimde… Ötekilerin hepsi, fotoğrafçı dükkanıyla birlikte yandı kül oldu]. (Ak, 2001: 63-64)

Table 2. Listing of pre-1922 photographer studios and their address

	Photographer / Studio	Address
1	Cosmi Abdullah and Antoine Zilpoch	Rue Franque, Local Baindirli, vis-a-vis la Rue Hadji-Stam
2	Antoine Zilpoche	Rue Franque, a coté des sœurs de la charité, Smyrne
3	Photographie El-Beder & Cie	Rue Franque, Local Ruegg, Smyrne
4	F. W. Krabon	Rue Franque, N. 157, vis-à-vis Passage Aliotti, Smyrne
5	F. Reiser	Rue Franque, Smyrne
6	Rubellin père & fils	Rue Franque, Passage Psaro-Khan, Smyrne
7	Phot. Studio S. Dragonetti & M. Sergio	Rue Binbachi Chereffeddine bey No. 11
8	N.S. Athanassiades	Rue Franque, Smyrne
9	El Veder	Rue Gallazio
10	Konstantinopulos A.B.	Rue Gallazio
11	Ilias Bakos	Rue Gallazio
12	T.G. Nesesian	Rue Armenia
13	M. Chazelis	Rue Rodon
14	N. Theodoru	Dervişoğlu Hanı Sokak
15	Sislian	Passage Ruk
16	G. Sosiadis	Agios Dimitrios Sokak
17	S. Kalligeris	Katırcıoğlu Sokak
18	Spiro Calighéris	Local Rossi
19	Michel	Rue des Roses No 47.

20	N. Zambat	Place Fassola No 77.
21	J. Zilpoche et Ch. Bukmedjian	Petite Rue des Roses
22	Carlo Bukmedjian	Pass. Rue des roses
23	B. Chieïilian	Ann. p. 29 rue Gallazio 1
24	J. Minerva Nisso	Rue des Roses
25	N. Pantzopoulos	Rue Franque
26	Pierre D'andria	pass. Rue des Roses no.18
27	Dhiamandopoulo Periclis	Rue Hadjistam /Guys pasajı
28	Photographie L'agneau	Rue Fassola
29	Sarian I.	Rue Basmahané
30	Sociades Emm.	Rue Fardhi Socak, St-Dimitri
31	D. Zades	Madama Han
32	A. Boyadjian	Rue Basmahané
33	B. Chichlian	Rue Gallazio
34	X. Karacolos	Loc. Paterson
35	Jules Lind	Smyrna – Rue des Roses, 47
36	N. Zographos	Rue franque- en face de la maison Solari
37	I. Antovik	Madama Han
38	Baindirli	Odos (Rue) Rodon
39	P. Geralis	Odos Europaiki (Rue Franque)
40	K. Doumanian	Rue Basmane
41	I. Zografos	Rue Stamou
42	G. Kalligeris	Rue Franque
43	I. Kalligeris	Impasse Sponti
44	S. Kalligeris	Rue Armenia
45	A. Kokonis	Rue Rodon
46	Danielo	Rue Fasoula
47	I. Lind	Rue Gallazio

Great Fire of Smyrna (1922)

The Turkish War for Independence, which lasted for four years following the First World War, ended in 1922 in Izmir. During this period, when the Turkish army entered the city and the Greek army left, Izmir was the scene of all the events called the "Great Fire of Smyrna." It is stated in various local and foreign sources that the fire started on September 13, 1922, and was barely contained and ended on September 18, 1922. "According to estimates, 25,000 houses were burned down, 300,000 people were left homeless, and thousands were injured, and died" (Kaya, 2010: 23). The fire ended, leaving permanent damages to the city. Following the destruction of the fire, all services were disrupted in the city, and there was a shortage of food and shelter. The chaos in the city decreased with the end of the fire, but the damage it caused in the city became more visible day by day. The fire completely destroyed various areas that had a real place in the city's memory. The city's population, which can be classified as Turks, Rums (Greeks of Turkish origin), Armenians, Jews, and Levantines due to its heterogeneous structure, was greatly affected by the fire.

> The fire, which started simultaneously in more than one place in the Armenian Quarter, continued for about four days, resulting in the complete destruction of the area where today's Izmir International Fair is located, which was the city center of that time, was completely destroyed, in other words, two-thirds of Izmir's neighborhoods burned down, except Turkish and Jewish quarters [Ermeni Mahallesi'nde birden fazla yerde, aynı anda başlayan yangın yaklaşık dört gün devam ederek, o dönemin şehir merkezi olan bugünkü Fuar Alanı'nın bulunduğu bölgenin tamamen tahrip olması,

> bir başka ifadeyle İzmir'in Türk ve Yahudi mahalleleri dışındaki üçte ikisinin yanması ile sonuçlanmıştır]. (Göktürk, 2012: 124)

It can be said that the city, which stands out with its multi-identity structure, is comprised of neighborhoods belonging to different groups, although the boundaries are relatively blurry. As a matter of fact, Alpaslan (2015: 169) states that there are no findings of physical segregation or divisions in these neighborhoods as in Jewish ghettos in Europe, yet, the groups living in these neighborhoods, as in many Ottoman and European cities, also adopt to live in closed communities. It should also be noted that as a result of the deformation in the spatial context of the Great Fire in 1922, especially the Rum (Greek of Turkish origin), Armenian and Levantine neighborhoods were largely destroyed, and the groups living there had to leave the city. The Fire of 1922, which was widely reported in the world press regarding its consequences, transformed the commercial continuity and spatial property structure of the city due to its complete destruction of the city's demographic structure and commercial centers, especially the Frank Street.

The extent of the disaster, which was recorded in history as the Great Fire of Smyrna 1922, was revealed only at the end of the fire. Such a disaster has left behind a devastated urban fabric and, accordingly, huge problems regarding fundamental needs such as housing, nutrition, health, and education. In addition to these fundamental issues with such human extents, considering the disruption of the trade cycle, which is the livelihood of the city, it is seen that the city experienced a multifaceted collapse in spatial, cultural, and economic contexts. As a matter of fact, while the new regime (Republic) established in the Anatolian lands, which emerged from the war of independence, took over Izmir with a largely destroyed urban fabric, it also faced the necessity of comprehensive planning in the city.

The Development and Zoning Process of the City after the Fire

Regarding Izmir, which became a ruin following the fire, new regulations and extensive restorations were required in order to make the city a center of attraction again in spatial, cultural, and economic contexts. Although the priority of the newly established Republican regime is the spatial development of Ankara, the capital, the devastating effects of the great fire have also prioritized interventions in Izmir. As a matter of fact, it can be said that the history of the modern construction of the city in a spatial sense was shaped by the Republican era. In this construction, the plan prepared in 1924 by the Danger brothers (Rene and Raymond Danger) under the supervision of Henri Prost takes place first. The plan, which represents a holistic approach to the city, includes decisions such as linear boulevards, vast squares, the creation of new residential areas in the Garden-City model, the regulation of the industrial regions, and the relocation of the port to the north of Alsancak. The radial axis leading to the wide squares are directed to the landmarks located on the square, which will form a visual record of the new regime in spatial and social memory. On the other hand, the new plan of Izmir is expected not only to zoning areas destroyed by fire but also to make the city take its rightful place in the economic order, which was at the forefront of the trade cycle.

The Danger - Prost plan, approved by the municipality of Izmir in 1925, is intended to be implemented rapidly despite economic insufficiencies, yet, with the World Economic Crisis of 1929, the implementation of the plan comes to a halt. With the election of Dr. Behçet Uz as the Mayor in 1931, the reconstruction works that slowed down became a priority again. "In 1932, Izmir Municipality receives an opinion from Hermann Jansen, who was planning the capital Ankara, regarding the current plan of Izmir" (Bilsel, 2009: 13). However, the German designer expresses a negative opinion on the current plan and criticizes, in particular, the width of the proposed boulevards and streets economically. In line with these criticisms, the plan is revised. Following these revisions, Kültürpark and Izmir International Fair, which has a fundamental value for Izmir, are added to the plan. With the fairs to be held in this area, it is aimed that the city will reclaim its value in the international arena, and this will accelerate economic growth.

Having played an essential role in the modern urbanization of İzmir, Dr. Behçet Uz contacts French architect Le Corbusier, and Le Corbusier presents his plan for Izmir in 1949. However, this plan was not accepted. Then, a project competition was organized on the planning of the city in 1951. Kemal Ahmet Aru and his team won the competition. This plan was adopted and implemented in 1953. According to Cana Bilsel (2009: 16), "one of the most important decisions that Kemal Ahmet Aru and his team have made for Izmir is the preservation of the historical commercial center in Kemeraltı."

"Both the migration of a part of the Europeans and the Rums and Armenians from the city, as well as the destruction faced due to the fire, required a spatial and socio-economic reconstruction of the city" (Kayın, 2010: 349). As a matter of fact, spatial changes have become visible in Izmir following the population exchange, especially in trade and housing areas. With the destruction of Frank Street, which is the main subject of Izmir's commercial connection with Europe, due to the fire, Kemeraltı Region has come to the forefront as the city's primary commercial area. According to Kayın (2010: 349), within the reconstructed spatial, socio-economic, and socio-cultural structure, the Turkish-Muslim immigrants who came to the city through exchange became an important subject.

Immigrant Photography Houses After 1922

The fire damaged both the appearance and the people of the city. The "Convention Concerning the Exchange of Greek and Turkish Populations" signed between Turkey and Greece in Lausanne on January 30, 1923, is the main element that shaped this process. This agreement covered the compulsory exchange of Greek Orthodox citizens living on the territory of Turkey except for Istanbul and Muslim Greek citizens residing on the territory of Greece except for Western Thrace, starting on May 1, 1923 (Ari, 2000: 1-2). The convention was the primary framework, but the migration process was not limited to exchange. The fact that the city, almost two-thirds of which was destroyed by the fire, entered a period of recession in every field, especially in trade, and that it was part of a national state structure, causing the non-Muslim population, who were excluded from the convention, to migrate over time.

There is no available data on the newly established studios nor did those sustain their operation between 1922 and 1924. It can be said that the photography studios, along with their equipment and archives, were damaged and even destroyed due to the fire and that local photographers left the city in parallel with the population structure that changed with the population exchange. In 1924, Hamza Rüstem appeared as the first Turkish-Muslim photographer of Izmir. In various respects, Hamza Rüstem is an important and determinant name for the history of Izmir photography. Hamza Rüstem was born in Crete in 1872. In 1895, while he was a student of the Istanbul Imperial School of Military Engineering (Mühendishane-i Berri-i Hümayun), he was arrested and tried after his relationship with the pro-reformist Young Turks was discovered. In 1896, he returned to Crete, escaping while being exiled. He met Bahaettin Rahmi Bediz there and began to photography in his studio (1896-1909-1924). In 1924, he settled in Izmir with his family and some of his employees as a migrant (mübadil) and established his studio in Kemeraltı in *Emirler Bazaar (Hamza Rüstem Passage)* (Ak, 2001: 77, 118). For that period, the most detailed description of the spatial use of photography studios in Izmir is made by Seyfi Ali Ak through Hamza Rüstem photography house:

> For the photography house, the terrace floor above the closed section of the passage is rented, in where two studios, dark rooms, a study area, and customer admissions hall are prepared side by side, and then it began to serve as a photography studio. The photo shooting with electric light was not possible then. Therefore, the work is carried out in daylight. The roof and one side of the studio are made of glass placed on an iron structure. In this way, the necessary light for the photo shooting was provided in the studio via its high position and its windows at the top and sides. The necessary orientation of this light was controlled utilizing silk curtains, which were moved by the rails hung on the ceiling and sides. The photo shooting with daylight will last until 1938, and the shooting with electric light will begin in 1938; accordingly, the photography studio will be moved into the passage [Fotoğrafhane için ise, pasajın kapalı bölümünün üstündeki teras katı tutulur ve burada yan yana iki stüdyo, karanlık odalar, çalışma ve müşteri kabul salonu hazırlanır, fotoğrafhane olarak hizmet vermeye başlar. O dönemde henüz elektrik ışığıyla çekim söz konusu değildir. Bu nedenle gün ışığında çalışma sürdürülür. Stüdyonun damı ve bir tarafı demir bir yapı üzerine yerleştirilmiş camlardan oluşmaktadır. Böylece yüksekte ve üstü ile yanı camlardan oluşmuş stüdyoda çekim için gerekli ışık sağlanmış oluyordu. Bu ışığın gerekli şekilde yönlendirilmesi, tavana ve yanlara asılan raylar yardımıyla hareketleri sağlanan ipek perdeler ile gerçekleşirdi. Gündüz ışığı ile çekim 1938 yılına kadar sürecek, 1938'de elektrik ışığında çekim başlayacak, fotoğrafhane pasaj içine nakledilecekti]. (Ak, 2001: 119)

The Resne Photography House is among the first established Turkish-Muslim photography studios in İzmir, and the relationship between Bahaettin Rahmi Bediz and Hamza Rüstem is interesting. Bahaettin Rahmi Bediz, from whom Hamza Rüstem learned photography in Crete, settled in Istanbul with the declaration of the Constitutional Monarchy in 1908 and established the Resne Photography House in Babıali. He also becomes the first Turkish-Muslim photographer of the Palace. On the other hand, meanwhile, Hamza Rüstem took over the photography studio in Crete and continued to work under the name "Hamza Rüstem, owner of the Bahaettin

Photography House" (1909-1924). Hamza Rüstem resided in Izmir with the exchange in 1924 and established his studio of the same name. In 1927, after the troubles experienced in Istanbul and with the influence of Hamza Rüstem's invitation, Bahaettin Rahmi Bediz moved his Resne Photography House to Izmir. In this process, the name of the studio, "Hamza Rüstem, owner of the Bahaettin Photography House," has changed, and he continued to work as Hamza Rüstem (Ak, 2001: 119).

After the proclamation of the Republic, there was an increase in the number of photography studios opened by Muslim-Turks throughout the country, while studios owned by non-Muslims gradually decreased. Especially with the Surname Law of 1934, the necessity of renewing identities of the old script and adding photos has created a new market for portrait shooting. Besides, the documentation of the reflections of the early republican projects in everyday life is considered essential. Accordingly, photography has become a common business line. During this period, there was an increase experienced in the number of both traveling photographers and resident studios in Izmir. As before, during the Republican period, photography studios from Izmir have a fundamental place following Istanbul. The names of these photographers of Izmir are seen at events or government auctions on a national scale. For example, Photo Hamza Rüstem and Photo Resne from Izmir are among the studios invited to participate in the beauty pageants organized by Cumhuriyet Newspaper in 1929 and 1932 (Ak, 2001: 97).

Table 3. Listing of after-1924 photographer studios and their address

	Photographer / Studio	Address	Notes
1	Hamza Rüstem Photography House / Hamza Rüstem	Kemeraltı Bazaar, The top floor of the building in front of Emirler Shopping Arcade	1924
2	Resne Photography House / Baharettin Rahmi Bediz	2. Beyler Street, Ahenk dead-end street	1927-1936
3	Foto Cemal / Cemal Yalkış	Kemeraltı Bazaar	1938-1981
4	Halit Gökberk	Alanyalı Shopping Arcade, Konak	1938
5	Ethem Ruhi Taga	Yolbedesten, Konak	1940'lar
6	Hüseyin Fikri Göksay	Basmane	1942
7	Mustafa Kapkın	Karşıyaka	1943
8	Foto Balım / Ali Balım	Konak	1946
9	Yıldırım Foto/Kemal Mete	İnönü Avenue	1950

Among the first studio photographers of Izmir's Republican period, in addition to Hamza Rüstem and Bahaettin Rahmi Bediz, Fikri Göksay, Ali Balım, Refik Sözer, Kemal Mete, Alim Uras, Fahri Çetin, Mahzar Çullu, Faruk Çullu, Hayri Ertan, İbrahim Fotocan, Mustafa Canıtez, Mustafa Biner, Cemal Ecer, Hüseyin Göksel, Foto Gagin, Halit Gökberk, Ali Şenalan can be named (Ak, 2001: 117) (Table 3). Among these studio owners, it is possible to mention the qualitative and quantitative weight or determinacy of exchange or immigrant photographers. As mentioned earlier, Hamza Rüstem (1924) and Bahaettin Rahmi Bediz (Resne-1927) were Cretan immigrants. Cemal Yalkış, who started as a mobile photo shooter between 1924 and 1938, and then founded a studio in 1938, is a Macedonian immigrant. Halit Gökberk settled in Izmir in 1938 and Fikri Göksay in 1942. The migrant photographers of Izmir came and settled in a city that is trying to get back on its feet after the great fire and the compulsory population exchange. It is seen that the cleaning and rehabilitation of the fire zone lasted about 15 years and the rezoning process that began at the end of the 1930s had an impact on the relationship that photographers established with the city and on their location selections for the studios (Figure 3).

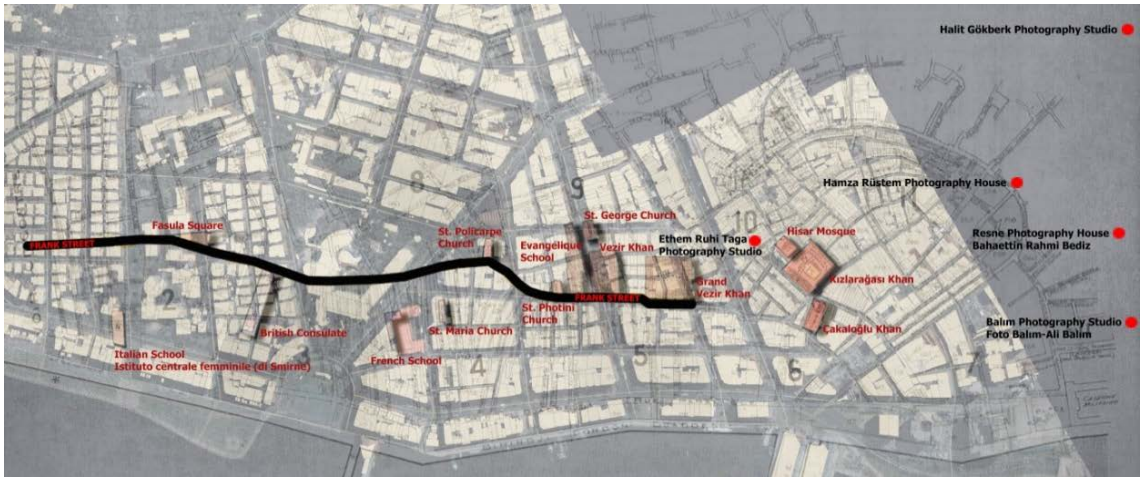


Figure 3. Turkish Muslim photographers and their studios in Kemeraltı district after 1924

CONCLUSION: FROM FRANK STREET TO KEMERALTI

European immigrants (Levantines), who started to settle in Izmir in the 13th century, were one of the influential communities in the formation of the city culture, although they were not populous in number. The Levantines, who are based around ports and have a more significant presence in areas associated with Europe, have been the most sheltered group of migrants in the city for centuries. In particular, they come across as the group to establish the first and direct relationship with commercial and technological innovations. In this context, it is expected that by the Levantines would operate the majority of the photography studios established in the city before 1922. Unlike Istanbul, Greek and Armenian photographers have a presence, but the Levantines have maintained their pioneering position. Thus, like other commercial activities, studios are concentrated around the Frank Quarter and especially on Frank Street.

Kayın (2010: 345) stated that "the most important element that is common in the city in 17-19th century Izmir is the port-based trade" and he states that this element failed to integrate the cultural and spatial patterns within the city due to its changing nature. At this point, perhaps a more clear distinction of the trade phenomenon within the city can be made through Kemeraltı and Frank Street. The fact that the spatial and cultural pattern cannot be integrated can be explained by the fact that the trade cycle in these areas is mostly in the hands of Muslim Turks in Kemeraltı and in the hands of Levantine merchants in Frank Street. The almost complete destruction of Frenk Street with the fire and the events that followed forced the photographers to emigrate, as did many European traders. The damage or complete destruction of the spatial and its contents has been a factor that widens the scope of migration. In this process, Levantine Photographers left their place to Turkish-Muslim Photographers. The city, where immigrant photographers see when they came to Izmir, was trying to dress its wounds in all areas. The changing demographic structure and the idle fire zone at the heart of the city caused daily life practices and locations to change. Since the 17th century, the use of urban space, especially focusing on trade and entertainment, has been interrupted. At this point, immigrant photographers were positioned around Kemeraltı as a significant commercial zone. Habits of urban space use and the Kemeraltı region were reshaped and defined together with the immigrants.

As a result, the photography studios, mostly belonging to European immigrants that appeared on Frank Street, left their place to the new immigrants during the fire and the subsequent migration process, that is, mostly the Turkish-Muslim photographers who came to Anatolia through the exchange. The city's immigrant Turkish-Muslim photographers and photo studios changed hands both in terms of property and in the context of urban space. The photography studios in the city have changed from the control of one ethnic group to another one. This should be addressed both as a result of the population exchange process and the great fire. It seems that the consequences of the exchange process associated with the formation of the city, in a world in which the fire of 1922 did not occur, would be different.

The city requires continuity to exist. Like the city itself, identity formation also depends on continuity, and it cannot be evaluated independently from previous developments. The built environment is one of the primary elements that form the urban identity. The spatial equivalent of social and cultural stratification, which shows continuity, involves an ongoingness. In the case of Izmir, the spatial equivalent of the functional and cultural continuity was interrupted both by the Great Fire of Smyrna in 1922 and the population exchange process. Within the scope of the study, this change is discussed through the relationship that a group establishes with urban space. It is aimed to contribute to the social memory of İzmir regarding the use of urban space.

Authors' Contributions

The authors contributed equally to the study.

Competing Interests

The authors declared no potential conflicts of interest concerning this article's research, authorship, and publications.

Ethics Committee Declaration

The authors declared no potential conflicts of ethics and genders, concerning this article's research, authorship, and publications.

REFERENCES

Ak, S. A. (2001). *Erken Cumhuriyet Dönemi Türk fotoğrafı 1923-1960*. Remzi Publishing.

Alpaslan, H. İ. (2015). Osmanlı İzmir'inde kentsel mekandaki görünmez sınırlar ve ihlalleri. *Proceedings of the 9th International Sinan Symposium*, Edirne, Turkey, 169-176, ISBN: 978-975-374-180-4.

Ari, K. (2000). *Büyük mübadele: Türkiye'ye zorunlu göç (1923-1925).* Tarih Vakfı Yurt Publishing.

Atay, Ç. (1997). *19. yüzyıl İzmir fotoğrafları*. AKMED.

Beyru, R. (2000). *19. yüzyılda İzmir'de yaşam.* Literatür Publishing.

Bilsel, C. (2009). İzmir'de Cumhuriyet Dönemi planlaması (1923-1965): 20. yüzyıl kentsel mirası. *Ege Mimarlık Dergisi, 4*(71), 12-17. http://www.izmimod.org.tr/egemim/71/3.pdf

Cadoux, C. J. (2003). *İlk çağda İzmir: Kentin en eski çağlardan M.S. 324'e kadar tarihi* (B. Umar, Trans.). Iletisim Publishing.

Corner, J. (1999). The agency of mapping: Speculation, critique and invention. In D. Cosgrove (Ed.), *Mappings* (pp.213-254). Reaktion Books.

Daşçı, S. (2012). 1893-1896 İzmir Ticaret Yıllıklarında adı geçen sanatçılar ve sanatla ilgili meslekler üzerine bir değerlendirme. *Journal of the Human and Social Science Researches, 1*(3), 47-52. https://dergipark.org.tr/tr/download/article-file/92727

Göksu, E. (2003). *1929 Dünya Ekonomik Buhranı yıllarında İzmir ve suç coğrafyası.* IBB.

Göktürk, T. B. (2012). Amerikan Basını'nda İzmir Yangını ve yangın sonrası durum (Eylül-Aralık 1922). *Journal of Modern Turkish History Studies, 12*(24), 123-147. https://dergipark.org.tr/tr/download/article-file/233470

Hannoosh, M. (2016). Practices of photography: Circulation and mobility in the nineteenth-century Mediterranean. *History of Photography, 40*(1), 3-27.

Kaya, M. (2010). *Büyük İzmir Yangını sonrası mesken bunalımı* [Master's thesis, Dokuz Eylül University].

Kayın, E. (2010). Mekansal ve sosyo-ekonomik ayrıksılıklar geriliminde İzmir: küresel-yerel fenomenler. In D. Yıldırım and E. Haspolat (Eds,). *Değişen İzmir'i anlamak* (337-360). Phoenix Publishing.

Kuban, D. (2001). *Türkiye'de kentsel koruma/kent tarihleri ve koruma yöntemleri.* Tarih Vakfı Yurt Publishing.

Moralı, N. (2002). *Mütarekede İzmir.* IBB.

Özendes, E. (1995). *Osmanlı Imparatorluğunda fotoğrafçılık 1839-1923.* YEM Publishing.

Özendes, E. (1999). *Photography in Turkey.* Tarih Vakfı Yurt Publishing.

Saygı, S. K., Genç, G. (2018). *Yıldız Albümleri'nde İzmir.* IBB.

Sezer, I. (2018). İzmir'in görsel tarihini oluşturan fotoğrafçılar. *Anadolu University Journal of Art&Design*, *8*(2), 66-74. https://std.anadolu.edu.tr/sites/std.anadolu.edu.tr/files/dergiler/SAYI15.pdf

Tatlıbal, E. (2020). *İzmir'in gökyüzündeki ruhu.* Google Books.

Tito, F. (2010). Listing of pre-1922 photographer studios active in Smyrna. In *Levantine Heritage Foundation.* http://www.levantineheritage.com/data9.htm (05.06.2020).

Ünal, N. (2015). *Sorularla İzmir tarihi*. IBB.

Figure References

Figure 1: Yatagan, N., Özcan, N. and Alkan, S. (2009). Kaybolan frenk sokağının izleri üzerine… Proceedings of the National Izmir Symposium, Izmir, Turkey, 425-449.

Figure 2-3: Illustration designed by authors.

Authors' Biographies

Sevinç Alkan Korkmaz is currently an Assistant Professor in the Department of Interior Architecture at Toros University. She earned her B. Arch. (2005) from Uludağ University, M.Sc. (2011) and Ph. D. (2017) from Dokuz Eylül University. She also worked in architectural firms between 2004-2009. Her research areas include computer-aided manufacturing, sustainable design practice, gender studies, mapping and levantine heritage.

Nilay Özcan Uslu currently works as an Assistant Professor at İzmir Kavram Vocational School. She received her B.Arch from Dokuz Eylül University, Department of Architecture in 2008. Earned her master's degree and Ph.D. degree from the Department of Architecture at Dokuz Eylül University in 2011 and 2018 respectively. Major research areas are public space and community centers, space and consumption, architectural geometry and computational design.

Semiha Deniz Coşkun Akdoğan studied architecture at Middle East Technical University (BArch, 2012) and architectural history at METU (MA, 2015), and she is working on her Ph.D. in Architectural History at METU. She has taught undergraduate courses in architecture at various universities and currently works as a part-time lecturer at Mersin University. Her research interests cover architectural historiography, memory, representations and displays, and contemporary intersections of architecture-visual arts-museums.

International
Design and
Art Journal

IDA: International Design and Art Journal
ISSN: 2687-5373
www.idajournal.com
info@idajournal.com