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AESTHETICS
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CONTENTS

REVIEW ARTICLES / *İNCELEME MAKALELERİ*

RESEARCH ARTICLES / *ARAŞTIRMA MAKALELERİ*

Review Article

On Representation: The Greek and Roman Roots of the Idea of Character in Architecture

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Abstract

The French term caractère (character) was frequently debated during the second half of the eighteenth century and was meant to establish a relationship between the form of a building and the purpose for which it was built. Its importance was twofold: it raised the issue of the intelligibility of architectural forms beyond their beauty, and, as a consequence, it directly maintained that architecture was similar to a language, in poetry or prose, capable of conveying social, civil, and religious meanings. By emphasizing the possible parallels between architecture and literature, this article analyses some ancient texts—by the likes of Aristotle, Theophrastus, Horace, Cicero, and, of course, Vitruvius—that are at the foundation of the notion of character. This "dive into the past" has nothing to do with the will to reestablish the classical style (or classicism); quite differently, it aims to rediscover the philosophical basis of architectural theory, by means of which architecture can hopefully get back to expressing collective meanings. Some final questions connect the ancient theme of character to open contemporary issues.

Keywords: Architectural Character, Architecture and Philosophy, Architecture and Poetics, Architecture and Rhetoric, Classical Culture.

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İnceleme Makalesi

Temsil Üzerine: Mimaride Karakter Fikrinin Yunan ve Roma'daki Kökleri

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Özet

Fransızca terim olan "caractère" (karakter), on sekizinci yüzyılın ikinci yarısında sıklıkla tartışılmış olup, bir yapının biçimi ile inşa edilme amacı arasında bir ilişki kurmayı amaçlamıştır. Bunun önemi iki yönlüdür: estetik kaygıların ötesinde mimari formların anlaşılırlık meselesini gündeme getirmesi ve dolayısıyla mimarlığın, sosyal, sivil ve dini anlamlar iletebilen bir dil gibi, şiir veya düz yazı ile benzerlik taşıdığını doğrudan ileri sürmesidir. Bu makale, mimarlık ve edebiyat arasındaki olası paralelliklere vurgu yaparak, karakter kavramının temellerini oluşturan Aristoteles, Theophrastus, Horace, Cicero ve tabii ki Vitruvius gibi isimlere ait bazı antik metinleri analiz etmektedir. Bu "geçmişe dalış", klasik tarzı (veya klasizmi) yeniden kurma arzusuyla ilgili değildir; aksine, mimarlığın kolektif anlamları yeniden ifade edebilmesini umarak, mimari teorinin felsefi temelini yeniden keşfetmeyi amaçlamaktadır. Sonuçtaki bazı sorular kadim karakter temasını güncel meselelere bağlamaktadır.

Anahtar Kelimeler: Mimari Karakter, Mimarlık ve Felsefe, Mimarlık ve Poetika, Mimarlık ve Retorik, Klasik Kültür.

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INTRODUCTION

The notion of *caractère* (character) took on great significance in French architectural literature from roughly the middle of the eighteenth century to the beginning of the nineteenth. Over that period, it was meant to unambiguously convey the reasons why a building had been built or designed. Initially it was employed in the realm of private (or residential) architecture to establish a societal hierarchy through an aesthetic one, in the sense that the use of the five orders in the façade of a building, as well as the abundance of luxury in its interior, had to reflect the status of its owner. During the last two decades of the eighteenth century, public architecture took on renewed importance; as a consequence, the idea of character began to include the moral and intellectual response that institutions, through the architectural forms of the buildings that housed them, were expected to arouse in viewers. In analysing this era, several historians and critics of modern architecture trivialized the idea of character and reduced it to the relationship between form and function, with the more or less overt goal of discovering the origins of modernity, which grounded its theories in that very relationship. Indeed, the idea of character was not focused on the issue of the functional performance of a building, so much as it dwelled on its institutional significance. In turn, this implied the farfromobvious conviction that architecture should be viewed as a possible artistic language whose forms allowed civic meanings to be conveyed.

The idea of character, then, exposed the question of architectural representation in all of its magnitude, keeping in mind that the word representation does not refer to the drafting technique; instead, it means the capability of architectural forms to represent the intended uses of a building. To avoid any misunderstandings, it bears repeating that this use of the word does not coincide with the notion of mere function; rather, it points to a civic ritual, depending on context. In this sense, representation blended the form and the content of a work of architecture.

The term character, however, was not totally new in eighteenth-century France, since it recalled another one from the ancient world, decor, to which Roman architect Vitruvius had dedicated a section of his *De architectura libri decem*. In Book I, he listed this term between the categories of architecture, along with *ordinatio*, *dispositio*, *eurythmia*, *symmetria*, and *distributio*. Still, the Vitruvian term had its roots in an even more distant Greek and Roman past, where it had become charged with multiple meanings that arose both from spoken language and from its use in other disciplines, such as philosophy, theatre, poetry, and oratory. Because the many facets of the idea of character are only partly described in Vitruvius's work, we must go further back in time to better understand its semantic range.

ΧΑΡΑΚΤΗΡ AND TECHNIQUE

Reading the few and not too recent philological studies on the etymology of the term character (Körte, 1929; Van Groningen, 1930), we understand that when the Aristotelian meaning of the word that gave it its universal notoriety took hold, the term character already had a long history.

Χαρακτήρ (*charaktēr*) comes from the verb *χαράσσειν* (*charássein*) and is a *nomen agentis*, a noun that can refer either to an individual who performs an action or to a tool used in a job. As far as we can tell, it was initially used to designate 'one who sharpens [something]';[1] but its original meaning seems to be

1 Hesiod, *Opera et dies*, 387 and 573.

connected to the verb 'to lacerate' (or 'to tear').[2] The term was used primarily in a technical context, in reference to stone carving or to the minting of coins, but in a specific Dorian text it acquired an additional meaning that pertains to the act of creation: people give things their name, and thus become their creators.[3]

From a certain point forward, the word character underwent yet another transformation: no longer did it refer to the person who performed an action, but to the object of the action. Eventually, it came to overlap the action itself, so that *χαρακτήρ* (*charaktēr*) no longer indicated the person that made a mark, but the mark itself.

The term subsequently became gradually disengaged from the technical sphere and began to take on metaphorical meanings, sometimes signifying the physical appearance of people from one country or another,[4] and other times the idiosyncrasies of language or a set of facial features,[5] or even a type of speech.[6] The meanings that were linked to language provided the passageway for those connected with style or manner.[7]

ΗΘΟΣ AND MORALS

The idea of character in reference to the moral qualities of humans was expressed in Greek primarily with the word *ήθος* (*ethos*), which had already appeared in Heraclitus's famous aphorism, *ήθος ανθρωποι δαίμων* (*ethos anthropoi daimon*): character is a man's demon, his fate.[8] With Aristotle, the word acquired a connotation associated with behaviors and customs, as evidenced by *Ethica Nicomachea*, a collection of lessons on ethics, in which the quest for the highest good—and, consequently, happiness—requires the pursuit of such virtues as may relate to ήθος (*ethos*), or character, and *διάνοια* (*diànoia*), or thought; in this sense, virtues are characterized as ethical or dianoetic virtues.[9] Ethical virtues linked with everyday acts were classified in such a way that the principle of excellence was defined as the golden mean between excess and deficiency. For example, courage was defined as the golden mean between cowardice and recklessness.[10]

The convergence of the terms *χαρακτήρ* (*charaktēr*) and *ήθος* (*ethos*) happened thanks to Theophrastus, a pupil of Aristotle's and the author of *Charaktēres*. But the key to this development can be traced to the title of the work that Diogenes Laërtius cited in his *Vitae philosophorum*, first as *Charaktēres ēthikoi*, and later as *Ēthikoi charaktēres*, or ethical characters (Van Groningen, 1929; Volt, 2007).[11] The adjective is probably used to indicate that, until that time, the word character had not been used in an ethical sense. In any case, from that moment on, this new connotation became the prevailing one, to the point of appearing obvious. Proof of this is the fact that many subsequent versions of Theophrastus's work appeared under the simple title *Charaktēres*, a word that, in the author's intentions, was meant to signify various human types,

2 Pindar, *Pitica*, I, 28.

3 This is, according to Körte, a neo-Pythagorean fragment mentioned in Joannes Stobaeus, *Eclogae* physicae et ethicae, IV, 39.

4 Aeschylus, *Supplices*, 282.

5 Herodotus, *Historiae*, I, 15 and 57.

6 Aristophanes, *Pax*, 220.

7 There are also other meanings, which must be omitted for reasons of space.

8 Heraclitus, *Fr. 22, B 119*, Diels-Kranz.

9 Aristotle, *Ethica Nicomachea*, 1102a.

10 Ibid., 1104a.

11 Diogenes Laërtius, *Vitae philosophorum*, 5.47 e 5.48.

defined according to the way they acted in known situations (work, family, and social interactions). Because all the behaviors described therein—sycophancy, boorishness, boastfulness, etc.—are negative in nature, we can deduce that these character variants initially played the role of *signa*, signs that aim to denote the recurring caricaturable traits of those who are inclined to abandon the ethical ideal that underlies civic virtues.

ΦΥΣΙΟΓΝΩΜΟΝΙΚΆ AND THE BODY

The concept of representation was also implicit in a tract titled *Physiognomonica,* which had historically been attributed to Aristotle and was included in the *Corpus Aristotelicum*, but which in fact had most likely been written after Aristotle's death. Arising from the conviction that a correspondence exists between body and soul, physiognomics established a link between the character and the physical appearance of human beings, or—more generally—of any living thing in the animal kingdom. This led to the belief that a person's character could be fathomed through exterior signs that were lasting, clear, and incontrovertible.[12]

Starting from such premises, the discipline aimed to accomplish two goals: on the one hand, it attempted to gain knowledge about, and to measure, the inner world of a person based on his or her appearance; on the other, it tried to classify the different types that made up the animal kingdom using a descriptive, observation-based approach. Both objectives raise a general issue with identification: first, the identification of the soul through the body; second, of the distinctive traits of each species. In any case, the mechanism of identification required a correspondence between exteriority and interiority in which the detection of distinctive marks could not but lead to a tautology. The appearance of a lion or a fox only shows that the lion is a lion and the fox is a fox. Or, if you prefer, that the lion and the fox are two different animals. Nothing more. To solve the problem of tautology, supporters of physiognomic theories had to pay a steep price: they had to hypothesize a relationship, in name but without evidence, between physical features and character. Only by doing so could a lion's mien be a sign of its courage, or a fox's appearance reflect its cunning.

In the tract, the arguments used for humans seem even more questionable than those employed for other animals. For example, a brave man might have spiky hair and a broad forehead, and an upright posture. Conversely, a coward might have soft hair and glazed eyes, and move nervously. And a dullard might have a wide neck, an empty stare, and pale, tired eyes. And the list goes on.[13]

'ΗΘΗ AND *LEX OPERIS* IN THE POETIC SPHERE

While in a technical context the idea of character carried mostly an instrumental sense, in an ethical context it articulated a hierarchy of moral qualities and values expressed as a merit judgment on the behaviors of human beings, with the goal of establishing the boundaries that allow behaviors to be recognized as good and evil, moral and immoral, and right or wrong. Even so, it was only in the poetic and rhetoric spheres—where the issue of literary or artistic creation was more obvious—that the notion of character established a closer relationship with the idea of representation.

In Greek culture, representation was akin to imitation. The two concepts almost overlapped (Tatarkiewicz, 1970, 1977). In his *Poetics*, a text devoted to the

12 [Aristotle], *Physiognomonics*, 806 a.

13 Ibid., 807b.

genres of epic, tragedy, and (perhaps) comedy,[14] Aristotle wrote of *μίμησις* (*mímēsis*) as of an innate activity in human beings, one that delivers pleasure in addition to making knowledge possible.[15] In tragedy and comedy, he opines, the imitation process is based on a dual explanatory mechanism. First, the two genres imitated lofty individuals and debased ones respectively, so that their peculiarity was a consequence of the subjects they represented: individuals who were either exalted or ordinary.[16] At the same time, a parallel was established between the peculiarities of tragedy and comedy and the nature of the poets who wrote them, who could themselves be morally superior or inferior to the average person, just like their fictional characters.[17]

According to Aristotle, the representation of characters, or *ήθη* (*ethē*), was one of the six parts of tragic theater, which had to be understood as the imitation of human actions performed by individuals that were portrayed differently, depending on their character and on their way of thinking. For him, myth, or *μύθος* (*mythòs*), consisted of intersecting plots; character, or *ήθος* (*ethos*), was the means by which this or that quality could be recognized in each different actor; and thought, or *διάνοια* (*dianoia*), was the reason for which an actor expressed a particular judgement or intention.

In particular, fictional characters had to display four qualities: goodness, propriety, verisimilitude, and consistency.[18] On the one hand, goodness implied a sort of ethical ideal with regard to the tragic hero, who had to be endowed with a noble soul. On the other hand, propriety, verisimilitude, and consistency allow the audience to distinguish the specificity of each individual fictional character by hypothesizing an identifiable relationship between his actions and his disposition. If character as choice implied a judgment on the merits of the different actors (the nobility of the tragic hero, for example), character as distinction entailed a simple description of them. Nevertheless, after declaring that in representing fictional characters playwrights should strive to stick with what is necessary and plausible, Aristotle conceded that the object of mimesis is open to improvement, and cited painters as the example to be followed, in that they embellish the subject of a portrait while preserving a likeness with the original.[19]

Aristotle also declared the superiority of storytelling with regard to another type of primacy: that of poetry over history.[20] This is how myth—that is, *fabula,* or the narrative element—became a decisive factor of dramatic action. Without it, the events portrayed by the actors would be hard to comprehend. The issue of how dramatic characters should be portrayed came later, since they were not strictly essential,[21] as did the matter of language, which needed to be embellished in tragedies.[22] Obviously, this did not imply that language was a secondary matter, but only that the relationship between the theme of a work of poetry and its literary style began acquiring its importance based on two premises: the first one

14 There is a clash of opinions on this subject: some believe that the second book of *Poetics*, dedicated to comedy, was lost; others are convinced that it has never been written. Either way, comedy is mentioned time and again in the portion of the work that was preserved for posterity.

15 Aristotele, *Poetics*, 1447a. The different genres of poetry can be distinguished by their medium, their subject, and the way in which each of them imitate reality.

16 Ibid., 1448a.

17 Ibid., 1448b.

18 Ibid., 1454a.

19 Ibid, 1454b et seq.

20 Ibid, 1451b

21 Ibid., 1450a, where the author maintains that tragedy is an imitation of action, not one of characters. See also 1450b.

22 Ibid., 1449b.

is that there should be a plot that can be developed through storytelling; the second is that there are recurring and recognizable feelings to represent, such as piety and fear.[23] As a result, storytelling connotated by a particular sentiment, as well as the choice of an appropriate narrative style, would determine the specificity of a literary genre. The belief that works of poetry should be consistent in terms of form and content, and also be realistic, endured in the Roman world. An example of this is *Epistula ad Pisones* by Horace, a letter in verse that is better known as *Ars poetica*.

According to the Roman man of letters, poetry should be viewed as a technique aimed at rousing emotions through a specific form of writing; consequently, no man could call himself a poet who misidentified the characteristics of various styles or who could not respect the spirit of appropriateness, which implied a precise relationship between the subject of a work of poetry and a literary genre.[24] With such premises, epic poems were suited to describing the deeds of kings and military leaders, and bloody wars; elegies could be expressions of lamentations, but also of wishes fulfilled; iamb, both harsh and direct, worked just as well for comedies and tragedies, because it is a good fit for dialogue and it kept the audience's interest alive; and poetry, accompanied by the sound of a lyre, was appropriate for singing of gods and heroes, of athletes and youth. Therefore, as Horace admonishes his readers after his long explanation, it is not sufficient for poetry to be good: it should also be moving for the souls of its listeners.[25] The gist is that poetic vocabulary should be sad to describe a sorrowful face; menacing for an irate visage; jocular for a playful look; and solemn for a stern one. The response that the poet was called to elicit in a reader, or a listener implied the adoption of a poetic genre that obeyed a specific *lex operis* (Labate, 1993).[26]

ΠΡΈΠΟΝ AND *DECORUM* IN THE CONTEXT OF RHETORIC

The issue of the appropriateness of expression was felt also in contexts that did not contemplate the process of imitation; for example, rhetoric. In antiquity, rhetoric was used mainly, though not exclusively, in the field of public speaking and concerned itself with eloquence. Unlike poets, rhetoricians did not have realism of representation as their primary objective; instead, their main goal was effectiveness in discourse. By effective speech, they meant the kind that allowed them to garner the agreement of their audience. For ancient Greeks, this idea of the appropriateness of expression went by the name of *πρέπον* (*prepon*) (Pohlenz, 1933). Initially, this notion signified a kind of beauty that was immediately manifest, almost absolute; later, it began to denote a beauty that was fitting, appropriate for a given purpose or situation (Perniola, 1982). This is evident in Aristotle's *Rhetorica*, his work in which the theme of character, *ήθη* (*ethē*), resurfaces. Here, however, it does so with respect to orators and their audiences: they who give speeches, and those who listen.

If rhetoric was to be regarded as a technique—*τέχνη ρητορική* (*téchne rhetorikè*)—one that had the goal of persuading a person or an audience, rhetoricians could therefore prove persuasive in one of three ways: through the reliability of their character; by their ability to bring forth *πάθος* (*pathos*), that is an emotional state that is conducive to earning a favorable judgment from the audience; or by the ability to demonstrate the truth, or what appears to be truthful. The matter of passions provided additional room for a broad range of dispositions

23 *Ibidem*.

24 Horace, *Ars poetica*, 73-103.

25 Ibid., 99-100.

26 Labate references Horace's *Ars poetica*, 135, as well as Tacitus, *Dialogus de oratoribus*, 10.

and temperaments, of ages, and of the economic and social conditions of the people or audiences that the rhetorician was addressing.[27]

In the latter part of his work, Aristotle discussed the style of speech from different perspectives, particularly regarding the feeling that it was intended to elicit in the audience. After differentiating poetry from prose, he affirmed that style could be considered appropriate when it was capable of transmitting emotions by adjusting to the subject matter; it could make no concessions to improvisation in matters of certain consequence, nor should it be solemn in ordinary situations. Moreover, style has the duty to make a speaker's feelings clear. Therefore, the speaker should be: angry, if the topic represented outrageous acts; offended, when faced with ungodly or shameful acts; admiring, in relating praiseworthy actions; and mournful, in the presence of deeds that merit compassion. Finally, style should be adjusted in response to the character of the audience, as well as to its moral and intellectual tendencies.

While poets appreciated by Aristotle and Horace were moved by the desire to capture the various facets of the real world using mimesis, rhetoricians rather followed the taste of their listeners, and focused their primary field of inquiry not on reality itself but on judgments about reality and on the reasons that led to such judgments being made.

In his *Orator*, Cicero reexamined this topic. In pondering the perfect type of eloquence, he described three *genera dicendi*, or the three styles of oratory: the magniloquent or grand style; the humble style, and—in between—the temperate or medium style. These are also known as High Style, Low Style, and Middle Style.[28] Some orators, he maintained, excel in one style but have no mastery of the other two; a true orator, however, can use any of these styles, depending on what is appropriate for specific circumstances. He knows what to say, and where and how to say it.[29] The orator should therefore be meticulous in his effort to convince his audience, moderate in pleasing it, and vehement in rousing its emotions, and should choose his speaking style carefully.[30] Only by so doing can his expressive force be effective. In other words, he needs to discern what is appropriate, which the Greeks called *πρέπον* (*prepon*) and the Romans would call *decorum*.[31]

According to Cicero, there are three types of orators, who use three types of speech: the humble orator, simple and modest, reproduces the popular manner of speaking, and at the same time lets his elegance transpire with careful neglect;[32] another type of orator uses the medium style, with little force and much grace, to turn out a figurative and polished speech;[33] the final type of orator is majestic and rich, solemn and ornate in his speeches, and it is he who holds the most extraordinary power.[34] Cicero did not establish a hierarchy of the three styles, because the ideal orator should be able to speak of lowly things with simplicity, of great things with solemnity, and of ordinary things with

27 Aristotle, *Rhetorica*, II, 1389a - 1391b.

28 Cicero, *Orator*, 20-22. At line 36, Cicero uses the Greek term *χαρακτήρ* (*charaktēr*) to identify the perfect type of orator and reiterates the same definition at line 134.

29 Ibid., 43.

30 Ibid., 69.

31 Ibid., 70. Cicero was first to mint the term *decorum*, in *Orator*, to translate the Greek term *πρέπον* (*prepon*). See Pohlenz 1993.

32 Cicero, *Orator*, 75-90.

33 Ibid., 91-96.

34 Ibid., 97-101.

moderation.[35] In sum, he should be capable of picking the right type of speech based on circumstances. Perfect oratory, therefore, is context-based.

These premises produced a change in how the appropriateness of expression was perceived: in a poetic context, its purpose was the acquisition of knowledge; in a rhetorical context, it sought to generate a consensus. If the representation of fictional characters, *ἠθη* (*ethē*), was anchored in reality and configured itself as the principle of natural identification, respect for *decorum* took on the connotation of a principle fit to generate approval based on the notion of appropriateness.

DECOR IN ARCHITECTURE

Vitruvius spoke of decor as 'beauty in appearance' (Ferri, 1960) or the 'formal perfection' (Gros, 1997) of a work, which the architect could achieve by acting in compliance with the principles of *statio, consuetudo,* and *natura,* each of which represented a particular meaning of appropriateness.36

Statio, which can be translated as 'a mode of being' (Ferri, 1960) but also as 'rule' (Gros, 1997), is a term that Vitruvius used for the architecture of temples.[37] His writing seems to allow two possible interpretations: the first one suggests the idea of standing inside a temple and refers to the observance of given rituals made possible by the spatial design of the building; the second one relates to the idea of standing outside the temple to examine its exterior forms.

Initially, Vitruvius began by speaking of hypaethral temples, which are a type of temple that does not have a roof over its central portion. This configuration was designed to allow a kind of ceremony in which viewers could witness a sign from the celestial vault, where—they believed—the gods that this type of temple had been built to honor (Jupiter Fulgur, the Sky, the Sun, and the Moon) would make themselves known. In this form, the absence of a roof was the defining element of the character of the temple.[38]

Later, however, Vitruvius delved into the worthiness of the belief that a temple should be fashioned using a style befitting the disposition of the deity that it was dedicated to, thus establishing an analogy between the temperament of some divinities and the *modus aedificandi*, which could be of three types: strong, medium, and delicate. It was at that time that Vitruvius also introduced his theory of the three orders of architecture, which—not without hazards—lends itself to a parallel with the three genres of speech in oratory.[39] By this logic, architectural styles should be employed in the following way: the Doric style, austere and unadorned, could be applied to temples dedicated to Minerva, Mars, and Hercules, to highlight their warlike virtues; the Corinthian style, rich and slender, is suited to the gentleness of goddesses such as Venus, Flora, and

35 *Ibidem*.

36 Vitruvius, *De architectura*, I, 2, 5-7. The Latin term *decor* is a translation of the Greek term *πρέπον* (*prepon*), which had been used by authors like Vitruvus (*De architectura*, I, 2) and Horace (*Ars poetica*, 156–157). See Pohlenz, 1933.

37 With the term *statio*, Vitruvius translated what he believed to be the Greek equivalent for θεματισμός (*thematismos*). However, his conviction seems to be based on a misunderstanding. See Pohlenz, 1933 and Ferri, 1960.

38 On the subject of hypaethral temples, see Tosi, 1991.

39 The parallel between the three genres of speech and the orders of architecture can be found in Onians, 1988; the refutation of this argument is in Gros, 2006.

Proserpina; and finally, the Ionic style represents a medium between the other two orders, so it is a good fit for temples honoring Juno, Diana, and Liber Pater.[40]

The use of different architectural styles is rather easy to detect in temples, for which Vitruvius did provide other types of classification as well; but it slips into vagueness and lacks theoretical backing when applied to other kinds of buildings. In Book V, the Roman architect simply stated that the columns used in theaters – specifically, in the portico of the postscenium wall – should be arranged into two sets of rows: Doric ones on the outside, because they were more robust; Corinthian or Ionic columns, more delicate, on the inside.[41] The contrast between *gravitas* and *subtilitas* appears clearer when, soon afterwards, Vitruvius affirms that the appearance of columns in theaters should not be confused with their appearance in temples. In the case of the latter, their purpose was to suggest the idea of gravitas, so they should have an austere look and be tightly spaced. On the contrary, columns for theaters should be slender and more widely spaced, to communicate a sense of gracefulness.[42] In this context, Vitruvius raised the question of what type of feelings are inspired by different modes of construction, which can be sturdy or delicate. Thus, he suggested an ethical use of architectural representation, one in which gravity should bring religious subjects to mind, and slenderness would denote civil and mundane subjects.

If we set aside the narrow logic of characterization based on the adoption of the *genus architectonicum*, or the orders of architecture,[43] we realize that the defining element of a public building, for example a theater, actually resides in its specific spatial configuration. In other words, character is rather a consequence of type than one of style.

Consuetudo, or custom, served to regulate both the degree of luxury in the rooms of private residences and the stylistic principles of each of the orders of architecture.

In terms of custom, decor could be lacking where a home mixed lavish rooms with modest ones. Vitruvius raised the issue of the appropriate display of the rank of the owner and hinted at the fact that character was not just a form of symbolic expression for public buildings (and, specifically, for temples), but also a form of social representation for private residences. He mainly focused on the *domus*, the patrician city residence, which had to be equipped with such spaces as the atrium, the tablinum, the peristyle, a library, and a reception hall. In contrast, the homes of modest folk should merely satisfy the criteria of comfort.

Decor as a matter of custom could also be flawed when the elements of the Doric order encroached upon those of the Ionic order. In such cases, the issue of the expressive value of the orders of architecture resurfaced, albeit not with reference to the character of a certain deity, but to a specific mode of construction. This is a matter of stylistic consistency that the Roman architect pursued in Book V, where he explained that monumental stone buildings have roots in those made with wood, for both the Doric and the Ionic style. Under this

40 Note that Minerva, a goddess, is represented using the Doric order, which is masculine in kind, whereas the Ionic order, which is feminine, is used for Liber Pater. It is not gender that matters, so much as the temperament of the deity.

41 Vitruvius, *De architectura libri decem* V, 9, 2.

42 Ibid., V, 9, 3.

43 To refer to orders, Vitruvius mostly used the term *genus* (sometimes, *mos*, *opus*, and *ratio*), while the phrase "orders of architectures" became established during the Renaissance, where it coexisted with the term *maniera* (style) thanks to Sebastiano Serlio, Daniele Barbaro, and Giacomo Barozzi da Vignola. In this regard, see Ferri, 1960 and Forssman, 1961.

premise, the *ornamenta*, that is the ornaments of architectural orders, were the translation into stone of a woodbased building technique; thus, architecture was the metaphorical representation of the act of building.[44]

However, we should not forget that in the treatise by Vitruvius, architectural orders are mentioned also because of their anthropomorphic origins, which is how they came to take on specific ratios. Also in Book IV, we encounter the analogy between different kinds of columns and the human body: the Doric column exhibits the sturdiness and the beauty of a male body, whose feet are the sixth element of its stature, whereas the Ionic columns display the elegance of a woman's body, whose feet are the eighth element of its stature. The former is sober and, apart from the metopes in the frieze, unadorned; the latter, more elegant, is not only decorated with volutes and flutes meant to match the hair and the folds of a matron's gown respectively, but it also rests on a base that resembles a woman's footwear. The Corinthian column is not different from the Ionic kind, even as it appears to be slenderer still, thanks to its ornate and tall capital, which reminds us of the delicate proportions of a young lady's figure.[45]

The concept of *natura*, or nature, was meant to encompass both ceremonial needs and the requirements for the proper operation of the building. For example, a temple dedicated to Health should be in a most salubrious area. And again, the baths and the winter rooms of the *domus* should be westerly-facing, libraries should be oriented to the east, and picture galleries to the north.

Despite the total lack of a method in his treatment of the subject,[46] *decor* according to Vitruvius exhibited different facets of representation intended as a device for identification: the symbology of architectural orders allows us to recognize the kind of temple we are viewing; the proper use of the ornaments of each specific order allows us to recognize its style; the abundance of luxurious elements helps us to establish the status of the owner of a private residence; and finally, the location of a building is a sign of its purpose, either practical or symbolic.

FROM *DECOR* TO *CARACTÈRE*

During the Renaissance, architects treated orders as something akin to a system of ratios, proof of what they saw as the perfectly harmonious relationship between microcosm and macrocosm. Only occasionally did they use them in a semantic sense (sometimes allegorically, sometimes metaphorically). It was only on rare occasions that the Doric, Ionic, and Corinthian orders, or the Tuscan and composite ones, were used to represent the religious, civic, or social character of a building. For example, in his 1537 book *General Rules of Architecture*, which is also Book IV in *Seven Books on Architecture*, Sebastiano Serlio attempted to adapt to the saints of Christianity the arguments that Vitruvius had already used for pagan deities, with added reflections on the possibility of using the rustic-Tuscan order in a semantic way.[47]

44 Vitruvius, *De architectura*, IV, 2, 1-6.

45 Ibid., IV, 1, 1-12, where we can also find the mythological tale of the invention of the Corinthian capital, which was attributed to the sculptor Callimachus. For the correspondence between architectural orders and the human body, see Rykwert, 1996.

46 Regarding the difficulties that Vitruvius encountered in translating the Greek terms of aesthetics into Latin, see Ferri, 1960: 48-52.

47 On the semantic use of orders, see: Forsmann, 1961 and Ackerman, 1983. On the possible social meaning of the construction method used most frequently by architects of the Renaissance—the bearing wall, with or without windows, adorned with a system of columns and entablature—see Thones, 1998.

First with the Enlightenment, and subsequently with the French Revolution, public institutions gained new importance, leading architects to begin asking themselves about their civil meaning and, consequently, about their architectural character. However, it was not an architect but a man of letters who exhumed the concept of *decor* from the ancient world, calling it *caractère*.[48] Nicolas Boileau-Despréaux used it as a synonym for appropriateness and verisimilitude in a verse from his *Art poétique* (Poetic Art),[49] published in 1674. In 1683, Nicolas-François Blondel mentioned *caractère* briefly in his *Cours d'architecture* (Course of Architecture), which was published in three volumes between 1675 and 1683. In the first volume, he explicitly mentioned orders, but mainly because of his interest in their valuable use of ratios, which—in his opinion—determined their beauty.[50] The writings of Charles Perrault—both his translations of Vitruvius of 1673 and 1684, and his *Ordonnance des cinq espèces de colonnes selon la méthode des Anciens* (*Ordonnance for the Five Kinds of Columns after the Method of the Ancients*) of 1683, destroyed those arguments that defined architectural beauty based on what he considered "absurd" rules and proportional prescriptions. (Pérez-Gómez, 1993); thereafter, it was the semantic value of orders that piqued the interest of architects.

The notion of character gained popularity in part thanks to the successful publication of *Les caractères*, which Jean de La Bruyère published in 1688. Soon thereafter, in 1691, Augustin-Charles d'Aviler already described orders as expressions of good architecture, but he also declared that a building could be regarded as Doric, Ionic, or Corinthian even in the absence of columns. A single other element, like an entablature, a cornice, or a window panel, sufficed to classify them as belonging to a particular order.

Once again, a decisive contribution to the definition of the idea of character in architecture came from a separate discipline. Long before the aforementioned texts were published—in 1668, to be exact—Charles Le Brun, who had been appointed as First Painter of the King at the Court of Louis XIV, had tackled the theme of facial expressions in his famous lecture titled *Conference sur l'expression générale et particulière* (Lecture on General and Particular Expressions), which he delivered at the *Académie de Peinture et de Sculpture* (the Royal Academy of Painting and Sculpture); the lecture, enriched by a series of drawings, was published posthumously in 1698. It is through the mediation of this work, which was itself influenced by *Traité des passions de l'âme* (Treatise on the Passions of the Soul) by René Descartes, published in 1649 (Damish, 1980), that the theme of character in architecture was linked with the theme of the expression of *pathos* (Middelton, 1992).

In 1734, Germain Boffrand gave a lecture at *Académie d'architecture* (Royal Academy of Architecture) on an essay curiously titled *Principes tirés de l'art poétique d'Horace* (Principles drawn from Horace's Ars poetica). In 1745 he published it, along with other writings, in the introductory section of his *Livre d'architecture*. It was on this occasion that the idea of character was injected into the notion of appropriateness, as channeled by Boileau, and into the notion of the effect upon the spirit of an observer (Szambien, 1986), which had already been mentioned by Le Brun; both concepts had already appeared in Horace and, even earlier, in Aristotle.

Thereafter, other architects and critics of architecture, such as Jacques-François Blondel, Antoine-Chrysostome Quatremère de Quincy, Nicolas le Camus de

48 For these topics, see Egbert et al. (1980:128-129).

49 Nicolas Boileau-Despréaux, *Art poétique*, chant III, line 112.

50 Nicolas-François Blondel, *Cours d'architecture*, I, p. 399.

Mézières. Etienne-Louis Boullée and Claude-Nicolas Ledoux, developed their interpretation of the idea of character.[51] However, those works lie outside the scope of this essay, which focuses instead on how the idea of character has integrated the various semantic meanings of the ancient world, and left a legacy of issues for contemporary architects to examine.

POSSIBLE PARALLELS BETWEEN ARCHITECTURE AND LITERATURE

As shown in the previous sections, the term character implies a relationship between architecture and literature that raises some unanswered questions for contemporary architects.

In a technical context, as well as in spoken language, the term *χαρακτήρ* (*charaktēr*) initially signified a mark made onto an object, but it soon acquired those metaphorical meanings that made a process of identification possible. With the notion of *ήθος* (*ethos*), the idea of character disclosed the moral and social sphere, in which the behaviour of individuals in relation to the community became the main object of study and judgment, thus raising the issue of appropriateness in ethical terms. Similarly, according to the architects of the second half of the eighteenth century, buildings were to take on both a social and moral character, a set of intellectual ideas capable of conveying the reasons why they had been built in the first place, using recognizable architectural forms. Still, some unanswered questions remain: What feeling is each individual institution tasked to rouse in those who observe it? Who decides what that feeling should be? Is it a shared, concerted feeling, or a convention that has been bequeathed to us?

Another problem is "how" such feelings should be represented. And "where", meaning in which part of the building. The architects of the second half of the eighteenth century focused mainly on the façade, which served the purpose of announcing (in French, *annoncier*) the intended use of the building. However, modern and contemporary buildings do not always have a main façade or view. Even when they do, we would do well to ask: how can we establish a one-to-one correspondence between form and substance that can make the language of architecture unequivocally understandable? Such a hypothetical correspondence, in fact, reintroduces the insurmountable ambiguities of physiognomics, which held that the nature of a person can be revealed, albeit in totally arbitrary terms, from their physical features. Similarly, the association of certain forms with specific feelings (essentially, with specific contents) would fall into the conventional. Is this a flaw, or something to be explored?

Moving from the ethical sphere to the poetic one, the issue of the intelligibility of architectural forms morphed into a problem of expressive appropriateness. Both within theater and poetry, the character of human beings was represented by individuals who acted a certain way in certain situations, and become recognizable through the sensations and the passions that they elicited in audiences or readers. Likewise, architectural characters were tasked with signifying institutional meanings and uses, building systems, and social conditions. Therefore, the notion of *lex operis* extended from the poetic language to the language of architecture. Whereas in the former it had to realistically portray the feelings of the performers in a theatrical piece, or the characters described in a literary work, in the latter it served to illustrate the rationale that had resulted in a project or in the construction of a specific building.

51 See the chapter "The Neoclassical Interlude" in Etlin, 1994: 88-123.

And here is another question: the realism of a situation, in the poetic sphere, requires that feelings can be universally recognized. But is this really the case? And even if they are, another issue immediately arises, tied to the matter of the effectiveness of architectural language, which should be as convincing as the language of the rhetorician in ancient times. If the *genera dicendi* covered the three styles of oratory, the three orders of architecture even after they were augmented by the two Roman ones, were far from capable of revealing the institutional purpose of a building using their character. This does not mean that Greek and Roman architecture were inadequate; it simply means that the different orders had not originated to characterize different types of buildings, except in the specific situations that Vitruvius had discussed in dealing with different kinds of temples.

Architects like Boullée and Ledoux, who recognized this limitation, commingled the classical forms with those of basic geometry, thus inventing unprecedented spatial configurations. What matters most is that even as they continued to use them, they never made architectural orders the main instrument of characterization. For a brief period, they pushed the notion of character away from the idea of *style*, instead bringing it closer to the notion of *conception*, which encompassed not only the façades of a building, but its plan and its volume as well. In the nineteenth century, their *architecture parlante*, or speaking architecture, was judged with scornful skepticism and pushed aside. For almost the entirety of the nineteenth century, and in the first half of the twentieth, the expression of the civil character of buildings was delegated to the eclecticism promoted by the *Ecole des Beaux-Arts*, which on the one hand offered an alternative to neoclassicism as the official academic language, and, on the other hand, desisted from producing a new architectural style. The Modern Movement did assert the privilege of doing so, but it ended up diminishing the matter of the architectural expression of the civil meaning of public institutions, to focus instead of the topic of the constructive realism of buildings. This is a theme that it had inherited from the muchdespised nineteenth century![52]

CONCLUSIONS

Why should we exhume the notion of character nowadays? There are at least three good reasons to do it.

The first one is that, in every country, the world of finance pushes to replace the world of politics in terms of authoritativeness; therefore, the issue of the civil meaning of institutions is becoming urgent again, as is the matter of how to represent them through architecture.

The second reason is that returning the focus of contemporary architects back to a notion like character involves the need to once again picture architecture as a language with a high (though not total) degree of intelligibility.[53] In other words, architecture can once again be considered as a tool capable of producing meaning, after its relatively recent demotion to a nondescript self-referential gesture, one purely aimed at causing a sensation.

The third reason is that architecture conceived as a language can be regarded as a critique of architectural language itself. What does this mean? With the term *caractère*, the French architects of the eighteenth century had destabilized

52 Think, for example, of Eugène-Emmanuel Viollet-le-Duc, Karl Bötticher and Auguste Choisy.

53 Architecture cannot be considered a language in the narrow meaning of the term, but it has a lot to do with this notion. On this topic, see the chapter "Architecture at the Limits of Language" in Pérez-Gómez, 2006:137-145.

the classical language of architecture even as they continued to use it themselves. In fact, they managed to highlight some of its qualities that had remained hidden until then. With the help of elemental geometry, Boullée and Ledoux invented a new way to conceive space and to configure architectural volumes, but they did not renounce the language of walls and columns that they took from the classical tradition. They arrived at *poésie de l'architecture* (the poetry of architecture) by exalting ordinary language. In this sense, poetry was a kind of intelligible and rightful transgression, because it could avail itself of a conventional language that could become the subject of a debate. The lesson that contemporary architects can draw for the present is that the exceptional, transgressive language of poetry cannot exist without its ordinary, conventional counterpart: prose. In other words, transgression cannot exist without conventions to be transgressed. Absent such conventions, transgression is nothing but posturing; basically, an ill-disguised form of conformity. If everything is transgressive, then nothing is. Moreover, it should be clear, prose does not necessarily equate with sloppy expression. It is the vehicle for novels, long and short, for critical essays, and for position papers.

Here, then, are other questions for contemporary architects: nowadays, what are the elements of an ordinary, common kind of architectural language? Should we envision it on a local or on a global scale? On which terms can it promote the definition of a civil meaning for architecture at a time like the present, which seems to have given up on the notion of meaning both deliberately and definitively? These questions should spark a debate, since the answers are far from obvious. There is no doubt that it would be wrong to liken the ordinary kind of language that we are looking for to the language used in current professional practice, where clients dictate decisive choices, not architects. But it would be equally wrong to view poetry in architecture as a selfreferential artistic gesture that aims to shock observers; a gesture that, over the last thirty years, has sparked the construction of architectural icons that pursue the most boorish kind of consumerism.[54]

In the search for a new balance between prose and poetry, between convention and transgression, contemporary architects will benefit by reconsidering the Greek and Roman origins of the idea of character. Instead of pedantically reproducing the architectural forms of the classical tradition, they should aspire to instill new vigor into the idea of representation and to reopen the debate over it, which was too hastily archived by contemporary philosophy.[55]

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54 The spectacular (or iconic) architecture meant as a strategic aim of the so called "transnational capitalist class" is addressed in Sklair, 2017.

55 The notion of language in architecture seemed to have been dismissed in the Nineties and in the following decade; in this regard see Mitrovic, 2009. Nevertheless, a new approach called IPL (Italian Philosophy of Language), documented in Cimatti, 2015, is slowly reopening the debate. A possible application of this approach to architecture can be found in Djalali, 2017.

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Research Article

Museum as Object: From Postcard to Post

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Abstract

Whether it's through sharing picture postcards or visitor-produced photographs of museums on social media, these processes of image sharing, often dismissed as trivial, are acts which create and sustain relationships between the visitor, museum, and a wider audience. This paper positions picture souvenirs as significant, performative media, and understands postcards and Instagram posts as comparable social, objective and subjective mediums which reflect museum values and visitor decision-making.

Using the British Museum as a case study, this paper analyses postcards and Instagram posts within their networks of production, use, and distribution. Visitor messages are analysed alongside imagery, and grounded theory is used to offer an interpretive understanding of decision making and inherent meaning potential. This approach responds to Haldrup and Larsen's (2010) call for greater emphasis on 'photographing' in studies of tourist media and contributes to a deeper understanding of the role of photography in museum visitor experiences.

Photography of the museum transforms 3D spaces into 2D objects, miniaturising the institution, making it mobile, and readying the museum for 'new' social uses, and research indicates that whilst the aims of photography differs between museum, commercial publisher, and visitor, the decisions which underpin production are consistent. Through use, a connection is fostered between museum and person, and institutional and personal messages are read congruently. This connection is heightened online with photographs shared in 'real-time' alongside narratives which more closely reflect lived experiences.

These photo-sharing practices enrich the visitor experience, allow visitors to 'own' the museum, and facilitate and support social interaction.

Keywords: Instagram, Museums, Postcards, Tourism, Visual Culture.

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Araştırma Makalesi

Nesne Olarak Müze: Kartpostaldan Paylaşıma

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Özet

İster kartpostal paylaşımıyla ister ziyaretçilerin müzelerde çektikleri fotoğrafları sosyal medyada paylaşmasıyla olsun, bu görsel paylaşım süreçleri genellikle önemsiz olarak değerlendirilse de, ziyaretçi, müze ve daha geniş bir kitle arasında ilişkiler kuran ve sürdüren önemli eylemler olarak görülmelidir. Bu makale, kartpostalları ve Instagram paylaşımlarını, müze değerlerini ve ziyaretçi tercihlerini yansıtan, karşılaştırılabilir sosyal, nesnel ve öznel araçlar olarak ele alarak, bu görselleri anlamlı, performatif bir medya biçimi olarak konumlandırmaktadır.

British Museum'u bir vaka çalışması olarak ele alan bu makale, kartpostallar ve Instagram gönderilerini üretim, kullanım ve dağıtım bağlamlarında analiz eder. Ziyaretçi mesajları, görsellerle birlikte incelenir ve temellendirilmiş kuram yöntemi kullanılarak karar alma süreçleri ve bu görsellerin içerdiği anlam potansiyeli yorumlanır. Bu yaklaşım, Haldrup ve Larsen'in (2010) turistik medya çalışmalarında 'fotoğraf çekme' konusuna daha fazla odaklanılması gerektiğine dair çağrılarına yanıt verirken, fotoğrafçılığın müze ziyaretçi deneyimlerindeki rolüne dair daha derin bir anlayış sunar.

Müzenin fotoğraflanması, üç boyutlu mekânları iki boyutlu nesnelere dönüştürerek müzeyi küçültür, taşınabilir hale getirir ve onu 'yeni', sosyal kullanımlar için hazırlar. Araştırmalar, fotoğrafçılığın amacı müze, ticari yayıncı ve ziyaretçi arasında farklılık gösterse de, üretimi yönlendiren kararların genellikle tutarlı olduğunu ortaya koymaktadır. Bu süreçte, ziyaretçi ile müze arasında bir bağ kurulur ve hem kurumsal hem de kişisel mesajlar bir bütünlük içinde okunur. Çevrimiçi paylaşımlarda, fotoğraflar 'gerçek zamanlı' olarak ziyaretçi deneyimlerini yansıtan anlatılarla birlikte paylaşılır ve bu bağ daha da güçlenir.

Bu fotoğraf paylaşım pratikleri, ziyaretçi deneyimini zenginleştirir, ziyaretçilerin müzeyi 'sahiplenmesini' sağlar ve sosyal etkileşimleri destekleyip kolaylaştırır.

Anahtar Kelimeler: Instagram, Müzeler, Kartpostallar, Turizm, Görsel Kültür.

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INTRODUCTION

Sante (2023) remarks that picture postcards are ancestors of social media. There are many parallels which can be drawn between the two media when reflecting on their use as pictorial-objects which facilitate communication; postcards are visual textual objects which are primarily used for communication (Rogan, 2005), as are Instagram posts (Leaver et al., 2020). As mediums, they are ephemeral in nature (Snow, 2010; Budge & Burness, 2018), and, considered during peak periods of use, they offer quick modes of communicative exchange (Rogan, 2005; Staffs, 1966; Leaver et al., 2020; Frier, 2020).

Museum visitors have shared picture postcards with friends and family since at least 1898, and many museums produced postcards at the turn of the century; the Times reported on new postcard collections released by the V&A in 1920 (The Times, 1920) and the Natural History Museum in 1924 (The Times, 1924), and 1927 (The Times 1927). An estimated 200-300 billion postcards were sent across the world between 1895 and 1920 (Rogan, 2005) and this evidences a widespread desire to record and share personal experiences, but also highlights the cultural significance of postcards as a communication medium during this period.

Today, the desire to share images of museums and their collections remains, but visitors are no longer reliant on museums and commercial publishers to create shareable images. It is common to observe visitors walking around museums and galleries, taking photographs, not only to document their visit but to share with others online (Budge, 2018).

Although integral to many museum experiences, the use of photographs by visitors is relatively underexplored (Larsen & Svabo, 2014; Budge, 2017). Edwards (2022) explains that this, in part, is due to the mass-produced nature of postcards not being considered influential to museum cultures, and Budge (2017) cites the newness of social media as a reason limiting the number of studies which connect museums and Instagram. Budge (2017) says, "This is problematic because assumptions begin to accumulate about what it is that people are doing (or not doing)", and this research responds by considering picture souvenirs as meaningful media, rather than trivial objects.

Reflecting on museums as sites of 'gazing', the paper considers visitor viewing, contrasting the concept of the tourist gaze with that of the curatorial eye. Emphasis is placed on 'behind the scenes' decision making, particularly concerning the development and production of picture postcards, the concerns museums had about producing pictorial keepsakes at the turn of the century, and the choices made by visitors today when sharing photographs.

This research uses the British Museum as a case study and questions the enduring popularity of views featured on historic postcards. Reflecting on Sante's (2023) observation that picture postcards are ancestors of Instagram posts, the research analyses both medium to better understand how the use of key views by visitors might have developed. The media are considered within their networks of production, use, and distribution, and through doing so, it responds to Haldrup and Larsen's (2010) call for greater emphasis on 'photographing' in studies of tourist media. Cumulatively, this approach contributes to a deeper understanding of the role of photography in museum visitor experiences, and the informal use of museums by audiences.

VISITOR GAZING AND MUSEUMS

Visitor viewing practices are as diverse as the museums and exhibitions they take place within. These viewing practices are shaped by an interplay of social norms, cultural backgrounds and individual experiences. Understanding how visitors see, engage with and interpret museums and their exhibitions through the use of photographs offers insight into the broader impact of visitor purchased, used, produced, and shared photography.

This diversity in viewing practices underscores the multifaceted nature of the tourist gaze, a concept which outlines how tourists perceive, interpret and react to their surroundings. Urry (1990) suggested that the tourist gaze was primarily a visual practice, shaped by and informed by social and technological influences. He refers to the 'medical gaze', drawing from Foucault, to describe how medical professionals view the body through the lens of clinical knowledge. Applying these concepts to tourist, Urry (1990) argued that tourists develop learnt ways of looking through consuming mediatised images before their visit, such as advertisements, travel guides and postcards, highlighting their importance in shaping tourist experiences.

Perkins and Thorns (2001) argue that this conception of the tourist gaze "is too passive to encapsulate the full range of the tourist experience" and advocate for thinking about tourist behaviour more broadly. Haldrup and Larsen (2010) also contrast this visual-oriented perspective and argue that "Photography is an emblematic tourism performance." Both Perkins and Thorns (2001), and Haldrup and Larsen (2010) consider tourism as processes in which photographers are performers that are actively involved in the consumption and production of images and culture.

As part of her study of tourist photography at the Rock of Aphrodite, Stylianou-Lambert (2012) analyses postcards and tourist photographs shared online and reflects on whether tourists simply mimic before-seen images, or create images which are distinctive to the photographers. She considers not only the images, but the behaviours of tourists, affording them agency and acknowledging the performative nature of photography and this incorporates multiple perspectives with regards tourists as consumers, producers, and performers. She concludes that, despite tourists actively participating in photography and creating images with personal significance, these images are influenced by broader conventions, such as established visual norms, photographic etiquette, and social influences (Stylianou-Lambert, 2012). These processes may reinforce the value of particular views, and result in more photographs which mirror the scene, and perhaps communication.

The enduring value of specific views is highlighted in a study by Greenwald (2007). Reflecting on the similarity between early 20th century promotional images at Yellowstone and contemporary visitor photographs, Greenwald (2007) argues that the photographs are similar because there have been few changes to the landscape, and that "the impulse to take a photograph that looks like those encountered before" remains. This desire may be enhanced by the increased availability of tourist-produced imagery shared online.

The Tourist Gaze 3.0 (Urry & Larsen, 2011), published 21 years after the first version, incorporates ideas of increased digital media influence, reflects on the multi-faceted actions of tourists, and acknowledges that tourists not only consume place, but produce and share it through photography, which leads to a more interactive and participatory gaze. And whilst there is no single tourist gaze,

gazing is "structured by culturally specific notions of what is extraordinary and therefore worth viewing" (Urry & Larsen, 2011).

Urry and Larsen (2011) explain that since the introduction of the Michelin Guides in the early 20th century, the tourist gaze has included the museum, but Larsen and Svabo (2014) notes that museums are often overlooked tourist research studies. Museums are full of exhibitions and are made to be looked at, and as photographs allows "the gaze to be reproduced, recaptured and redistributed over time and across space" (Urry & Larsen, 2011), in museums, curatorial decisions shape visitor engagement and teach the audience how to view objects in collections.

Museums produce guides, blogs, they share content on social media, create postcards, and publish other supportive media. Postcards disseminate the curatorial eye (Edwards, 2022), treasure trails teach children how to gaze within museums and promotes "more focused visual engagement" (Larsen & Svabo, 2014), and adverts often support exhibitions, identifying significant cultural objects. Reflecting on the tourist gaze, this process may 'visually objectify' artefacts, transforming 3D objects into 2D pictorial keepsakes which not only show people how to see and what is of value, but also provide a sense of ownership in buildings where it's unlikely visitors can physically touch what they're looking at.

In museums, visitors negotiate spaces and engage with exhibitions using interpretive frameworks which incorporate personal experiences and learnt ways of looking. Visitors consume media but they also produce their own images, and share photographs alongside personal messages. Whether taking photographs to share on Instagram or selecting postcards to send to friends at home, all visitor-produced and visitor-shared imagery reflects moments of decision making and this has value.

PHOTOGRAPHIC SOUVENIRS, MUSEUMS, AND THEIR AUDIENCES

Picture-postcards have had a constant presence in museums since the turn of the 20th century, yet there is little research which considers the picture postcard and its relationship with museums, or indeed the museum audience (Beard, 1992; Edwards, 2022). Edwards (2022) argues that the popularity of the picture postcard in museums, at least during the interwar period, is in part the result of a shift in publicness of museums. During the interwar period sales grew year upon year, with their popularity as a souvenir and as a "symbol of 'having been there'" (Beard, 1992) persisting through until today. Photography miniaturises and duplicates museums and their objects, and once printed as a postcard, the purchase allows visitors to in effect own part of the museum, reflecting the 'publicness' of museums at the turn of the 20th century.

Picture postcards are message carriers (Rogan, 2005) and in the museum environment, postcards are multifaceted, multi-performative media which connect institution and audience, educate, and entertain. They provide the museum visitor with a symbol of their visit (Beard, 1992), but they also miniaturise collections (Edwards, 2022), and show the audience how to look at exhibits (Edwards, 2022).

Some of Rogan's (2005) picture postcard "pull factors" are evident in motivations for purchasing and using museum postcards, notably, the aesthetics of the card itself, with research suggesting additional reasons for purchase (Beard, 1992; Edwards, 2002). Using the British Museum as a case study and sales ledgers from

the period 1988-1991, Beard (1992) asks why particular postcards come to act as mementoes for a visitors experience. She remarks that some of the consistent best sellers aren't particularly "pretty" (Beard, 1992), suggesting alternate reasons for use and one of her main arguments relates to the postcards being used to make sense of a museum experience. Edwards (2022) offers another angle to this conversation, noting that postcards provide a sense of ownership, of both the postcard as an object, and the artefact on display to the postcard holder. Tracing decision making processes behind postcard production at the V&A during the interwar period, Edwards (2022) argues that the museum utilised existing skills and knowledge to inform object selection and production processes (Edwards, 2022), thus retaining control over the quality of the final product, and in turn, the museum's message. The V&A positioned their "postcard production between educational dissemination and a response to popular interests" (Edwards, 2022), with discussions over the suitability of colour vs monochromatic prints, and the associated "moral qualities" of each. Edwards (2022) notes that for some the use of monochromatic printing rendered postcards as objects of study, whilst for other, the use of colour improved the legibility of objects.

It is important to note that commercial publishers have differing aims in relation to their postcards, with an emphasis on sales, rather than knowledge dissemination. Reflecting on Youngs (2012) study of Grand Canyon postcards, we see that the use of colour can also add a sense of novelty. Youngs (2012) traces decision making at the Curt and Teich Company and says that, "During the manufacturing process, last year's postcard scene could be up-dated with a different palette of colours and subjects, thereby creating a "new" postcard with each printing". Further, this approach enables publishers to react to new fashions and styles, appealing to new and diverse markets.

In today's context, armed with smartphones, museum visitors can quickly and easily respond to and participate with current trends through their own photography. Contemporary museum visitors have an awareness of their digital audience, and this may influence photographic decisions, such as what objects are photographed and how they are portrayed (Suess, 2018). With editing tools and filters at hand, visitors run through a series of editing and production decisions not dissimilar to those made by museums and commercial publishers with postcards. And, as museums curate their collections, generally, social media users 'curate' their photographs online, create "enduring exhibition[s]" and "present content as a compelling *narrative*" (Zhao & Lindley, 2014),

Budge and Burness (2017) argue that there is a strong desire for visitors to share personal perspectives through photography, and that visitor photographs illustrate how objects are perceived in collections, suggesting that visitors are primarily engaging with objects through sharing photographs of them. Through photography, museum audiences become active producers of museum content and Instagram marks a shift for museums, with institutions moving from talking to visitors, to being in dialogue with them.

METHODOLOGY

Using the British Museum as a case study, the research is bounded by defined time periods and is comparative in nature.

Postcards used during the period 1900-1930 were collected and archival records from the same period sourced to determine museum production decisions. This period of study incorporates much of Rogan's (2005) identified "heyday" of picture postcard use, and reflects on the British Museum's production of

postcards from 1912 (British Museum Standing Committee, 1912). This ensures the sample incorporates postcards produced by the British Museum, in addition to those commercially available during the turn of the 20th century.

Instagram posts shared by visitors using the #BritishMuseum hashtag and/or geotag were collected during a 1 week period in 2022 and an open-ended question was asked of a random sample of digital participants to gain deeper insight into visitor perspectives. The period of collection was identified in respect of extant studies (Budge, 2017, 2018; Budge & Burness, 2018; Suess, 2014, 2018), and analysis of visitor upload rates to Instagram.

Research reflects on Latour's actor-network theory, and Postcards and Instagram posts were considered within their networks of production, use, and distribution. Analysis examines the socio-cultural contexts within which images of the British Museum were used by visitors, and this responds to Haldrup and Larsen's (2010) call for greater emphasis on 'photographing' in studies of tourist media. By contrasting 'ready-made' postcards with visitor-created Instagram posts, the research aims to identify museum-values inherent in the personal messaging, and to explore how these values are expressed, and used by visitors in their communication. It further seeks to understand how photographs of a public museum come to support personal communication, and how similar views can convey different meanings for different people.

Analysis considers picture postcards and Instagram posts as semiotic-objects, incorporating visitor messaging alongside photographs to provide a wholistic understanding of the media in use. This ensures that visitor messages are read, understood, and analysed alongside photographs of the British Museum, as they would be by those receiving a postcard, or viewing an Instagram Post.

Analysis makes reference to Ledin and Machin (2018) and Kress and van Leeuwen (2006), to 'open up' the postcards and Instagram posts prior to analysis using grounded theory method. A series of questions were asked of each data to identify their denotive attributes alongside their meaning potential, this information was coded alongside transcripts of postcard messages and Instagram captions, and other visual markers, such as postmarks, hand written annotations, hashtags, and geotags, and each data was analysed in its entirety. Analysis progressed iteratively through open, axial and selective coding to ensure the resultant conclusions were reflective of the data, with an aim to offer insight into the meaning-potential of the shared visual media.

To retain participant anonymity, the reverse side of postcards have been edited to remove identifying information such as names and addresses. Further, the Instagram posts included in this paper are examples of 'typical' photographs present in the dataset and are not visitor-produced. Instagram posts have been recreated by an author (Simpson) to prevent back-searching and this approach is congruent with existing studies using visitor-created Instagram posts (Budge, 2018).

DOMINANT SCENES

60 British Museum postcards which were used between 1900 – 1930 were collected. The dataset is largely comprised of architectural views, and 'spatial' images account for 91.7% of the dataset, with only 8.3% of the postcards collected showing objects from the museum collection.

All views of the British Museum are of the south elevation on Great Russell Street. The majority of photographs are taken from elevated locations, looking across and over the boundary wall and railings, or are taken at ground level looking obliquely towards the British Museum, again from behind the railings. The dataset does include views within the boundary of the museum's forecourt (21.8% of elevations), but these are less frequent than those from outside the boundary wall of the museum (78.2% of elevations).

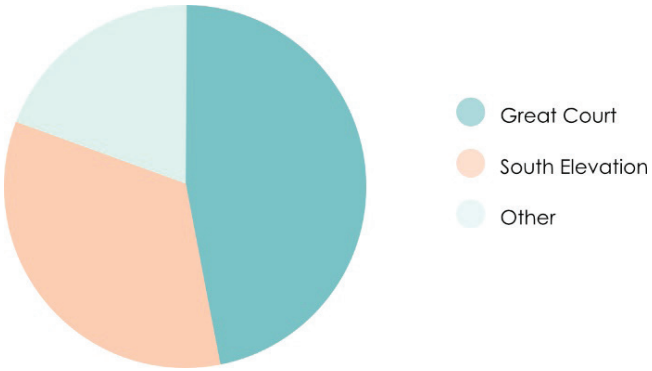

Figure 1. Pie chart showing spaces evident in shared photography of the British Museum. Data includes selfies where the architecture remains a significant feature of the image.

Source: Author's work (Simpson).

Although there have been significant changes to the British Museum, notably the development of the Great Court, however, the south elevation of the museum is still fairly frequently shared by its visitors today through personal photographs on Instagram. During a 7-day period in 2022, 4,768 individual images and videos of the British Museum were collected, the data was reviewed and posts which did not represent visitor photography, i.e. advertisements, were removed. A random sample of 10 posts per day were selected, which resulted in a total of 70 posts encapsulating 239 photographic data. Within this, 10.9% of the photographs were primarily architectural, an additional 16.7% of photographs including significant views of elevations and/or spaces as part of self-representational photography. In total, 66 of 239 photographs prominently feature the museum building; the Great Court is the most dominant view (31), but the south elevation (22) remains prominent in the data set. An additional 13 photographs feature other spaces, including the Kings Library, the Egyptian sculpture gallery, and others.

Due to its dominant presence in both historic postcards and contemporary Instagram posts the south elevation is the focus of this study. The values inherent in the façade and the meaning-potential of the elevation is first discussed, visitor image use is then explored, with reference to these values.

THE SOUTH ENTRANCE AND MUSEUM VALUES

Unlike other museums in the 1700s, the British Museum wasn't formed from a royal collection, but through the will of Sir Hans Sloane and an Act of Parliament. In 1753 the government passed a Parliamentary Act establishing a Trust for Sir Hans Sloane's collection of objects, and this required the Trustees to find a suitable building for display, whilst also preserving the objects for "public use, to all Posterity" (Timbs cited in Sanders, 1984). The collection was to be accessible and free of charge to all citizens (British Museum, 2020); a public museum.

The construction of the museum, as we see it today, began in 1823. The building was constructed in the Greek Revival style, with the façade of the south entrance completed in 1852. The British Museum materially represents an enlightenment principle (British Museum, 2020), and as a building, it encapsulates and represents "an early nineteenth century ideal – the unity of human knowledge" (Sanders,

1984). Sanders (1984) argues that "it was natural" for the British Museum to be constructed in the Greek Revival Style, "in order to assert its direct descent from Athens and Alexandria", and this decision grounds the museum in the past, providing a suggestion of historical authenticity, even at the onset of its construction

Figure 2. The left photograph shows the British Museum south elevation, the right photograph shows the stepped entrance beneath the central pediment.

Source: Author's work (Simpson).

The design of the British Museum follows a classical model (Merkel, 2002) and is monumental in scale. The south entrance is elevated above a series of steps and an entablature extends continuously along the length of the south portico, which is supported by 44 Ionic columns with distinctive capitals. The museum has a flat roof, but the main elevation has a pediment, the narrative of the tympanum, the sculpted space within the pediment, is therefore a significant element of the museum as this is an aesthetic addition, rather than structural. The sculpture represents the "Progress of Civilisation" (British Museum, n.d.1), it indues the museum with an association with law, the sacred, and cultures of the past (Merkel, 2002) and firmly situates the British Museum within enlightenment principles. And, for those visitors who may not 'read' the pediment, the aesthetics of the tympanum and the buildings architectural style will likely still bring about perceptions of power and authority, which are terms (Martins, 2021) describes neo-classical museums typically embodying.

Although informed by the preceding Monatgu House, the general footprint of the British Museum's southern elevation 'opens up' to the visiting public, 'enveloping' them as they approach the entrance. This elevation combines a sense of authority alongside a welcoming and sweeping entrance sequence, with the approach "still likely to impress a visitor now as it did a commentator on London in the 1860s" (Sanders, 1984).

Whilst there have been significant changes to the British Museum since the early 1900s, notably the development of the Great Court, the south elevation remains largely unchanged. A platform lift has been constructed to the west of the stepped entrance and the façade has been cleaned (British Museum Standing Committee, 1969-1971), but other changes are relatively minor and include changes of paint colour of railings, for example.

The museum has had an enduring presence on Great Russell Street. It has witnessed many significant moments in human history, from suffragette protests

in 1914 (British Museum Special Standing Committee, 1914), the evacuation of its collection in 1939 (British Museum Podcast) and the closure of the museum during the pandemic. The British Museum "is driven by an insatiable curiosity for the world, a deep belief in objects as reliable witnesses and documents of human history" (The British Museum Story, n.d.2) and, as an 'object', the museum, as a building, reflects this. The use of the Greek Revival style firmly roots the British Museum in history, and positions the museum within a pre-existing framework of philosophical, scientific and cultural ideas. We see, that as a piece of architecture, the museum communicates many of the foundational values of the British Museum, both at its time of construction, and today, and consequently, these are encapsulated in shared visitor photography.

SHARED POSTCARDS OF THE SOUTH ENTRANCE

Figure 3. Historic monochromatic postcard of the British Museum south elevation.

Postcard Production and Decision Making

Just as photographs of the south elevation incorporate museum values, the postcards produced by the British Museum do so too through the institution's decision making, which is integrated into the design and production processes of the cards themselves.

Postcards of the British Museum have existed from at least 1899, but the museum itself didn't start selling postcards until 1912 (British Museum Standing Committee, 1912). The British Museum had little control over the postcards produced by external publishers besides refusing permission to photograph within the museum grounds. The museum could not prevent photography proximate to the site, and consequently, all of the postcards in the dataset used before 1912 are images of the south elevation of the British Museum. Most of these postcards are taken from elevated locations nearby, looking across and over the railings on Great Russell Street. There are also a significant number of postcards with photographs taken besides the museum, on the pavement, looking obliquely down the street, again, showing the museum behind walls and railings.

Within museums, the photography of objects followed established 'rules', encompassing the curatorial eye. Edwards (2022) says that "photography made for publication followed the parameters established 'as effective object photography' which was established in the museum, and this, is translated into

the images shared on postcards." However, there were no established 'rules' with regards the spaces of the museum. Snow (2010) suggests that early amateur photographers took great influence from commercial photographic studios, effectively mimicking their styling in their own photographs, and with limited museum-produced spatial imagery, one of the few sources of guidance were the commercially produced postcards. Might the British Museum have reflected on externally postcards produced when creating their own collection?

The first set of postcards released by the British Museum included 182 photographs, 5 of which were views of the Museum (British Museum, 1912). However, unlike the postcards produced by external publishers, none of the views produced by the British Museum were external. The postcards were all internal views, and included the Reading Room, 'Iron' Library, King's Library, Mausoleum Room and the Egyptian Gallery. This decision outright rejected the 'popularised' views produced by commercial publishers suggesting a determination of the British Museum to position their postcard series as objects of education rather than entertainment. However, the internal views were new to the market, and these may still have instilled a sense of 'novelty', regardless of whether or not that was the intention of the museum.

Between 1912 and 1920 the original postcard series was expanded with 2 additional, external views of the British Museum recorded in the 1920 'Stock of Publications'. The two views are described as the "Main Entrance" and the "Front Portico"; reflecting the views printed by external, commercial publishers. Yet still, differences with presentation remain between commercial publishers and the British Museum; whilst commercial publishers largely released coloured cards, the British Museum opted to continue to print their architectural postcards (as part of a larger series) as a monochromatic set with the scenes framed in white space, rather than full-bleed images.

The British Museum did consider the use of colour plates, and during this period, Edwards (2022) notes a conversation between the British Museum and the Victoria and Albert Museum regarding colour production of postcards. The British Museum responded stating that the use of colour was, "out of the question for this particular purpose". Noting the implications of colour, namely, suggestions of entertainment, it may be that the British Museum Trustees resisted colourising the original series to instil museum values in the cards, but also to emphasise their cards as distinct from those commercially produced.

Figure 4. Historic monochromatic postcard of the British Museum south elevation.

Young (2018) argues there was a colour revolution during the 1920s, saying that the use of colours transformed from "being merely a consumer choice to a fundamental idea about ordering and classifying the world". Colour then, was no longer simply associated with ideas of entertainment, and with pressure from the Treasury to increase profits (British Museum Standing Committee, 1921a), the British Museum began to produce coloured sets from at least 1919 (Standing Committee, 1919).

The 1935 coloured postcard series included 426 individual postcards (British Museum, 1935), more than double the original monochromatic 200 series of 1912. The south elevation of the British Museum however remained in the monochromatic series, along with all other spatial and architectural images, maintaining this distinction between the Museum and external publishers.

Whilst we cannot be certain whether the Director, Board of Trustees and Department Keepers, hoped to focus visitors attention on the collection, rather than the building, or felt that images of spaces didn't align with the museum's aim to disseminate knowledge, continuing to produce the south elevation as a monochromatic postcard at a time when the use of colour was cost effective and almost presupposed represents a significant decision. This suggests that the British Museum, as an institution, were making postcard production decisions which reflected the values of the museum, even when under financial pressure from The Treasury.

Postcards in Use

Postcards of the British Museum's south elevation have been used for a variety of communication, including sharing museum visits and experiences, activities in and around London, and sending cards as gifts to one another.

The postcards are also used as part of ongoing communication, with some senders using cards to organise travel for the following day, request the recipient brings particular items with them when meeting, or, to share a new address. Phatic communication is the dominant use of the postcards, with all of the used cards conveying elements of social function, with several not imparting any information besides a simple greeting.

Many of the postcards state "British Museum, London" on their fronts and the south entrance has been used to support messages which 'locate' the sender in London, with examples of cards describing the sender being "here" but discussing activities spread across the city, rather than at the British Museum itself. In the 55 spatial postcards, only 6 messages make direct reference to the British Museum, either by simply stating that the sender has visited or through describing an experience, but through association, all postcards, regardless of written content, suggest a connection between sender and museum.

50.9% of used postcards of the south elevation include messages which have been written upside down or at 90 degrees to the address, presumably to prevent those handling and delivering the cards from reading the messages. In these examples, we see a contradiction between the publicness of the museum and the privateness of the shared messages. Whilst it could be argued the decision to support 'banal' messaging with views of the British Museum diminishes the museums significance, regardless of how 'every-day' some of the messages may first appear, efforts to privatise these messages suggests this type of messaging does have value, and that the views of the British Museum may support the meaning-making activities of the postcard sender.

Described as an "ephemeral" mode of communication which "often had a very short shelf life" (Snow, 2010), during the early 20th century postcards offered a fast and visual mode of communication between people. Staffs (1966) says that "Anyone wanting to notify a friend in the town or near-by village that he or she would be coming over for a cup of tea in the afternoon had only to send a postcard by the morning's post to be sure of its delivery in time". There are examples in the dataset of senders organising activities for the following day, and in one case, letting the recipient know that they are "coming in with the fox tonight", exemplifying this speed of communication. Noting the speed of communication and associated volume of postcards exchanged during the early 20th century, the mere fact that views of the south elevation were used at all, is significant.

Contrasting this ephemerality is the enduring nature of gifts with people noting cards are "for" someone in their message, with one sender remarking that this was due to the recipient "collecting them". This actively demonstrates the sender was likely considering their recipient in making the postcard selection, perhaps reflecting on the aesthetics of the card, or the British Museum itself, and the combined relevance to their audience. There are also examples in the dataset of recipients retaining the card. This is evidence with a note "Went here Saturday 29th Sept 08" penciled on the image-side, and in this instance, the postcard was sent as part of continued communication, with no reference to the British Museum in the senders messaging.

The use of the British Museum's façade as a pictorial object that is versatile enough to support and accompany a breadth of messages, which are often unrelated to the British Museum, and their use as object by both sender and recipient is important to highlight.

Although there may be a disconnect between visual and verbal messages, and whether cards are used as part of continued communication or are a gift, the two sides of the card are read collectively; the values, principles and associated perception of the British Museum tied up with the image are understood alongside the stories, meanings and context of personal messages. Elements of the sender's message are layered onto the message conveyed by the façade through 'reading', and this process may imbue the museum with a sense of personalisation in the eyes of the recipient. The reverse may also occur, with values evident in the museum's south façade enhancing and lending authority to the sender's message.

We have offered reasons for selecting the south elevation as a postcard, with purchases made because of aesthetic responses, a consideration of recipient tastes, to support personal messages, and, to share museum experiences. Beard (1992) conducts a study using postcard sales ledgers between 1988-1991 at the British Museum and considers motivations for purchases. Evaluating which cards are the most 'popular', the south elevation consistently ranked in the top 10 cards for all three years, some 60-90 years after those used in this paper's dataset. Beard (1992) offers insight into why this scene is so frequently chosen, suggesting that the elevation acts as a symbolic "treasure chest", the "(mystical) container of that totality, the frame that gives sense and order to the baffling array of the incomplete remnants of all the past civilizations that lie inside".

And thus, we see a return to the notion of the versatile façade; an elevation, as a sign, symbolic enough to represent museums at large, and London, whilst simultaneously encapsulating and representing the British Museum's collection. Underpinning this broadened perspective of motivations to use museum

postcards is the evidence of postcards being sold in shops beyond the British Museum during the study period, both prior to 1912 before the Museum opened its first postcard stall, and after, when the Museum supplied external 'agents' with postcards (British Museum Standing Committee, 1921b). Buying a postcard therefore didn't require a person to enter the British Museum, and thus, the use of the south elevation need not be limited in use to describing museum experiences. However, the view of the British Museum, and the values tied up in the image of the museum, and the decision making of the Board of Trustees support personal messaging, regardless of content.

THE SOUTH ENTRANCE AND INSTAGRAM

Unlike postcards, people sharing images of the British Museum on Instagram have attended the museum, and visitors have greater choice with regards the views chosen to share with others.

All of the shared images of the south elevation are inherently tied up with place, be that through the image itself markedly locating the participant at the British Museum via the symbolic elevation or signage, or the UK, through inclusion of the flag above the pediment. Many participants also shared their location via accompanying hashtags, including #BritishMuseum, #London, and #UK and this shows the elevations use in place-locating activities by visitors.

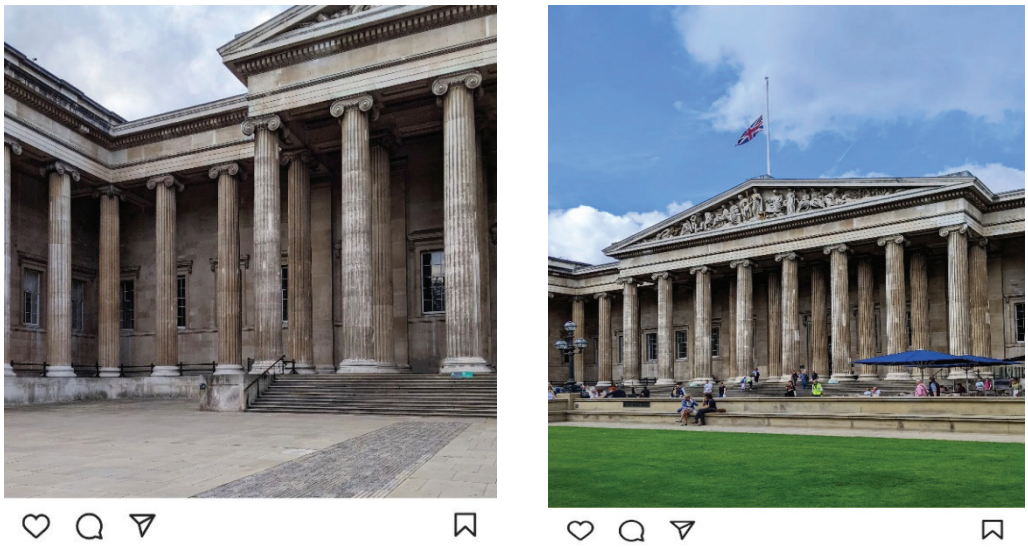

Figure 5. Examples of typical photographs shared to Instagram by visitors. On the left, AI has been used to remove signage and people, on the right, colour has been emphasised and the image aligned within the Instagram application.

Source: Author's work (Simpson).

Photographs of the south elevation can be largely categorised in two ways: either as architectural with few or no fellow visitors present, or as self-representational photography, where the participant is visible alongside the museum, with others visitors either barely noticeable or absent.

Predominantly, participants who shared 'architectural' views of the elevation opted not to include a caption to accompany their image. Those who did use captions broadly reflected on their experience, referencing the museum as a 'place'. One participant shared the caption "British Museum 🏛 GB", which identifies the museum, both visually (as a 'typical' museum), and geographically. Djenar et al. (2017) explain that emojis are language which should be read as text elements, not understood as separate visual things. The authors say that emojis are elements which "function intersubjectively in promoting solidarity through shared light-hearted attitudes" (2018). The use of the 'museum' emoji in this instance reflects the aesthetic of the British Museum, but may have also

been used to layer a sense of playfulness and informality alongside a 'serious' view.

Another participant described the museum as somewhere "where you relive history over and over again"[1]. This reflects the breadth of objects in the British Museum, but also suggests the visitor has previously visited and may return again. Additionally, the museum allows the participant to share their own interests with their audience whilst subtly suggesting their experience was enjoyable.

Those engaging with self-representational photography more often opted to include captions, which largely had some element of joviality or irony. One example of a participant jumping in front of the elevation is captioned "Responsible cultural trip to the British Museum", whilst a group photograph opts for "Having fun". Selfies aren't often considered 'typical' of visitor behaviour and may be disregarded as meaningful media due to a suggested disengagement between space and visitor, with visitors turning their back on the space they are photographed. However, in the majority of selfies taken at the south elevation, there is consistent centralisation of the participant beneath the British Museum's pediment. This visual alignment suggests a connection between participant and architectural space, with participant and photographer actively engaging with the museum environment to ensure this centralisation.

Participants who opted to share architectural images without captions also generated a connection with the museum, albeit more understated. When shared on Instagram, photographs of the south elevation are read beneath the photographer's username, marking an association between museum and person. In essence, the Instagram user 'owns' the shared image, and, the image comes to reflect some aspect of the photographer as part of their personal profile. Online, motivations for sharing views of the south elevation reflect those bound up with the tourist gaze, and arguably, in an environment where the 'skill' of the photographer is evident, the aesthetic of the final photograph becomes ever important as this comes to represent not only the museum, but the photographer.

Responding to an open-ended question, participants describe difficulties faced in photographing objects, saying that objects are "very difficult to take decent photos of", "artifacts can't be photographed clearly through the glass cases", and that "there were always a lot of people in the way to get great photos", and this perhaps explains why views of the museum are so frequent in the dataset. In sharing a view of the south elevation, a further participant simply noted "the sky was nice", and their photograph "looked good". Cumulatively, this shows an appreciation of the aesthetics of the shared image amongst participants.

Through Instagram and with the use of supporting third party applications, people are able to edit and manipulate their images, working through processes of colour saturation, alignment, and in some instances incorporating AI to remove parts of the image which are less aesthetic, likes bins and signage. The option to edit photographs is part of the 'workstream' of the Instagram platform, and whilst none of the participants described these process, perhaps because it is an inherent part of the application, it is probable that many have adjusted their image. Through processes of editing, Instagram users 'adopt' the view, it becomes their image not only because they have captured it, because they have worked on the image. Shared photographs of the south elevation act as mediators between museum and personal messaging, and we see they simultaneously represent person and place.

1 Participant caption rephrased to maintain anonymity

Participant 5056 included an image of the south entrance as part of a carousel post. In this post, the south elevation was the first image of the sequence, and, unless an Instagram users scrolled through the images, the south entrance would be the only photograph seen. The image, accompanied by the caption "Day at the British Museum[2]", connects person and place, but also demonstrates a digital development of Beard's (1992) concept of the elevation as "treasure chest". Scrolling the carousel we see the post fully encapsulates the participants day, including not only a series of objects, but their lunch, and a selfie. The south elevation, in this instance, is not only used to broadly 'collect' and make sense of the array of artefacts on display, but a selection of activities and events experienced throughout the day which are personal to the photographer. The south elevation is no longer a container, but a threshold, which when you scroll through, allows Instagram users to witness activities and experiences of the museum and beyond.

CONCLUSION

The 'commodification' of the Museum via postcards shared the curatorial eye, and showed the public how to see the museum and its collection. The British Museum asserted control over the production of their own postcard series and associated messaging, but we do eventually see the museum produce 'popular' views as part of their own series of cards. Maintaining monochromatic production of these views distinguishes museum manufactured cards from commercially produced 'keep sakes'. This enabled the British Museum to participate in popular, social, forms of communication whilst sharing their spaces and collection, and retaining a sense of authority.

However, the British Museum were not the sole producer of museum-postcards, and reflecting on the variation of postcards available to the public during the study period, the range of views, and the use of monochromatic and coloured prints, we see that postcard senders had access to a range of museum-photographs to support their messages. Whilst there were limited options with regards viewing angles of the British Museum's south elevation, a person was able to choose a postcard which may reflect an aesthetic preference in the purchaser, or the tastes of their recipient, allowing for greater personalisation, and perhaps meaning incorporated into the shared messages.

Regardless of postcard selection, these postcards incorporate museum values alongside personal messaging, aesthetic preference, and, in many examples, are used to maintain social connections. Much like Perkins and Thorns (2001) description of tourist photography these postcards are far from passive; the south elevation is an active photographic object. As Beard (1992) notes the south elevation comes to represent the "baffling" array of the British Museum's collection, through use, we see the facade also supports a broad array of messaging, with the view used to support messages of museum experiences, to support phatic communication, and also the sharing of trivial information. Whether commercially or institutionally produced, these postcards are mediatised representations of the British Museum, and through use, they shape broader audience perceptions of the museum, as part of the tourist gaze.

Today, armed with smart phones, museum visitors are able to take and share their own photographs with friends and families, and we see the museum, as an institution, has little to no control over how their visitors share photographs. Even with significant development to the building, and free reign over the museum,

2 Participant caption rephrased to maintain anonymity

many visitors still opt to share views of the south elevation. Whilst there is natural variation in the images taken, all are taken from within the museum grounds and share some view of the pediment, firmly locating the photographer as a visitor to the British Museum, regardless of whether they are behind the camera, or in front of it.

The supporting captions of the sampled Instagram posts are much less detailed than the majority of messages on the reverse side of postcards, and significantly, when a caption has been shared, they largely reflect a museum experience. This arguably is due to the photographer needing to have attended the British Museum to take their own photograph. Whilst there is notable similarity in some of the images shared on Instagram with those on postcards, particularly when taken inside the museum's forecourt, the contemporary museum visitor's use of social-photographs more closely relates to museum experiences than the use of printed postcards at the turn of the century.

Postcard use embellished the British Museum's image with person, blending formal views with personal messages, fostering a connection between sender and museum, enhancing a sense of accessibility amongst a wider audience. This literal dissemination of museum imagery also extended socially, knowing that a friend of family member had visited encouraged recipients to attend themselves. This is particularly important during a period where museum were seen to be becoming more public.

Online, museum visitors curate their own images for their audience, and make the decisions postcard manufacturers once did with regard views and colouring. The image users are now image producers, and images of the south elevation produced and used by visitors today reflect the British Museum, its values, and the visitor; the curatorial eye, evident in institutional postcards, is enmeshed in visitor-produced photographs today. Further, the consistent use of the south elevation both in historic postcards and on Instagram today suggests the façade is an established and recognisable symbol of the British Museum.

Ultimately, shared social-images of the south elevation, regardless of whether sent to others as a picture postcard or shared online via Instagram, are purposeful modes of communication. These visual media blend personal narrative with institutional values, and reflect learnt ways of looking. It is evidenced that picture postcards encapsulate the curatorial eye, and the visually-communicated values become entwined with personal messaging, informing broader audience opinions and perception of the British Museum. Online, the values inherent in the British Museum's façade are incorporated into personal photography, and the continuity in representation of the south façade demonstrates the elevation as a symbolic pictorial-object. As postcards extended the British Museum's reach, so to do visitor-produced photographs; these images may act as informal 'guides' to fellow audiences, influencing photography.

Whilst this study does demonstrate that postcards and Instagram posts are valuable media to visitors, additional engagement with Instagram users, to better understand their photographic decision making, would further provide insight into how these visitor-shared images influence broader audience perceptions, and photographic behaviours.

Conflict of Interest

No conflict of interest was declared by the authors.

Authors' Contributions

The authors contributed equally to the study.

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Ethics Committee Approval

As part of the PhD study of Charlotte Simpson at the University of Nottingham, the study received ethics approval from the Research Ethics Committee at the University of Nottingham on [14.01.2022].

Legal Public/Private Permissions

In this research, the necessary permissions were obtained from the relevant participants (individuals, institutions and organizations) during the survey, in-depth interview, focus group interview, observation or experiment.

Additional Comments

The submitted paper includes two figures (Figure 3 & 4) which are reproducible under the CC BY-NC-SA 4.0 license through the British Museum.

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Research Article

Preserving Cultural Heritage with Digital Design and NFT Technologies: Innovative Approaches in Architectural Education

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Abstract

This study explores the integration of Non-Fungible Tokens (NFTs) into architectural education to equip students with the knowledge and skills necessary to thrive in the digital age. By incorporating NFT technology into the curriculum, the study aimed to foster a comprehensive understanding of digital design, intellectual property protection, and the potential of NFTs in preserving and promoting architectural heritage. The research found integrating NFTs empowered students to explore the intersection of art, technology, and commerce within the architectural realm. By transforming their designs into unique digital assets, students developed a deeper appreciation for their work's commercial potential and the importance of intellectual property protection. The study demonstrated the role of NFTs in fostering networking opportunities, enabling students to connect with a wider audience and potential collaborators. To fully harness the potential of NFTs in architectural education, the study emphasizes the need for a holistic approach that addresses ethical, legal, and environmental considerations. Educators must instil in students a strong sense of responsibility regarding the creation and utilization of digital assets, including copyright, licensing, and the environmental impact of blockchain technology. Fostering interdisciplinary collaboration is also crucial for equipping students with the diverse skill set required to navigate the complexities of the digital landscape. By addressing these critical dimensions, architectural education can effectively prepare students to become proficient digital designers and informed participants in the evolving NFT ecosystem. This research contributes to the ongoing discourse on the role of technology in shaping the future of architecture and preserving cultural heritage.

Keywords: Architecture, Architectural Education, Digital Design Studio, Digital Transformation, NFT.

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Araştırma Makalesi

Dijital Tasarım ve NFT Teknolojileriyle Kültürel Mirasın Korunması: Mimarlık Eğitiminde Yenilikçi Yaklaşımlar

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Özet

Bu çalışma, öğrencilere dijital çağda başarılı olmak için gerekli bilgi ve becerileri kazandırmak amacıyla, Değiştirilemez Jetonların (NFT'ler) mimarlık eğitimine entegrasyonunu araştırmaktadır. Çalışma, müfredata NFT teknolojisini dahil ederek, dijital tasarım, fikri mülkiyet koruması ve NFT'lerin mimari mirası koruma ve tanıtma potansiyeli hakkında kapsamlı bir anlayış geliştirmeyi amaçlamaktadır. Araştırma, NFT'lerin entegre edilmesinin öğrencilere mimarlık alanında sanat, teknoloji ve ticaretin kesişimini keşfetme gücü verdiğini bulmuştur. Öğrenciler, tasarımlarını benzersiz dijital varlıklara dönüştürerek, çalışmalarının ticari potansiyeli ve fikri mülkiyet korumasının önemi konusunda daha derin bir takdir geliştirdiler. Dahası, çalışma, NFT'lerin ağ kurma fırsatlarını teşvik etmedeki rolünü göstererek, öğrencilerin daha geniş bir kitleyle ve potansiyel işbirlikçilerle bağlantı kurmasını sağlamıştır. NFT'lerin mimarlık eğitimindeki potansiyelinden tam olarak yararlanmak için çalışma, etik, yasal ve çevresel hususları ele alan bütünsel bir yaklaşıma olan ihtiyacı vurgulamaktadır. Eğitimciler, öğrencilere telif hakkı, lisanslama ve blok zinciri teknolojisinin çevresel etkisi de dahil olmak üzere dijital varlıkların yaratılması ve kullanımı konusunda güçlü bir sorumluluk duygusu aşılamalıdır. Disiplinler arası iş birliğini teşvik etmek, öğrencilere dijital ortamın karmaşıklıklarında gezinmek için gereken çeşitli beceri setini kazandırmak için de önemlidir. Bu kritik boyutlara değinerek, mimarlık eğitimi öğrencileri yetenekli dijital tasarımcılar ve gelişen NFT ekosisteminde bilgili katılımcılar olmaya etkili bir şekilde hazırlayabilir. Bu araştırma, mimarlığın geleceğini şekillendirmede ve kültürel mirası korumada teknolojinin rolü hakkındaki devam eden söyleme katkıda bulunmaktadır.

Anahtar Kelimeler: Mimarlık, Mimarlık Eğitimi, Dijital Tasarım Stüdyosu, Dijital Dönüşüm, NFT.

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INTRODUCTION

Throughout the 20th century, the rapid development of technology has encouraged extensive transformations in various sectors of society, including the field of art. The integration of digital technologies into art has led to paradigm shifts in the creation and perception of art. Particularly in recent years, digital art has started to emerge prominently, replacing traditional physical manifestations. According to Doğan et al. (2022), artists have increasingly embraced digital tools and techniques, significantly changing traditional art methods. These changes enable artists to harness the power of digital environments, acquire new capabilities, and produce works independent of the constraints of space and time. This production process allows designed artworks to be location-independent and readily accessible to a universal audience. In this context, the convergence of art and technology not only expands the boundaries of designed artworks but also facilitates the generation of monetary gains through online platforms and virtual marketplaces, giving rise to new economic models. Moreover, technological advancements give artists unique control over the entire life cycle of digital artworks, including creation, presentation, storage, and distribution.

Simultaneously, through a multitude of digital tools and software, artists can take charge of designing and representing their works without being dependent on any individual or institution. This autonomy contributes positively to the artistic production process and enhances the representation of artworks (Özeren & Qurraıe, 2024). The necessity of presenting digital artworks to art enthusiasts has led to the emergence of virtual galleries, online platforms, and new exhibition spaces that interact with these environments. These platforms facilitate the preservation and security of digital art, ensuring the longevity and accessibility of digital works for future generations. Furthermore, the distribution and dissemination of digital art have undergone new technological transformations as digital artworks can be instantly shared globally through digital platforms and social media networks. This symbiotic relationship has evolved into a structure that fosters cross-cultural dialogue, collaborative initiatives, and increased artistic practices.

In digital culture, the necessity to establish and protect the rights of unique and original creations, particularly for displaying and selling such creations on a global scale, has led to numerous developments. This matter has gained increasing importance and garnered considerable interest in scientific fields. Particularly, the concept of Non-Fungible Tokens (NFT) has emerged as a significant focal point (Doğan et al., 2022). NFT refers to digital assets stored on a blockchain, representing a unique digital entity with no identical counterparts (Fairfield, 2021). An NFT is a singular entity with a unique cryptographic key specific to the respective artwork, functioning as a virtual signature that certifies the creator and current owner (Wang et al., 2021)—additionally, NFT functions as a form of cryptocurrency. However, NFTs differ from traditional cryptocurrencies like Bitcoin in terms of their intrinsic properties (Nakamoto, 2008; Shirole, 2020). Non-Fungible Token (NFT) is a cryptocurrency derived from Ethereum's smart contracts (Wood, 2014). Ethereum is the most popular blockchain used for the creation and sale of NFTs, although other blockchains such as Binance Smart Chain, Polkadot, Flow by Dapper Labs, Tron, and Tezos also exist (Saygın & Fındıklı, 2021). Designers can earn royalties from any successful sale of an NFT in any NFT marketplace or exchange. Although NFTs represent more than just a piece of software code, they attribute commercial value to the digital objects when sold to a new buyer. The apparent IP code for non-fungible virtual assets ensures that the selling prices of relevant products are well secured. As a result,

a guarantee is provided for the exhibition and availability of the artwork (Garay et al., 2020).

Blockchain technology has emerged as a transformative force with extensive applications in various virtual environments, offering robust solutions for data storage, transfer, and asset valuation (Blokzincir Araştırma Laboratuvarı, n.d.). It is decentralized in nature, and cryptographic protocols ensure the security and immutability of digital data, while the distributed ledger system enables transparent and verifiable transactions. Grover et al. (2018), emphasize that blockchain technology serves as a reliable database that protects digital data and facilitates verification and validation of digital processes. These features make blockchain technology an ideal infrastructure for creating and transferring NFTs (Non-Fungible Tokens). Currently, efforts are being made to develop new insights into preserving, storing, and transmitting cultural assets for future generations. This study aims to leverage NFT technologies to preserve cultural assets and their sustainable engagement in socio-cultural and economic domains. Consequently, digital technologies' role in cultural transmission can be identified, and integrating emerging digital technologies into the educational processes can potentially reshape the culture of preservation.

In architectural education, integrating digital technologies into design studio curricula has gained momentum over the past 20 years (Onur, 2022). Educational institutions mainly play a significant role in utilizing digital tools and platforms for preserving and perpetuating cultural heritage and fostering the convergence of cultural heritage and the digital realm (Xi et al., 2022; Özeren & Sultan Qurraie, 2022). Universities and related departments offer specialized education and training programs, especially at the graduate level, focusing on cultural asset preservation, conservation, and digital representation (Yang et al., 2020; Özeren & Dinç Kalaycı, 2022). By incorporating blockchain technology and NFTs into these educational processes, this study's main objective is to enhance students' digital capabilities and ensure the integration of cultural heritage into the digital domain. Consequently, by employing blockchain technology along with original artworks that embody cultural values on a common platform, this study aims to enable educational institutions and stakeholders in the cultural sector to increase the preservation, visibility, and accessibility of cultural heritage beyond geographical and temporal boundaries. Moreover, by integrating NFTs into the educational process, the study aims to create unique digital representations of cultural assets, preserving their authenticity and value, enabling their virtual exhibition and transmission, and inspiring the creation of new artworks regarding these representations.

This study focuses on capturing the historical fabric of Safranbolu City, listed in the UNESCO World Heritage List, through photography and re-interpreting it to create digital patterns. This process digitalizes the existing local identity, creates digital archives, and generates new patterns inspired by the current texture. The ultimate aim is to ensure the sustainable existence of the local identity in the digital world. Additionally, the study aims to help students develop their digital design skills and learn about the potential use of digital technologies in architectural education. The project has encouraged students to enhance their creativity and engage in critical thinking about the role of digital technologies in the future of architecture. Ultimately, it is concluded that digital technologies can improve architectural education and assist students in developing their digital design skills. Furthermore, this project presents new opportunities for students' learning processes by showcasing the potential use of digital technologies in the future of architecture.

Architectural Education Process, Conservation, and Digitization

In the field of architectural education, the digitization of cultural heritage and the convergence of a global common ground hold significant potential in facilitating the transfer of cultural knowledge (Milic et al., 2022). Especially for historically significant and officially registered structures, they play a crucial role in disseminating culture. Urban historical fabric is a valuable component of cultural heritage, and its preservation relies on various professionals, especially architects. Given this, it is impossible for architecture students, trained in understanding and safeguarding historical structures, to be indifferent to a city's cultural heritage (Duru & Şenyiğit, 2023). Through digitization, these cultural heritage elements serve as concrete representatives of our collective place in the world.

Various visualization programs contribute significantly to digitizing cultural assets and transmitting culture in the architectural education process, enabling a more comprehensive exploration of cultural heritage. The digitization process allows individuals to have broader access to historical resources, enabling them to explore the past and establish a profound connection with it. The preservation and digital dissemination of cultural assets enable architectural students to immerse themselves in humanity's shared memory, bridge the gap between the past and the present, and develop a deep sense of cultural identity. Digitizing cultural heritage overcomes temporal and spatial barriers and opens up new ways to engage with and interpret our common heritage. The visualization programs required to present the products can help architecture students re-interpret and analyse historical structures with great attention to detail, providing solutions for complex details that could otherwise be lost over time. Additionally, digitizing cultural heritage facilitates access to historical knowledge, enabling individuals from different backgrounds with various historical and geographic cultures to engage with these valuable resources and learn cultural and historical values (Owens, 2013). Using visualization tools, educators can effectively convey the essence of cultural heritage to students, foster cultural awareness, and establish a deep connection with the past.

This digital approach to preserving cultural values safeguards our architectural heritage and enhances its accessibility, providing future generations with the means to explore, understand, and sustain our rich cultural legacy. Some areas in which the digitization of cultural heritage can be integrated into architectural education include:

- 3D modelling and visualization: 3D models of historical structures can create immersive learning experiences for students. These models can be used to explore both the interior and exterior of buildings from various angles (Yıldırım et al., 2010). Additionally, 3D models can be utilized to create animations of historical structures, helping students understand how these buildings were used and changed over time. Notably, examples can be found in the literature where laser scanning and BIM systems are used together to create models that are combined with technologies like virtual reality (VR) (Sidani, 2021).
- Virtual tours: Virtual tours of historical structures can grant students access to buildings that may no longer exist, such as ancient ruins (McKnight et al., 2016).
- Digital archives: Digital archives of historical documents and images can provide rich information for students to research architectural history, including design processes, materials, construction techniques, and the social and cultural context of architecture (Zağra et al., 2022).

In addition, various examples of NFT usage in cultural heritage and architecture worldwide can be presented. These include:

- Due to the ongoing conflict in Ukraine, many cultural heritage sites are at risk of destruction. In response, the National Art Museum of Ukraine has auctioned 15 NFT designs to raise funds for the continued operations and support of their staff. These NFTs are based on artworks by famous Ukrainian artists like Albrecht Dürer, Georg Jacob Johann van Os, and Ivan Aivazovsky (Murhpy, 2023).
- The renowned Zaha Hadid architecture firm designed a virtual art gallery called "NFTism Gallery" in the metaverse in December 2022. The gallery includes NFTs of various digital art pieces created by artists working on the blockchain. Virtual visitors can explore the gallery and interact with the displayed artworks. NFTism Gallery represents a significant development in the field of digital art and marks a significant step in the metaverse, having a global impact (Stouhi, 2021).
- The American furniture brand Heller has started using blockchain to determine the authenticity of a physical product from its inception to purchase. By making a product's history fully traceable, the company plans to track products throughout their usage lifetimes and assist customers in redistributing or reusing unwanted furniture pieces (Frew, n.d.).

MATERIALS AND METHODS

This study was conducted as part of the Digital Design Studio course offered during the spring semester of 2022 within the Department of Architecture at Karabük University. A single instructor conducted the course. Initially, the course had 50 enrolled students, but some of them were discontinued for various reasons, resulting in 44 students completing the semester. The course carried five credits and lasted for 14 weeks, with 4 hours of class time per week.

Throughout the course, various software training sessions were provided to the students, and they were assigned different projects related to these software applications. One of the projects conducted during the semester was titled "From Ground to Digital," which lasted for eight weeks after the preliminary training.

In the project's first stage, students were taught Advanced Photoshop Techniques using Adobe software, followed by instruction in Adobe Illustrator. For the "From Ground to Digital" project, students were asked to plan and carry out independent field trips to the historical sites of Safranbolu, recognized as a UNESCO World Heritage Site. The specific focus areas for the trips were the bazaars, Kıranköy, and Bağlar locations. During these trips, students were encouraged to explore patterns and textures present in the architectural elements of the site. The scope of the project was limited to architectural structural elements.

These field trips connected the students directly with tangible architectural heritage and allowed them to deeply examine and gain awareness of the intricate details contributing to the city's cultural significance. The photographs taken by the students during the trips were projected in the classroom, transformed into presentations, and analysed during the course.

In the second stage, students were required to select three photographs from their analysed collection and use the software skills they had learned to create new patterns and designs. Throughout this process, the students were expected to gain a deeper understanding of the relationship between traditional architectural elements and their digital representations.

In the third stage, the course introduced concepts such as NFTs (Non-Fungible Tokens) and Metaverse, followed by a presentation by an expert in the field of digital arts. This presentation aimed to provide the students with insights into the details and industry experiences of the online NFT and Metaverse worlds within the context of digital arts.

Figure 1. Classroom photos from Digital Art Installation Architect Ecem Dilan Köse's Metaverse Talks and NFT Art online presentation within the scope of the Digital Design Studio Course.

In the third stage, the students were shown in detail how they could upload the patterns they produced via the Opensea website as NFT, and the students were allowed to do NFT. At the last stage, students' opinions were taken on how the transformation from Earth to Digital can be realized between NFT and metaverse. As a result, with this study, the use of digital technologies in the protection of cultural heritage and transfer to future generations has been experienced in architectural education processes. In this way, the effective role of art and architecture in revealing the identity specific to the place will be revealed, and cultural heritage awareness will be transferred to the students in the education process. The share of digital production in the sustainability of cultures, lifestyles, and traditions will be evaluated. In addition, the importance of using digital technologies in the design processes and then registering the product, which was also revealed with NFT technologies, determining its value, and putting it up for sale, is done within the architectural education process. Thus, there will be a chance to establish an organic link in integrating cultural heritage and the virtual world.

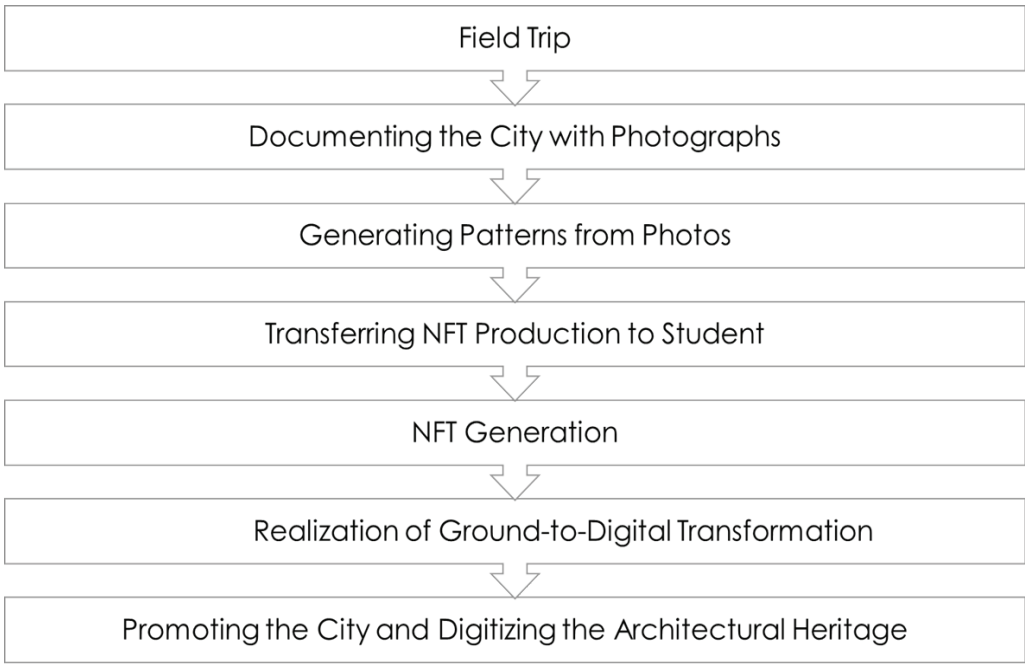

Figure 2. Flow chart of the methodology.

RESULTS AND DISCUSSION

The emergence of digital transformation has had a profound and extensive impact on various disciplines, including architecture (Yetkin & Çoşkun, 2021). To keep up with this transformation, architectural education should aim to equip students with the skills to use digital technologies. Digital transformation in architectural education manifests itself in various ways, particularly over the past two decades, where the use of digital tools in design processes and methods has steadily increased (Erol, 2021). Computer-aided design (CAD), building information modelling (BIM), 3D modelling, virtual reality (VR), and augmented reality (AR) are among the digital technologies that are increasingly integrated into architectural education (Wang et al., 2018). These technologies provide architectural students with faster, more accurate, and more efficient design processes, enabling them to benefit from the advantages of digital transformation.

Moreover, the digital transition in architectural education profoundly influences students' communication and presentation skills. By utilizing visual aids, animations, interactive simulations, and other digital media formats, students can enhance their ability to effectively convey their architectural projects and express their ideas during presentations. This advanced capability to communicate architectural concepts through digital tools significantly contributes to successful project presentations and encourages a high level of architectural representation. Furthermore, the integration of digital tools and internet resources provides students with unique convenience and efficiency in exploring new design concepts and emerging architectural trends from an extensive pool of knowledge. Students who benefit from these digital resources are supported in expanding their design horizons and engaging with architectural innovation at the forefront.

This study delves into the exploration of NFT technology within architectural education. It also evaluates its potential contributions to digitizing architectural history and cultural heritage to enrich students' development. The study focuses on students creating architectural products using 3D modelling tools, drawing inspiration from historical buildings, and subsequently presenting these works as NFTs in digital environments. To illustrate the application of this approach, the study conducted fieldwork in the historical town of Safranbolu, which is listed as a UNESCO Cultural Heritage site. During this process, students extensively studied the existing historical fabric of the town, documenting patterns and motifs through photographs, and gained various perspectives on the town. Building upon these photographs, students demonstrated the courage to produce digital models that offer new interpretations of historical motifs (Figure 2). Subsequently, these digital models were transformed into NFTs, effectively immortalizing and preserving them in the digital world. This experience not only presents the potential of NFTs as transformative tools in architectural education but also enables students to actively engage with architectural heritage and digitalize tangible objects through abstraction by symbolizing architectural patterns and motifs as NFTs, a secure and traceable digital framework was created, contributing to the preservation and dissemination of cultural heritage. Digital technologies not only enhance documentation and conservation processes but also provide an innovative platform for exploring and re-interpreting architectural history. Through their engagement with digital tools and the process of abstraction, students not only focus on the tangible aspects of architectural heritage but also acquire lessons on contributing to its dissemination and preservation in the digital realm.

With this study, the Digital Design Studio course, encompassing software education and theoretical knowledge, provided students with a multidimensional educational experience. The course not only equipped students with the technical skills required for digital design but also fostered an understanding of the significance of preserving cultural heritage in the digital age, as indicated by feedback received. It was observed that this course plays a vital role in shaping students' perspectives on integrating digital technologies into architectural practice and helps them gain a deeper understanding of the complex relationship between architecture, culture, and the digital world. Furthermore, the study within the Digital Design Studio course paved the way for a comprehensive exploration of potential applications of NFT technology and the metaverse in architectural education. By guiding students through creating NFTs and engaging them in discussions about the transition from the physical to the digital world, the course allowed them to explore the intersection of art, architecture, and digital innovation. They were inviting an expert in the field of digital arts to share insights and industry experiences, further enriching students' perspectives on the potential applications of NFTs and the metaverse in architectural design and cultural preservation.

With this study, students have actively engaged in in-depth discussions and debates surrounding the legal and ethical dimensions of intellectual property rights in architecture. The "From Ground to Digital" themed study has provided an effective platform for students to understand the implications and challenges of digitization in architecture education.

During the course, it was observed that students' initial concerns about entering the complex world of NFTs gradually transformed into a sense of confidence. The introduction to NFT technology expanded students' perspectives and sparked curiosity about the emerging Metaverse world. As students delved deeper into the subject, they recognized the potential of NFTs. Some students even embarked on individual research efforts to explore the intricacies and nuances of NFTs. Figure 2 illustrates instances of Designed Pattern Studies created by students.

This proactive engagement allowed students to develop a more nuanced understanding of various applications and consequences of NFTs, extending beyond the technical aspects of creating and implementing NFTs to encompass broader cultural, social, and economic dimensions. Integrating NFTs into the course activities effectively bridged the gap between traditional architectural practice and the digital world, fostering a more intimate and meaningful connection between students and the digital realm. This immersive experience not only heightened their appreciation for the transformative potential of NFTs but also instilled a more profound sense of engagement and representation in the digital space. The increasing curiosity among students indicated the possibility of exploring new approaches to NFTs and related digital subjects in the course. The platform for the Open Sea NFT Sample Collection is shown in Figure 3. This graphic depiction offers information about the layout and user experience of the Open Sea NFT Sample Collection platform, which features a wide variety of non-fungible tokens (NFTs). The picture provides users with a preview of the user interface and the type of tokenized information available inside the Open Sea NFT Sample Collection, acting as a visual help for learning how the platform presents NFTs.

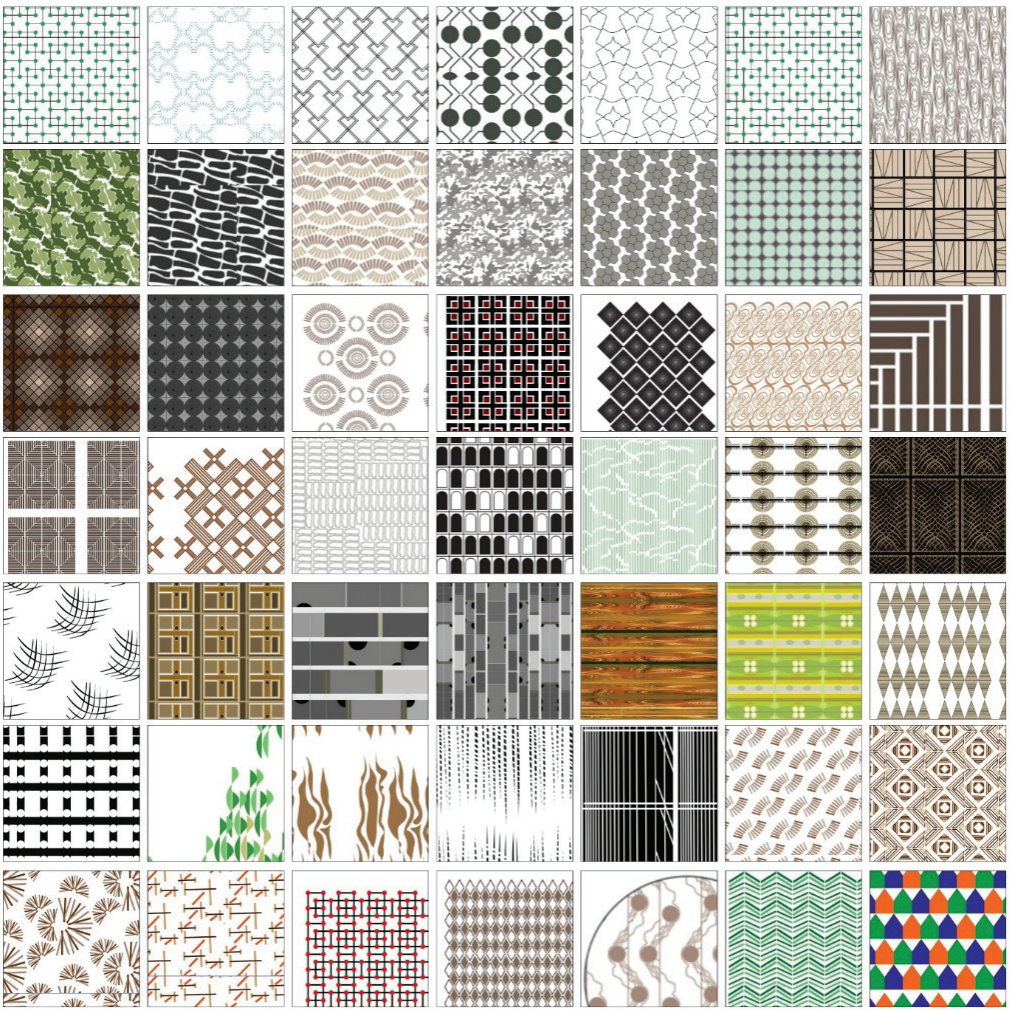

Figure 3. Examples of Designed Pattern Studies.

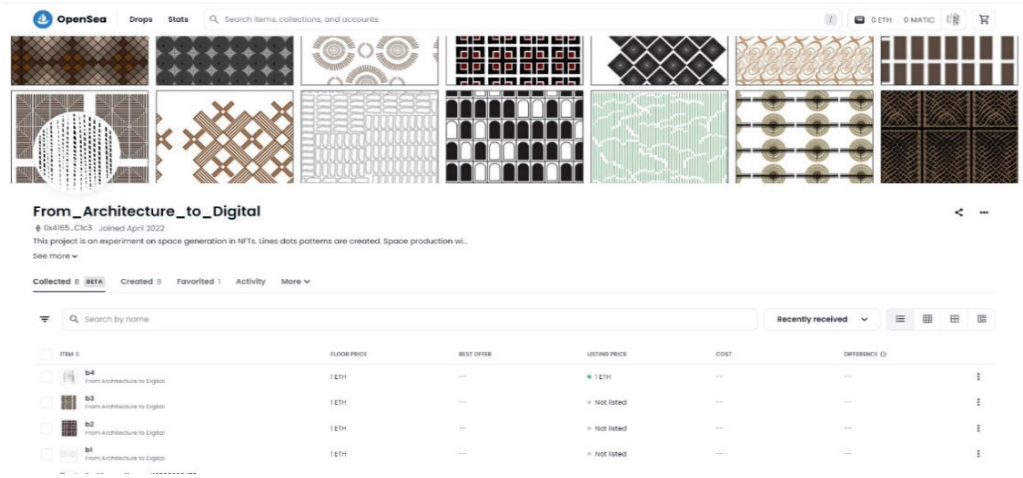

Figure 4. Open Sea NFT Sample Collection.

Students' exposure to different approaches in digital design processes led them to view traditional architecture from diverse perspectives. Students gained insights into the interplay between art and architecture by investigating the potential application of NFTs in architectural design and digital art. Enhancing their skills in digital design processes allowed them to effectively present and enhance their designs' impact and visual appeal in digital environments through the use of relevant software.

Furthermore, the findings of this study suggest that NFTs could be proposed for use in architecture. One such proposal uses NFTs to create digital representations of architectural landmarks and historical buildings, easily shareable and preservable online. Moreover, NFTs can facilitate the digitization of architectural history and cultural heritage and enable students to interact with this material more actively and creatively. Allowing students to create their own NFTs representing architectural patterns and motifs can aid them in developing a deeper understanding of architectural history and culture, potentially leading to a more comprehensive and nuanced comprehension of architectural heritage, which is crucial for the future of the field.

The patterns identified in Safranbolu's architectural fabric offer a valuable resource for architectural knowledge and practice. They serve as a digital repository preserving intricate details, contributing to cultural heritage preservation, and offering a foundation for innovative design concepts. These patterns can be directly applied in architectural projects, from building facades to urban planning, enhancing a sense of place. Additionally, they can inform product design, restoration efforts, and educational initiatives. By analysing these patterns, architects can gain insights into underlying geometric principles and construction techniques. This knowledge can be applied to contemporary design challenges, fostering a balance between tradition and innovation. Moreover, digital archives of these patterns can be used to create interactive experiences, educational tools, and virtual reconstructions, expanding the potential impact of this research beyond the architectural field. Similar to the potential of NFTs to create digital archives of architectural information, these patterns can serve as foundational data for comprehensive digital repositories. By combining the potential of NFTs and the rich pattern language of Safranbolu, architects and researchers can develop innovative ways to preserve, study, and disseminate architectural knowledge for future generations.

CONCLUSION

This experimental case study in architectural education aimed to adapt to the ongoing digital transformation and provide students with a comprehensive understanding of new technologies, mainly focusing on the use of NFTs (Non-Fungible Tokens). The study imparted practical experiences and knowledge about protecting intellectual property to architecture students in digital design processes. By integrating NFT technology into the curriculum, the study observed increased students' awareness of potential advantages and challenges related to this emerging field. Students were educated about the intricacies of NFT technology, including its applications, outcomes, and potential impacts on the architectural profession. Moreover, the study emphasized creating artistic works that combine traditional architectural elements with modern digital techniques. Encouraging students to transform their digitally created architectural projects into unique digital assets that could be commercialized, exhibited, or shared with a global audience has led them to explore the contextual foundations of architecture and its profound connection with the environment. NFTs have had a noticeable impact on empowering students to protect, authenticate, and assert ownership over their architectural designs, resulting in their embracement of NFT technology.

Furthermore, the study introduced students to the networking opportunities provided by NFT technology. Digital galleries and platforms have enabled students to connect with a broader audience, including potential clients, collaborators, and industry professionals. These expanded networks have facilitated idea exchange, feedback, and potential career opportunities,

ultimately enhancing students' professional development and visibility within the architecture community. In summary, this case study has highlighted the transformative potential of NFT technology in architectural education.

To fully integrate NFT technology into architectural education, it is crucial to establish a comprehensive framework that encompasses various dimensions of this emerging field. Additionally, ethical considerations associated with NFTs have been observed. Educators should emphasize the significance of creating and using digital assets, ensuring that students comprehend the ethical implications of tokenizing and selling their works. Moreover, detailed discussions about copyright and legal issues related to NFTs should take place among digital creators. Students need to be aware of the legal framework concerning digital asset ownership, transfer, and licensing. Educators should guide navigating copyright laws, license agreements, and potential risks of copyright infringement when dealing with NFTs. This will assist students in making informed decisions and avoiding legal challenges in their future professional practices. Sustainability is another critical aspect that must be considered while integrating NFT technology into architectural education. While NFTs offer new opportunities for digitizing and preserving cultural heritage, the environmental impact of blockchain technology should not be overlooked. Educators should encourage students to explore sustainable practices in digital art and architecture, such as energy-efficient blockchain networks or alternative technologies with reduced environmental footprints.

Lastly, fostering interdisciplinary collaboration is essential to fully realizing the potential of NFTs in architectural education. Interacting with experts from different fields, such as digital arts, blockchain technology, law, and cultural heritage preservation, can enrich students' understanding and open up new avenues for exploration. Collaborative projects and workshops involving professionals from diverse disciplines can give students a holistic perspective on the possibilities and challenges of integrating NFT technology into architectural practice. By addressing these aspects in architectural education, NFT technology can be embraced responsibly and with foresight. Students will acquire technical skills and develop critical thinking, ethical awareness, and a broader understanding of social, cultural, and environmental impacts. This will prepare them to navigate the evolving digital landscape and contribute positively to preserving and advancing architectural heritage in the digital era.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. No conflict of interest was declared by the authors.

Authors' Contributions

The authors contributed equally to the study.

Financial Disclosure

The authors declared that this study has received no financial support.

Ethics Committee Approval

Ethics committee approval was not required for this article.

Legal Public/Private Permissions

In this research, the necessary permissions were obtained from the relevant participants (individuals, institutions and organizations) during the survey, in-depth interview, focus group interview, observation or experiment.

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Review Article

Exploring Mixed Reality in Architectural Design Education: A Systematic Review

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Abstract

This systematic literature review explores the integration and impact of Mixed Reality (MR) technologies in Architectural Design Studio Education (ADSE). Covering the period from 2019 to 2024, this review consolidates the current role of MR in design education by analysing existing studies. The study aims to evaluate both the positive and negative contributions of MR in ADSE and discuss its future potential in this field. The articles were selected and reviewed according to PRISMA (2020) guidelines (Page M.J.et al.,2021), and findings were analysed from databases including ScienceDirect, Web of Science, and Scopus. The review identified articles focusing on the application of MR in ADSE. The research findings indicate that MR technologies significantly enhance experiential learning by providing interactive and immersive environments that allow real-time visualization and manipulation of architectural designs. However, integrating MR into ADSE faces challenges such as high implementation costs and the need for specialized training for instructors. Nevertheless, if these challenges are addressed, MR can offer an alternative reality to ADSE with transformative potential. This paper provides a comprehensive guide for educators, curriculum developers, and students interested in leveraging MR technologies to foster innovative learning environments in ADSE.

Keywords: Architectural Design Studio Education, Architectural Education, Mixed Reality (MR), Quality Education (SDG 4).

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İnceleme Makalesi

Mimari Tasarım Eğitiminde Karma Gerçekliği Keşfetmek: Sistematik İnceleme

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Özet

Bu sistematik literatür taraması, Karma Gerçeklik (KG) teknolojilerinin Mimari Tasarım Stüdyosu Eğitimi (MTSE) içindeki entegrasyonunu ve etkilerini araştırmaktadır. 2019'dan 2024'e kadar olan dönemi kapsayan bu inceleme, mevcut çalışmalar aracılığıyla KG'nin tasarım eğitimindeki güncel rolünü derlemektedir. Çalışmanın amacı, KG'in MTSE'ndeki olumlu ve olumsuz katkılarını değerlendirmek ve bu alandaki gelecekteki potansiyelini tartışmaktır. Makaleler, PRISMA (2020) kılavuzlarına (Page M.J.et al.,2021) göre seçilmiş ve gözden geçirilmiş, bulgular ScienceDirect, Web of Science ve Scopus veri tabanlarından analiz edilmiştir. İnceleme, KG'in MTSE'ndeki uygulamalarına odaklanan makaleleri belirlemiştir. İncelenen araştırmalardan elde edilen bulgular, KG teknolojilerinin, mimari tasarımların gerçek zamanlı görselleştirilmesi ve manipülasyonuna olanak tanıyan etkileşimli ve sürükleyici ortamlar sağlayarak deneyimsel öğrenmeyi önemli ölçüde artırdığını göstermektedir. Ancak, KG'in MTSE 'ne entegrasyonu, yüksek uygulama maliyetleri ve eğitmenler için özel eğitim gereksinimleri gibi zorluklarla karşı karşıyadır. Bununla birlikte, bu zorluklar aşıldığında, KG MTSE'ne alternatif bir gerçeklik sunarak dönüştürücü bir potansiyel sağlayabilir. Bu makale, KG teknolojilerini kullanarak MTSE'nde yenilikçi öğrenme ortamları geliştirmek isteyen eğitimcilere, müfredat geliştiricilere ve öğrencilere kapsamlı bir rehber sunmaktadır.

Anahtar Kelimeler: Mimari Tasarım Stüdyosu Eğitimi, Mimarlık Eğitimi, Karma Gerçeklik (KG), Kaliteli Eğitim (SKA 4).

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INTRODUCTION

Recent progress in digital technology has greatly affected architectural education. Shifting from the conventional studio paradigm, renowned for its tranquil and uninterrupted ambiance that fosters imaginative inquiry (Weiner, 2005), towards incorporating digital resources, has reshaped the instruction, application, and depiction of architectural concepts.

Extended Reality (XR), comprising Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR), introduces revolutionary platforms that merge real and computer-generated environments to generate immersive, participatory interactions. These encounters enrich architectural design's educational and professional facets of architectural design (Gownder, 2016). Such innovations assist in comprehending spatial dynamics critical to architectural learning and facilitate synchronous cooperation and design alterations, which are essential competencies for modern architects. However, integrating XR technologies in higher education, specifically in the field of architecture, poses difficulties. The assimilation of these technologies requires thoroughly examining pedagogical goals, technological framework, and curriculum development. It is apparent that although the potential for XR in education is encouraging, significant transformation in instructional approaches is necessary to fully harness its advantages (Darwish et al., 2023).

Mixed reality (MR) technology tools within the extended reality (XR) technologies framework, such as Microsoft HoloLens, aid students in analysing architectural configurations in a three-dimensional manner within their genuine environmental context. This specific characteristic plays a crucial role in comprehending intricate spatial connections and the magnitude of architectural components, ultimately boosting spatial understanding and design proficiencies (Milgram & Kishino, 1994). Mixed reality (MR) enables real-time engagement with design components, allowing students to adjust and transform architectural prototypes digitally. This interactive involvement enhances comprehension of the repercussions of design choices and advocates for a more iterative and adaptable design methodology (Milman, 2018). Mixed reality (MR) facilitates cooperative design endeavours by empowering multiple students to simultaneously approach and engage with a collective virtual prototype, irrespective of their geographic position. This strategy fosters student cooperation enriches negotiation competencies, and seamlessly integrates diverse design components (Parveau & Adda, 2018).

The application of technology is crucial in determining the curricula and instructional approaches in the rapidly changing domain of architectural design education. This study investigates the integration, effects, and future possibilities of Mixed Reality (MR) technologies in architectural design education. A methodical literature review -from 2019 to 2024- was carried out for this examination. Conventional architectural education typically combines theoretical understanding with practical experience, often constrained by physical models and two-dimensional drawings. The introduction of digital technologies has introduced new dimensions in this field. The fusion of Virtual Reality (VR) and Augmented Reality (AR) to form Mixed Reality (MR) establishes an immersive environment where virtual and real components interact, demonstrating the potential to improve students' spatial comprehension and design skills, thus emerging as a crucial area of concentration. The article explores the integration of MR technologies in architectural design education and evaluates their influence on the educational process and scholarly outcomes. Through an analysis of the shift from conventional methodologies to advanced

digital interactions, the objective is to comprehend the changing landscape of architectural education and its alignment with contemporary professional standards.

The research has three main objectives: to evaluate the use of Mixed Reality (MR) technologies in architectural design studio education; to provide a general overview, investigate the positive and negative contributions and impacts of these technologies; to critique the current state of technology in design education; and finally, to discuss the transformative potential of Mixed Reality technologies for architectural design studios in the near future.

The importance of this article lies in its capacity to guide future research pathways and educational approaches. The study is designed to aid educators, curriculum developers, and policymakers in making well-informed decisions about incorporating Mixed Reality (MR) technologies into architectural education programs through a detailed examination of current applications and discoveries. The assessment proceeds with a systematic literature review method following PRISMA principles to integrate and assess relevant research. The method used for selecting and evaluating the research through systematic literature review is explained in the subsequent section, while other sections detail the findings and results. Discussions on future educational implications resulting from integrating MR into architectural design education are presented in the conclusion.

METHODS

The research employs a systematic review methodology distinguished by thorough and clear information analysis from various studies addressing a particular research query. It entails systematic exploration, meticulous selection, and critical assessment of related literature, preceded by a detailed synthesis of results. The principal research inquiries concentrate on how mixed reality (MR) technology is utilized in architectural design studio education, its impacts on learning encounters, and its prominence in the investigations of the architecture domain. A literature exploration spanning from 2019 to 2024 was carried out utilizing Science Direct, Scopus, and Web of Science databases, with keywords pertinent to the research queries. Chosen studies specifically investigated experiential learning in architectural design studios, notably utilizing MR technology. The research complies with PRISMA guidelines (2020) (Page et al., 2021), which are clear and comprehensive documentation guidelines. Its objective is to offer an evidence-based comprehension of the influence of digital technology, particularly MR, on experiential learning in architectural design education and practice.

Eligibility Criteria

The initial search was conducted by entering the query "mixed reality technology in architectural design studio education" into the selected databases. The search criteria were set as follows: research language: English; document type: review or research article; research fields: engineering, social sciences, arts, and humanities (Table 1).

Table 1. Systematic Literature Review Results in Science Direct, Scopus, WoS Databases.

Database	Query Formula/Terms	Document Type	Research Area	Results
Science Direct	Find articles with these terms: mixed reality technology in architectural design studio education	Review article, research article	Engineering, Social Sciences	102
Scopus	ALL (mixed AND reality AND technology AND in AND architectural AND design AND education) AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "ARTS")) AND (LIMIT-TO (EXACTKEYWORD, "Architectural Design") OR LIMIT-TO (EXACTKEYWORD, "Mixed Reality"))	Article	Engineering, Social Sciences, Art and Humanities	216
Web of Science	Mixed reality technology in architectural design education (All Fields) and 2019 or 2020 or 2021 or 2022 or 2023 or 2024 (Final Publication Year) and Review Article **or** Article (Document Types)	Review article, article	-	15
TOTAL				333

Source: Science Direct, Scopus, WoS Databases.

RESULTS

The initial search resulted in 333 (three hundred thirty-three) reviews and research articles. The eligibility criteria outline the parameters for selecting studies examining the integration of mixed reality (MR) technology in architectural design studio education. These criteria emphasize investigations exploring the application and effects of MR within this educational context, focusing on articles published in English between 2019 and 2024. The selection process prioritizes papers addressing MR and architectural design studio education, especially those investigating the use of MR technologies for experiential learning in architectural design studios.

Selection Criteria

Research related to architectural education and MR technology has been included in this study.
Exclusion criteria were established, and in the initial phase, the retrieved studies were assessed by reviewing their abstracts or full texts. The exclusion criteria for this systematic literature review involved filtering out studies that did not focus on Mixed Reality (MR) technology, were unrelated to higher education or architecture, or were off-topic. Only papers directly addressing MR technology in architectural design studio education were included. Non-English studies and duplicate publications were also excluded to maintain methodological rigor and ensure the selection of relevant sources.

The review process followed a clearly defined procedure of identifying, screening, and including articles. This led to the exclusion of numerous papers based on specific criteria: duplicates (n = 4), work unrelated to MR (n = 60), content not related to higher education (n = 141), material not focused on architecture (n = 19), studies outside architectural design education (n = 96), and inaccessible sources (n = 1). This systematic approach identified twelve papers most relevant to the study's objectives. These selected papers were evaluated based on their aims and conclusions to explore the use of MR technology in architectural design studio education (Figure 1).

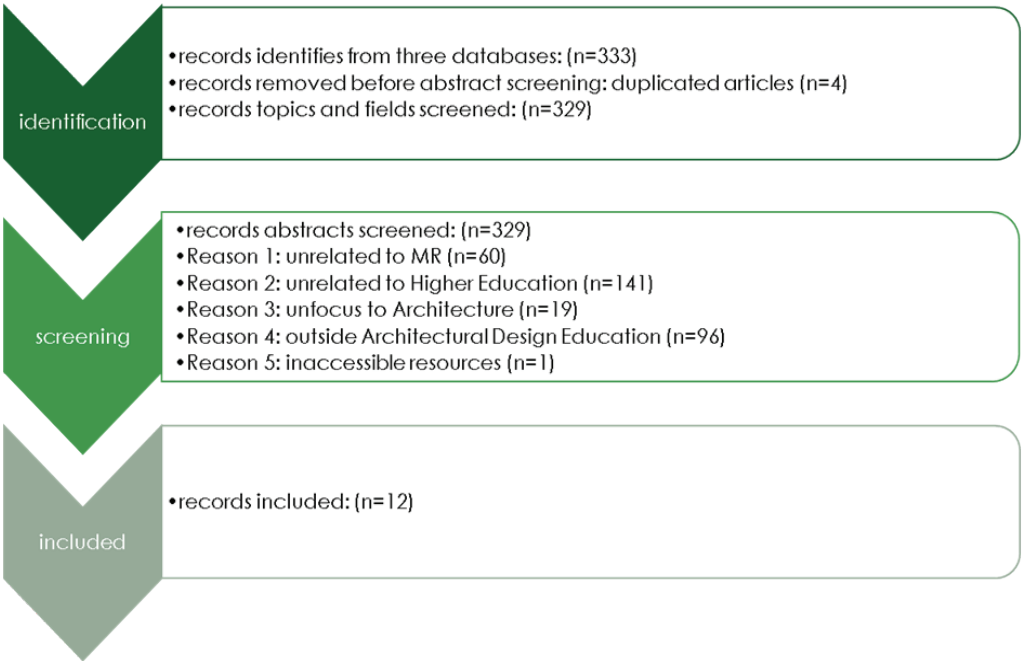

Figure 1: Modified Prisma Flow Diagram.

This systematic literature review examined 12 critical articles selected from 333 reputable databases such as Web of Science, ScienceDirect, and Scopus, focusing on integrating Mixed Reality (MR) technologies in architectural design education. Synthesis and assessment of the outcomes derived from examining these studies are presented here (Table 2).

Table 2. Most Related Papers as a Result of Systematic Literature Review.

no	Topic	Author(s)	Aim	Method	MR Relation	Conclusions
1	Architectural education challenges and opportunities in a post-pandemic digital age	Saleh et al. (2023)	To explore architectural education challenges and proposing digital strategies from pandemic opportunities.	analyzing literature on the pandemic's impact on architectural education to identify problems and opportunities for developing new models.	investigating how MR tools enhance architectural education through improving design, collaboration, and learning environments.	highlights the pandemic's effects on architectural education and as a result suggests a model emphasizing networking, exploration, and adaptability with MR.
2	Collaborative Educational Environments Incorporating MR Techs: A Systematic Mapping Study	Ali et al. (2019)	To discover trends, challenges, and gaps for further study on literature in education associated with MR.	systematic mapping of the development and pinpointing deficiencies in MR technologies in the educational field.	MR were examined for their application in collaborative learning settings	identifies an increasing curiosity in MR technologies in academia
3	Exploring the Potential of MR in Enhancing Student Learning Experience and Academic Performance	Almufarreh. (2023)	To investigate how MR enhances education and scholarly achievement.	a numerical method with a survey and data analysis was executed utilizing structural equation modeling (SEM).	MR technologies used to blend digital and physical environments for studying on immersive learning.	MR technologies enhance students' learning experiences, resulting in greater satisfaction and academic achievement.

4	XR for enhancing spatial ability in architecture design education	Darwish, et al. (2023)	To examine how early adoption of XR technologies influences spatial skills in architectural education.	Uses control and experimental groups to compare the effectiveness of XR integration against conventional teaching methods.	uses XR to measure if it promotes engaging learning, reduces cognitive load, and improves spatial understanding.	XR enhances spatial skills in architecture students, even with challenges in adapting to new technologies.
5	Framework for the Use of Extended Reality Modalities in AEC Education	Spitzer et al. (2022)	To provide a framework to assist AEC educators in selecting XR technologies, taking into account budget, scalability, space requirements, and educational outcomes.	uses a comprehensive review and analysis of XR modalities in AEC education, proposing a framework for selecting XR tools aligned with educational goals.	Utilizes MR, VR, and AR within the XR spectrum to evaluate their impact on visualization, engagement, and interactive learning in AEC education.	highlights the transformative impact of XR technologies on AEC education, advocating for their integration to enhance student engagement and outcomes.
6	HoloDesigner: A mixed reality tool for on-site design	Dan et al. (2021)	To illustrate how MR technology and the HoloDesigner tool improve on-site design through real-time visualization and manipulation of 3D models in real-world settings.	Involves using the HoloDesigner tool with Microsoft HoloLens for real-time MR integration, tested at a community park to assess design based on user experiences.	HoloDesigner employs MR to blend virtual 3D models with real environments, enabling designers to adjust designs on-site using spatial mapping and gesture control.	HoloDesigner improves on-site design by offering tools for instant visualization and adjustment of 3D models, thereby enhancing accuracy in architectural and urban planning decisions.
7	Impact of extended reality on architectural education	Kharvari and Kaiser (2022)	To evaluate XR technologies in architectural education, assess their impact on student performance, and offer recommendations for curriculum integration.	Reviews XR technologies in architectural education from 2015 to 2020 using a modified PICO strategy and databases SciDirect, WoS, and Scopus.	Uses the keyword "MR in architectural education" to review its role in enhancing student engagement and learning by merging physical and virtual worlds.	Finds that XR technologies benefit architectural education by improving the design process, enhancing learning outcomes, and effectively involving end-users.
8	Interactive Parametric Design and Robotic Fabrication within Mixed Reality Environment	Buyruk and Çağdaş (2022)	To test parametric design and robotic fabrication integration in mixed reality for real-time enhancement.	Develops a digital twin in mixed reality through parametric modeling and robotic fabrication, incorporating visual updates.	Uses Mixed Reality (MR) to enhance interactivity in parametric design and robotic fabrication, enabling real-time adjustments and multi-user collaboration.	Combining parametric design and robotic fabrication in mixed reality enhances design flexibility, efficiency, and human-robot collaboration.

9	Proposing a Novel Mixed-Reality Framework for Basic Design and Its Hybrid Evaluation Using Linkography and Interviews	Cindioglu et al. (2021)	To examine how MR affects design thinking skills in novice designers within BD education, improving their ability to generate and evaluate design options.	Uses linkography and interviews to analyze design decisions and explore how students benefit from MR technology.	Uses the DesignMR framework to enrich design education with Mixed Reality (MR), enhancing creativity and real-time feedback through the integration of physical and digital elements.	DesignMR boosts creativity, productivity, and idea exploration for novice designers, making MR valuable in BD education for exploring solutions and engaging in the design process.
10	The Contribution of Digital Tools to Architectural Design Studio: A Case Study	Ceylan et al. (2024)	to investigate how digital tools influenced architectural design studios during the pandemic-driven shift to online education.	Involves a case study with a questionnaire for architecture students to gather opinions on digital tools in the studio process.	MR is used in architectural education to enhance visualization and design features.	MR in architectural education enhances visualization, design, and creativity through real-time changes and collaborative feedback.
11	The Application of Extended Reality Technology in Architectural Design Education: A Review	Wang et al. (2023)	To analyze XR technology in architectural design education over the past five years, providing a framework for future use, and identifying limitations and research directions.	Employs content analysis and a literature review from Science Direct, Google Scholar, and Web of Science to evaluate XR technology in architectural education.	Uses MR and XR as a keyword to determine if it enhances architectural education by merging real and virtual elements, improving understanding, and providing real-time feedback and collaboration.	XR technologies enhance architectural education by fostering active learning, encouraging reflection and communication, and potentially replacing conventional teaching methods.
12	Design Assessment in Virtual and Mixed Reality Environments: Comparison of Novices and Experts	Wu et al. (2021)	Explores how VR and MR can link novice and experienced designers in construction, boosting rapid knowledge acquisition and skill development.	Uses VR and MR simulations to assess small house accessibility with students and experts, collecting data via think-aloud protocols, surveys, and recordings.	Uses VR and MR technologies to create immersive virtual learning experiences, enabling direct interaction with design tasks to boost expertise development.	VR and MR bridge the gap between novices and experts, allowing novices to undertake expert tasks through immersive learning experiences.

Source: Science Direct, Scopus, WoS Databases.

The reviewed articles consistently highlight the transformative impact of Mixed Reality (MR) on conventional architectural education methods. Technologies like Virtual Reality (VR) and Augmented Reality (AR) provide immersive, hands-on experiences that greatly improve learning outcomes, as demonstrated by studies such as Saleh et al. (2023). These technologies enhance conventional educational content and introduce novel teaching approaches, encouraging deeper engagement and interaction. This leads to a more dynamic learning environment where students can actively explore and understand complex design principles, marking a new phase in architectural education.

Several studies, including one by Darwish et al. (2023), highlight the effectiveness of Mixed Reality (MR) in enhancing key skills for architectural design, such as spatial awareness and visualization. MR's immersive nature provides a deeper understanding of spatial relationships, a crucial aspect of architectural training. By interacting with MR technologies, students can dynamically visualize and engage with structures, which improves their spatial cognition and problem-solving abilities.

The integration of MR has significantly boosted student engagement and satisfaction. Almufarreh's research (2023) demonstrates that MR enhances academic performance and enriches the learning experience. MR technologies make learning more interactive and engaging, capturing students' attention and improving their overall academic results and satisfaction. This transition to interactive learning is essential for keeping pace with digital educational advancements. Wu et al. (2021) state in their research that despite their limited experience, novice students exhibited similar behaviour patterns and achieved design review results comparable to those of seasoned professionals when using VR and MR mock-ups. This study adds to the existing knowledge by offering initial evidence that VR and MR can help bridge gaps in experience and suggests that these technologies could expedite the development of workplace expertise among college students. The insights gained may also guide the development of instructional and pedagogical strategies incorporating VR and MR technology into undergraduate construction and engineering programs.

According to Ceylan et al. (2024), digital technologies have recently exceeded conventional methods in the field of architecture, offering new formal and structural possibilities. The diversity of tools and practical interfaces encourages users at all levels and increases the shift toward digital solutions. Digital tools already play an active role in materializing pre-designed ideas in architectural education and are increasingly integrated into the design process for new experiments. Consequently, the study considered it valuable to explore the transformative effect of digital tools on architectural design education through students who have personally experienced these technologies. However, the value and contributions of conventional methods, such as hand sketching and physical model making, should not be overlooked. Further research is needed to examine their relationship with digital tools to enhance their contribution to architectural education, even in an era dominated by digital technologies.

Despite the benefits, integrating MR into architectural education presents challenges such as high costs, technology integration, and curriculum alignment, as noted by Dan et al. (2021). Implementing MR requires substantial investments in hardware, software, and educator training. Additionally, adapting MR into existing curricula involves reworking course structures and objectives.

Ali et al. (2019) identified research gaps, particularly in augmented virtuality and technical integration. Further research is required to evaluate MR's enduring impacts and establish more effective integration frameworks. Future studies should address these challenges and improve the scalability and accessibility of MR technologies in architectural education.

This review highlights MR's transformative potential in enhancing architectural education by improving experiential learning, increasing student engagement, and developing key skills. However, it also stresses the importance of further research to address the challenges and maximize MR's benefits in educational contexts.

CONCLUSION

This study has conducted an in-depth review of integrating Mixed Reality (MR) technologies into architectural design education, analysing 12 pivotal articles from an initial pool of 333. The review suggests that MR technologies, such as Virtual Reality (VR) and Augmented Reality (AR), can potentially transform architectural education. These technologies, with their capacity to enhance interaction, experiential learning, and essential design skills, offer a deeper engagement with architectural concepts, inspiring a new era of architectural education.

The review highlights that MR technologies enable students to immerse themselves in virtual environments, allowing for a more nuanced understanding of complex design principles. By facilitating real-time interaction with virtual architectural models, MR enhances spatial cognition and design capabilities, thus aligning educational practices with contemporary industry requirements.

The impact of MR on student engagement and performance underscores its value in modernizing educational methodologies. MR's interactive nature contributes to heightened student involvement and improved academic outcomes, signifying a significant shift from conventional, less dynamic learning approaches.

Despite these advantages, several challenges accompany the integration of MR into architectural education. These include the high costs of technology, the need for specialized educator training, and the adaptation of existing curricula to incorporate MR. However, with strategic planning and investment from educational institutions, these barriers can be overcome, ensuring successful and sustainable implementation of MR technologies in architectural education.

Future research should address the existing gaps by exploring the long-term impacts of MR technologies and developing cost-effective solutions. Research should focus on creating adaptable frameworks that facilitate MR integration across diverse educational settings, instilling confidence in MR's flexibility in education. Enhancements in MR technology, such as user-friendly interfaces and natural interaction simulations, will likely expand its accessibility and effectiveness in education.

Interdisciplinary applications of MR offer exciting opportunities for enriching architectural education. Integrating MR with engineering, urban planning, and interior design can give students broader learning experiences and practical insights. Collaboration with industry partners could also enhance the practical application of MR in real-world scenarios, fostering a more comprehensive educational experience.

"Scalability and inclusivity are essential for the widespread adoption of mixed reality (MR) in education." Future strategies should consider a range of resource levels, and learning needs to ensure that MR technologies are accessible to all students. Implementing adaptive learning systems within MR environments could further personalize educational content and support various learning styles.

Finally, establishing robust longitudinal studies and evaluation frameworks will be essential for assessing MR's impact on educational outcomes. These studies should include quantitative and qualitative measures to capture the full range of MR's effects on spatial reasoning, design skills, and student engagement.

Addressing these considerations can help architectural education harness the full potential of MR technologies, creating more engaging and effective learning environments. As MR technology evolves, it will continue to offer new opportunities for advancing educational practices and outcomes in the architectural field (Table 3).

Table 3. Conclusion Summary: Integrating Mixed Reality in Architectural Education.

Aspect	Details
Purpose	Review of integrating Mixed Reality (MR) technologies in architectural design education.
Benefits	Enhanced interaction, experiential learning, deeper engagement with architectural concepts.
Impact	Improved student engagement and performance, modernized methodologies, enhanced spatial cognition.
Challenges	High costs, specialized educator training needs, curriculum adaptation.
Future Research	Explore long-term impacts, develop cost-effective solutions, create adaptable MR integration frameworks.
Opportunities	Interdisciplinary integration with engineering, urban planning, interior design.
Scalability	Ensure accessibility for all students, considering diverse resources and learning needs.
Adaptive Learning	Personalize educational content, support various learning styles.
Evaluation	Establish robust longitudinal studies with quantitative and qualitative measures.
Potential	Advancing educational practices and outcomes in architectural education.

Conflict of Interest:

No conflict of interest was declared by the authors.

Author' Contributions

A.K. and B.A. reviewed the resources regarding the evolution of architectural design studio education. A.K. conducted analyses, while both authors performed the synthesis in preparing the manuscript. All authors have read and agreed to the published version of the manuscript.

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Ethics Committee Approval

Ethics committee approval was not required for this article.

Legal Public/Private Permissions

Legal Public/Private Permissions approval was not required for this article.

Data Availability Statement

The data sets generated and analysed during the current study will be publicly available upon publication.

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Research Article

The Effect of Bedroom Wall Colours on Users' Perceptual Performance

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Abstract

In this study, the effects of colour types (neutral, warm, cool) selected based on single-colour harmony used on the walls of bedrooms, where individuals spend a significant part of their lives, on participants' perceptual evaluations were examined. Within the scope of the study, virtual bedroom spaces designed according to different colour types were used to investigate how perceptual evaluations of research participants could be influenced. The study formulated hypotheses based on the relationships between bedroom colour type and participant variables such as occupation, gender, and age. To test these hypotheses, participants evaluated virtual bedroom spaces online using Google Forms. Statistical analyses, including confidence tests conducted with SPSS, involved calculating percentage values, means, and standard deviations. Differences among variables were examined comparatively. The findings indicated that spaces utilizing neutral colours were generally perceived more positively compared to those employing warm and cool colours. Moreover, certain groups, namely engineers and other professionals, men, and participants aged 25-35, tended to provide more favourable perceptual evaluations than architects, interior designers, women, and participants aged 36-50. In conclusion, this study contributes to understanding how colour types in bedroom environments can influence perceptual evaluations, shedding light on preferences across various demographic groups.

Keywords: Bedroom, Design, Interior, Perception, Wall colour.

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Araştırma Makalesi

Yatak Odası Duvar Renklerinin Kullanıcıların Algısal Değerlendirmeleri Üzerindeki Etkisi

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Özet

Bu araştırmada, bireylerin yaşamlarının önemli bir bölümünü geçirdikleri yatak odalarının duvarlarında kullanılan tek renk harmonisine dayalı olarak seçilen renk türlerinin (nötr, sıcak, soğuk) katılımcıların algısal değerlendirmeleri üzerindeki etkileri incelenmiştir. Çalışma kapsamında, farklı renk türlerine göre tasarlanan sanal yatak odası mekanları ile, araştırma katılımcılarına ait algısal değerlendirmelerin ne şekilde etkilenebileceği araştırılmıştır. Araştırmanın hipotezleri ile, yatak odalarında kullanılan renk türü ile meslek, cinsiyet ve yaş gibi değişkenler arasındaki ilişkilere dayanarak oluşturulmuştur. Araştırma hipotezlerini test etmek için, katılımcılardan sanal yatak odası mekanlarını çevrimiçi olarak değerlendirmeleri istenmiştir, bu değerlendirme Google Formlar aracılığıyla gerçekleştirilmiştir. Toplanan veriler SPSS programı kullanılarak güven testlerine tabi tutulmuş, yüzdelik dilimler, ortalamalar ve standart sapma gibi istatistiksel değerler hesaplanarak, değişkenlerin arasında tespit edilen farklılıklar karşılaştırmalı şekilde incelenmiştir. Bu çalışma sonucunda, nötr renklerin tercih edildiği mekanların genel olarak sıcak ve soğuk renklerin tercih edildiği mekanlara göre daha olumlu bir şekilde algılandığı saptanmıştır. Ayrıca, mühendislerin ve diğer meslek gruplarının, erkeklerin ve 25-35 yaş aralığındaki katılımcıların, mimarlar ve iç mimarlar, kadınlar ve 36-50 yaş grubundaki katılımcıların, daha olumlu değerlendirmelerde bulunduğu tespit edilmiştir.

Anahtar Kelimeler: Yatak odası, Tasarım, İç mekân, Algı, Duvar rengi.

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INTRODUCTION

Bedrooms are special places where people spend approximately 30% of their daily lives and perform activities such as sleeping, resting, reading, dressing, personal care and make-up. Sleep has a fundamental and indispensable role in human life for the physical and mental health of a person. For this reason, the optimal design of the spaces where sleep takes place is of critical importance (Bıçak et al., 2015). Designing the bedroom effectively and functionally can increase the comfort, tranquillity and comfort of the users in this space. In addition, it can have positive effects on people's health and well-being by improving their sleep quality. Therefore, bedroom design has become an important research topic in the field of architecture and interior design. Scientific studies consider the effective design of sleeping spaces an important factor in terms of the health, happiness and quality of life of users.

Designing the environmental factors of sleeping spaces to positively affect the users' perceptual and functional evaluations constitutes a fundamental focal point in space design. People's interaction with their environment is largely based on their perception and behaviour. The perceptual performance of users is moulded by the environmental elements present in spaces. In a study conducted by Baker (1986), environmental factors were categorized into three main groups: design, ambient, and social factors. Design factors encompass elements such as colour, texture, lighting, furniture layout, and architectural arrangement. Numerous previous studies have explored the impact of indoor physical environmental elements on individuals' spatial perceptions (Ertürk, 1983; Yıldırım et al., 2007a, 2015; Hidayetoğlu et al., 2012; Çagatay et al., 2017). These studies show that differences in demographic characteristics such as gender, age, education, profession and culture, as well as wall colours, among the physical characteristics of the interior can significantly affect the spatial perceptions of the users. In this context, this study will focus on the perceptual effects of the colour variable, which plays an important role and is used by designers as a main element in space design. Colour can significantly influence the ambiance of a space and the perceptions of its users. Therefore, the selection and application of colours are crucial as integral components of space design.

The design and application of colour in architectural spaces are important components of the physical environment and constitute indispensable elements of architectural design. Colour plays a significant role in shaping users' emotional, aesthetic, and perceptual experiences (Joshi & Rawat, 2020). Colours are used as a primary tool to clarify the character, function and atmosphere of architectural spaces. This strengthens the feel and purpose of the space, as well as providing visual appeal to enhance users' experiences (Chen et al., 2021). The colours used in interior design have significant effects on people's behaviour. Research clearly shows that the designed physical environment can cause different psycho-behavioural effects on people. In this context, it is important to determine colour arrangements that are thought to be more effective in a spatial sense because these arrangements can meet user needs at an optimum level and increase the performance expected from the user (Ergün et al., 2022).

Sources providing information on this subject clearly demonstrate that the colours preferred in interior spaces have significant effects on users' perceptual evaluations. Based on the reviewed literature, the research hypotheses formulated regarding wall colours and participants' demographic characteristics are discussed in detail in the following section. This study emphasizes the importance of colour use in interior design and aims to provide a framework for understanding how factors related to colour selection affect user perception.

Conceptual Framework and Hypotheses

Numerous studies in the literature investigate how colours impact people's perceptual and behavioural performance. For example, a study by Tantanatewin and Inkarojrit (2016) emphasizes that warm colours such as red, yellow, and orange have revitalizing and exciting effects, but can also create a tendency toward stress and anxiety. Similarly, in a study conducted by Yıldırım et al. (2011), it was observed that cold colours such as blue are calming, peaceful and serene. In another study by Hidayetoğlu et al. (2012), it was suggested that spaces where cold colours are preferred are more impressive than spaces where warm colours are preferred. On the other hand, achromatic colours were perceived as more uniform and simpler compared to chromatic colours; however, in another study, they were associated with concepts such as spaciousness, simplicity and order (Öztürk et al., 2012; Savavibool & Moorapun, 2017).

According to the results given above, the colours used in the interior can affect the perception of space. In this context, bedrooms were chosen as the research space because they appeal to a wide range of users, sample spaces can be examined more easily, and they allow the use of different materials. To achieve this goal, the aim was to ascertain how various wall colours in bedrooms affect users perceptually and to analyse the differences in these effects. In this context, neutral (gray), warm (orange) and cool (blue) colours were used on the walls of the bedrooms used as the experimental environment. Research spaces were modelled on the computer with the 3ds Max program and realistic visuals were created. These visuals were presented to the participants using a space evaluation survey. Participants evaluated the visuals using the semantic differentiation scale, and based on the evaluations, the hypothesis (H1) of the research, which was created based on colour variables, is explained below.

H1: Participants will perceive the environmental factors of a neutral-coloured bedroom more positively than cool and warm-coloured spaces.

Profession is an important independent variable that affects the perceptual evaluations of architectural spaces and is among the social factors. Recently, there has been a notable rise in the number of studies investigating how users' occupations influence their spatial perception. The initial investigations in this field were conducted by Hershberger (1969) and later by Mehrabian and Russell (1974). Subsequent research has examined the perceptual assessments of participants with design education (such as architects, interior designers, industrial designers, urban planners, and landscape architects) and those without design education (other professional groups), focusing on various parameters (Gifford et al., 2000; Malekinezhad et al., 2013; Boumová & Zdráhalová, 2016; Arslan et al., 2018; Müezzinoğlu et al., 2020). Many of these studies suggest that evaluations made by designers tend to be more discerning than those made by non-designers. Müezzinoğlu et al. (2021) discovered notable variances in how design-trained professionals perceive the physical environmental factors of architectural spaces compared to other professional cohorts. Likewise, Coşgun et al. (2022) and Yılmaz et al. (2022) indicated that users with design education perceived these physical environmental factors more negatively than those without such training. These studies highlight that individuals with design education tend to assess spatial elements with greater criticality and depth.

According to the above studies, it is evident that whether users have received design education or not affects their perception of space. These findings demonstrate that occupational distinctions can serve as a significant independent variable in spatial perception. Based on these assessments, the

research hypothesis (H2) formulated for the occupational variable is presented below.

H2: Architects and interior designers will perceive the environmental factors of their bedrooms more negatively than engineers and other professions.

One of the crucial social factors influencing the perceptual evaluations of environmental factors in architectural spaces is gender. Studies in this area have highlighted that gender can lead to variations in behaviour. Considering these studies, it is seen that men have lower risk aversion thresholds in natural environments (Eisler et al., 2003), perform better in spatial abilities (Voyer et al., 1995), and have a stronger environmental dominance in indoor spaces (Lindfors et al., 2006). On the other hand, women are seen to be more affected by internal events (Hunter et al., 2004), have less organizational and institutional commitment (Dodd-McCue & Wright, 1996), and have stronger ties to the places they adopt (Fraser & Hodge, 2000). Kim et al. (2013) noted in their research that women tend to have lower satisfaction levels with environmental factors in architectural spaces compared to men. Similarly, Akalın et al. (2010) and İmamoğlu (2000) reported comparable findings regarding women's perceptions of architectural facades with different forms. These studies indicate that women exhibit a more critical attitude than men. Furthermore, research conducted by Dube and Morgan (1996), Yıldırım et al. (2012, 2014, 2015), and Ayalp et al. (2016) suggests that women evaluate spaces from a more personal, emotional, and visually focused standpoint. Overall, these studies underscore the significant role of gender in shaping spatial perception. It is observed that women can generally exhibit a more critical approach than men in evaluations based on space perceptions and adjective pairs.

According to the above studies, it is clear that the gender difference of the users affects the perception of space. These studies reveal substantial variations in preferences based on gender. These findings suggest that gender could serve as a significant independent variable in spatial perception. Based on these assessments, the research hypothesis (H3) formulated for the gender variable is presented below.

H3: Men will perceive the environmental factors of their bedrooms more negatively than women.

Age differences among participants represent one of the critical social factors influencing the perceptual evaluations of environmental factors in architectural spaces. Several researchers have utilized age as a proxy for various factors, including life experience and the socialization process (Joyce & Lambert, 1996). When the literature is examined, there are few studies on the effects of users' age differences on perceptions of different physical environments. In some of these studies, it was stated that young people perceive indoor spaces more positively than older users (Yıldırım et al., 2007a, 2014, 2015). Therefore, it would be beneficial to ascertain whether the physical environmental factors of bedrooms arranged in different ways have a statistically significant impact on the perceptual evaluations of participants aged 25-35 and 36-45. According to these evaluations, the hypothesis (H4) of the research established for the age variable is given below.

H4: Participants aged 25-35 will perceive the environmental factors of their bedrooms more positively than participants aged 36-50.

METHOD

In this section, the study method used to determine the effects of three different wall colours (neutral, cool, warm) preferred in bedrooms on people's perceptual evaluations is explained in detail.

Selection of Subjects

A total of 197 participants living in Turkey were included in the research. 48.2% of these participants were architects or interior designers (95 people), 16.2% were engineers (32 people), and 35.5% were from other professions (70 people). 59.9% of the participants were women (118 people) and 40.1% were men (79 people). Looking at the age distribution, 85.8% were in the 20-35 age range (169 people) and 14.2% were in the 36-50 age range (28 people).

Survey Design

The survey forms designed to test the research hypotheses comprise two main sections. The initial section requests general demographic information from participants, while the second section contains questions crafted to assess the spatial quality of bedrooms featuring various wall colours. The design of the research questionnaire was found to be valid and reliable in previous studies conducted by İmamoğlu (1975), Yıldırım et al. (2005, 2007a; 2007b; 2007c; 2011, 2015), Yıldırım (1999), Yıldırım and Akalın (2009), Erdoğan et al. (2010) and Özkan and Yıldırım (2016). The semantic differentiation scale consisting of seven-point adjective pairs listed in positive-negative polarities (1: positive, 7: negative) was used. These adjective pairs are beautiful/ugly, warm/cool, light/dark, wide/narrow, attractive/unattractive, roomy/cramped, high/low, sincere/formal, tidy/untidy, well-planned/poorly planned, large/small, free space / restricted space, simple/complex, restful / disturbing and uncrowded / crowded.

Wall Colour Selection

In the research, neutral (grey), cool (blue) and warm (orange) colours, which have been frequently preferred recently, were used on the walls of the modelled virtual bedrooms. The RGB and NCS codes of these colours used in bedrooms are given in Table 1.

Colours	NCS and RGB Colour Codes	Image
Neutral Colour (Gray)	S 2000-N R:204 G:204 B:204	
Warm Colour (Orange)	S 0585-Y50R R:255 G:127 B:0	
Cool Colour (Blue)	S 1555- R80B R:69 G:151 B:214	
NCS: Natural Colour System, RGB: Red, Green, Blue Colour System.		

Table 1. Colours used in virtual bedroom spaces.

Links to places designed using the colours presented in Table 1 and which can be explored with a 360-degree virtual tour are presented in Figure 1.

Design of the Experimental Space

In this research, modelling of bedrooms containing three different wall colours was carried out with virtual reality (VR) technology. In the contemporary era characterized by extensive digital technology use, it is crucial to examine the similarities and disparities between information gathered from real-life and virtual environments. Research focuses on areas such as the transformation of information from digital platforms to physical reality, skill transfer and spatial knowledge transfer. Some studies claim that spatial data obtained from virtual

and physical environments are quite parallel and that skills and spatial knowledge can be effectively transferred from the virtual environment to the real world (Wolbers et al., 2010; Wallet et al., 2013). Some studies (Tsunetsugu et al., 2005; Yıldırım et al., 2007c; Yıldırım et al., 2014; Ayalp et al., 2016 and 2017), report that visual materials play a critical role in measuring perceptual behaviours and emphasize that digital images contribute to the visualization of information. Hidayetoğlu et al. (2012) asserted that virtual environments are effective for achieving precise outcomes and can be attained at lower costs compared to real-world scenarios. All this literature reveals that virtual environments can be used effectively in scientific research.

In this research, for the visualization of virtual bedrooms used as experimental spaces, Yıldırım et al. (2007c), Hidayetoğlu et al. (2012), Yıldırım et al. (2012, 2014, 2019, 2022) and Ayalp et al. (2017) were used. Bedrooms with three different wall colours were made compatible with virtual reality glasses using 360-degree virtual reality renderings. This process was carried out in the 3ds Max program.

Neutral Coloured Bedroom
http://bit.ly/4akzKsx

Cool Coloured Bedroom
https://bit.ly/3To4y5x

Warm Coloured Bedroom
https://bit.ly/46VhV0p

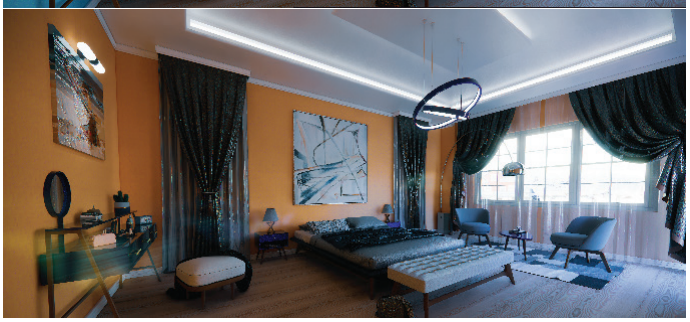


Figure 1. Images of virtual bedroom spaces.

Participants experienced colour variables in the bedroom space and evaluated their effects on spatial perception. All environmental factors were carefully controlled to ensure that the experiment was carried out correctly. Thus, all physical features except wall colours were kept constant in the 27 square meter rectangular planned bedroom spaces designed and modelled for the experiment. The bedroom spaces modelled as the experimental environment are shown in Figure 1.

Application and Procedure

A research survey was administered to 197 participants to evaluate the spatial quality of the modelled virtual bedrooms. The surveys were conducted over a two-week period in December 2023, using online survey forms designed with the Google Forms platform. In the initial segment of the survey, participants were provided with introductory information. Subsequently, they were tasked with evaluating three-dimensional videos of bedrooms created using augmented virtual reality technology, using a semantic differentiation scale comprising 15 pairs of adjectives. The collected data set was analysed and interpreted statistically using SPSS.

Data analysis

In the research, the effects of three different wall colours used on the virtual bedroom walls on the participants' perceptual evaluations were determined through a survey. In this context, the participants' evaluation of the environmental factors of their bedrooms was considered as "dependent variable", while the colour of the walls, occupation, gender and age differences were considered the "independent variables". The Cronbach's Alpha reliability test was conducted to assess the reliability of the research data. Then, statistical calculations such as percentage value, average value and standard deviation value were performed. Next, a one-way analysis of variance (ANOVA) was employed to determine if there were statistically significant differences between the dependent and independent variables at a significance level of $P < 0.05$. Variable means are presented comparatively with graphical representations.

FINDINGS

This study aims to provide important findings about bedroom wall colours that can help designers create high-quality and easily perceptible spaces. In line with this goal, the participants' reactions to different wall colours were examined. Participants evaluated virtual bedroom spaces created using augmented virtual reality technology with the 3ds Max program on the computer, through a survey. The resulting data set was analysed through statistical methods and the findings are presented comprehensively below.

Reliability Analysis

The reliability of the research data was assessed using the Cronbach's Alpha test method, yielding a scale reliability coefficient of 0.963. The reliability values for the dependent variables and the primary scale employed in the study are presented in Table 2.

Dependent Variables	Dependent Variable Reliability	Scale Reliability
Beautiful/Ugly	0.959	0.963
Warm/Cool	0.963	
Light/Dark	0.961	
Wide/Narrow	0.961	
Attractive/Unattractive	0.959	
Roomy/Cramped	0.959	
High/Low	0.961	
Sincere/Formal	0.961	
Tidy/Untidy	0.960	
Well-Planned/Poorly Planned	0.959	
Large/Small	0.961	
Free Space / Restricted Space	0.960	
Simple/Complex	0.960	
Restful / Disturbing	0.959	
Uncrowded / Crowded	0.961	

Table 2. Cronbach Alpha reliability analysis results.

In Table 2, the reliability coefficient of the main scale, comprising 15 adjective pairs, is reported as 0.963. According to Cronbach (1951), referenced in the literature, scale components are considered "reliable" when the alpha reliability coefficient exceeds 0.70. It is evident that all elements tested in this study have Cronbach Alpha coefficients exceeding 0.70. Hence, the research data can be characterized as demonstrating a high level of reliability.

Colour Findings

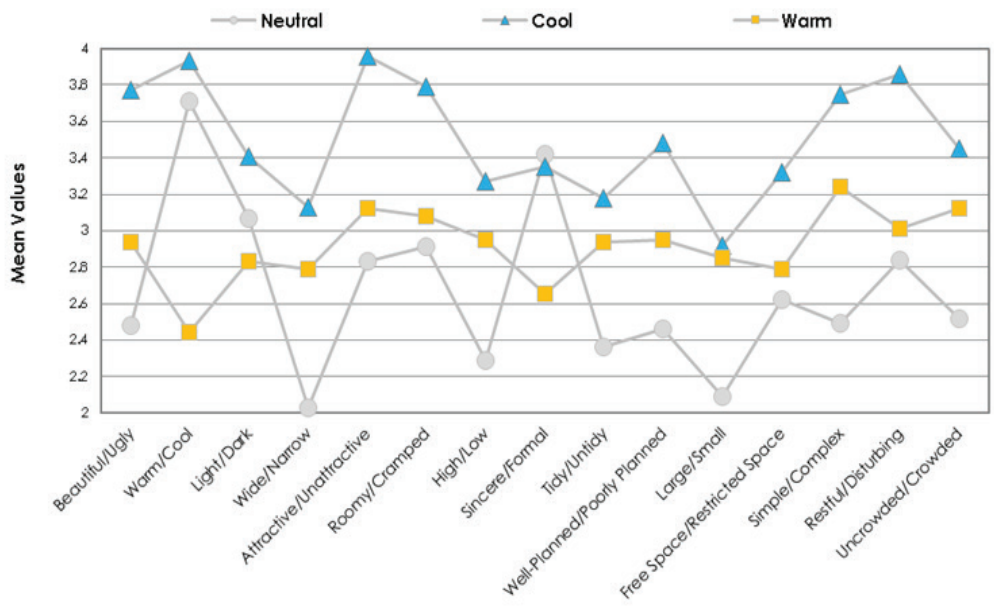
The analysis results of the data covering the participants' perceptual evaluations of the environmental factors of the bedrooms where three different wall colours were used (neutral, cool, warm) are given in Table 3.

Table 3. Analysis results of data regarding the colours used in bedroom spaces.

Dependent Variables	Bedroom Wall Colours									ANOVA Results		
	Neutral			Cool			Warm					
	M[a]	SD	HG	M	SD	HG	M	SD	HG	F	df	Sig.
Beautiful/Ugly	2.48	1.62	A	3.77	1.92	C	2.94	1.83	B	26.050	2	0.000*
Warm/Cool	3.71	1.95	B	3.93	1.87	B	2.44	1.70	A	37.356	2	0.000*
Light/Dark	3.07	1.83	AB	3.41	1.76	B	2.83	1.62	A	5.403	2	0.005*
Wide/Narrow	2.03	1.41	A	3.13	1.78	B	2.79	1.66	B	23.701	2	0.000*
Attractive/ Unattractive	2.83	1.63	A	3.96	1.99	B	3.12	1.77	A	20.836	2	0.000*
Roomy/ Cramped	2.91	1.80	A	3.79	1.92	B	3.08	1.70	A	13.046	2	0.000*
High/Low	2.29	1.48	A	3.27	1.83	B	2.95	1.67	B	17.773	2	0.000*
Sincere/ Formal	3.42	1.99	B	3.35	1.78	B	2.65	1.67	A	10.837	2	0.000*
Tidy/Untidy	2.36	1.66	A	3.18	1.81	B	2.94	1.76	B	11.606	2	0.000*
Well-Planned/ Poorly Planned	2.46	1.52	A	3.48	1.88	C	2.95	1.73	B	17.403	2	0.000*
Large/Small	2.09	1.41	A	2.92	1.63	B	2.85	1.62	B	17.052	2	0.000*
Free Space / Restricted Space	2.62	1.58	A	3.32	1.84	B	2.79	1.65	A	9.205	2	0.000*
Simple/ Complex	2.49	1.51	A	3.75	1.85	C	3.24	1.72	B	27.691	2	0.000*
Restful / Disturbing	2.84	1.75	A	3.86	1.96	B	3.01	1.71	A	18.108	2	0.000*
Uncrowded / Crowded	2.52	1.52	A	3.45	1.79	B	3.12	1.73	B	15.417	2	0.000*

Note: HG: Tukey HSD Homogeneity Group. * Significant at the level of p< 0.005.
M: Average value. SD: Standard deviation. F: F value. df: Degree of freedom.
a: They are the average values of the variables listed from 1 to 7. High values are negative responses.

According to the analysis results given in Table 3, it was determined that the colours used in the bedrooms had statistically significant effects on the participants' perceptual evaluations at the $p < 0.005$ level for all 15 adjective pairs. A visual representation of these findings is included in Figure 2.



Note: Higher variable means indicate more negative answers.

Figure 2. The effect of colours used in bedroom spaces on dependent variables.

Figure 2 illustrates that the environmental factors of bedrooms with neutral colours are generally evaluated more positively compared to those with warm and cool colours, except for three adjective pairs. These results indicate that the neutral-coloured bedrooms are perceived as more beautiful, spacious, attractive, roomy, high, tidy, well-planned, spacious, simple, restful, and uncrowded than the other spaces. It was observed that bedrooms with orange-coloured walls are perceived as warmer, brighter, and more sincere than the other spaces. In this context, it was found that the perceptual evaluations of participants were significantly influenced by the choice of three different wall colours in the bedrooms. This supports the hypothesis stated in H1: "Participants will perceive the environmental factors of a neutral-coloured bedroom more positively than those of cool and warm-coloured spaces." Overall, it was concluded that bedrooms with neutral colours left a more favourable impression across twelve adjective pairs compared to those with cool and warm colours.

Profession Findings

The analysis results of the data regarding participants' perceptions of the environmental factors in their bedrooms, categorized by their profession (architect/interior designer, engineer, other professions), are presented in Table 4.

In Table 4, participants' perceptual assessments of the environmental factors in their bedrooms based on their professions showed statistical significance at the levels of $p < 0.05$ and $p < 0.10$ for thirteen adjective pairs. A graphical depiction of these results is provided in Figure 3.

Table 4. Analysis results regarding participants' evaluations according to their professions.

Dependent Variables	Professions						ANOVA Results		
	Architect / Interior Designer		Engineer		Other Professions				
	M[a]	SD	M	SD	M	SD	F	df	Sig.
Beautiful/Ugly	3.30	1.88	2.75	1.83	2.89	1.85	4.600	2	0.010*
Warm/Cool	3.53	1.97	3.14	1.97	3.23	1.91	2.340	2	0.105**
Light/Dark	3.34	1.77	2.69	1.57	2.98	1.77	5.879	2	0.003*
Wide/Narrow	2.75	1.68	2.49	1.66	2.59	1.71	1.074	2	0.343[ns]
Attractive/ Unattractive	3.55	1.86	2.94	1.80	3.13	1.85	5.451	2	0.005*
Roomy/Cramped	3.45	1.85	2.85	1.61	3.18	1.91	4.113	2	0.017*
High/Low	3.00	1.71	2.53	1.62	2.77	1.74	3.026	2	0.049*
Sincere/Formal	3.29	1.84	2.84	1.81	3.07	1.86	2.409	2	0.091**
Tidy/Untidy	3.06	1.88	2.44	1.43	2.69	1.73	5.495	2	0.004*
Well-Planned/ Poorly Planned	3.21	1.83	2.63	1.55	2.78	1.72	5.925	2	0.003*
Large/Small	2.73	1.62	2.49	1.55	2.52	1.60	1.414	2	0.244[ns]
Free Space / Restricted Space	3.14	1.78	2.65	1.56	2.73	1.66	4.802	2	0.009*
Simple/Complex	3.44	1.80	2.74	1.55	2.98	1.77	7.520	2	0.001*
Restful / Disturbing	3.52	1.91	2.85	1.70	3.02	1.82	6.894	2	0.001*
Uncrowded / Crowded	3.27	1.79	2.78	1.56	2.80	1.66	5.728	2	0.003*

Note: * Significant at the level of p< 0.05, ** Significant at the level of p< 0.10.
M: Average value. SD: Standard deviation. F: F value. df: Degree of freedom.
a: They are the average values of the variables listed from 1 to 7. High values are negative responses.

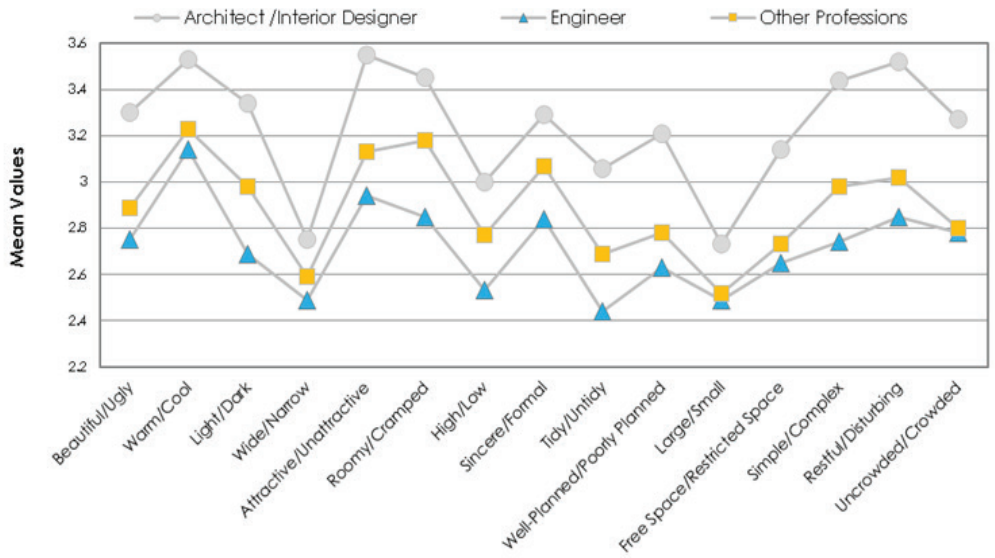


Figure 3. Effect of participants' profession on dependent variables.

Note: Higher variable means indicate more negative answers.

In Figure 3, it is observed that architects and interior designers evaluate the environmental factors of bedrooms more negatively for all pairs of adjectives compared to other professional groups. This finding shows that the hypothesis put forward in H2: "Architects and interior designers will perceive the environmental factors of their bedrooms more negatively than engineers and other professions."

Therefore, it can be stated that architects and interior designers exhibit a more critical approach in spatial evaluations compared to other professional groups.

Gender Findings

The analysis results of the data concerning participants' perceptual assessments of the environmental factors in their bedrooms, categorized by their gender (male and female), are presented in Table 5.

Table 5. Analysis results regarding participants' evaluations according to gender.

Dependent Variables	Gender						ANOVA Results		
	Men		Women		Total				
	M[a]	SD	M	SD	M	SD	F	df	Sig.
Beautiful/Ugly	3.22	1.94	2.82	1.74	3.06	1.87	6.571	1	0.011*
Warm/Cool	3.51	2.03	3.13	1.82	3.36	1.96	5.491	1	0.019*
Light/Dark	3.25	1.83	2.88	1.61	3.10	1.75	6.616	1	0.010*
Wide/Narrow	2.76	1.73	2.49	1.61	2.65	1.69	3.857	1	0.050*
Attractive/ Unattractive	3.50	1.94	3.00	1.69	3.30	1.86	10.344	1	0.001*
Roomy/Cramped	3.47	1.94	2.94	1.65	3.26	1.84	12.302	1	0.000*
High/Low	2.99	1.74	2.62	1.64	2.84	1.71	6.654	1	0.010*
Sincere/Formal	3.29	1.91	2.91	1.72	3.14	1.85	6.130	1	0.014*
Tidy/Untidy	2.93	1.87	2.67	1.63	2.83	1.78	3.014	1	0.083**
Well-Planned/ Poorly Planned	3.13	1.87	2.71	1.56	2.96	1.76	8.303	1	0.004*
Large/Small	2.66	1.62	2.56	1.58	2.62	1.60	0.600	1	0.439[is]
Free Space / Restricted Space	3.10	1.79	2.64	1.56	2.91	1.72	10.447	1	0.001*
Simple/Complex	3.40	1.84	2.80	1.60	3.16	1.77	17.091	1	0.000*
Restful / Disturbing	3.49	1.96	2.85	1.63	3.24	1.86	17.334	1	0.000*
Uncrowded / Crowded	3.14	1.76	2.87	1.66	3.03	1.72	3.513	1	0.061**

Note: * Significant at the level of p< 0.05, ** Significant at the level of p< 0.10, [is]: Insignificant at the level p< 0,05.
M: Average value. SD: Standard deviation. F: F value. df: Degree of freedom.
a: They are the average values of the variables listed from 1 to 7. High values are negative responses.

In Table 5, participants' perceptual assessments of the environmental factors in their bedrooms based on their gender were found to be statistically significant at the levels of $p < 0.05$ and $p < 0.10$ for all adjective pairs except one. Consequently, it was observed that men provided more favourable perceptual evaluations across all adjective pairs compared to women. A graphical representation of these results is included in Figure 4.

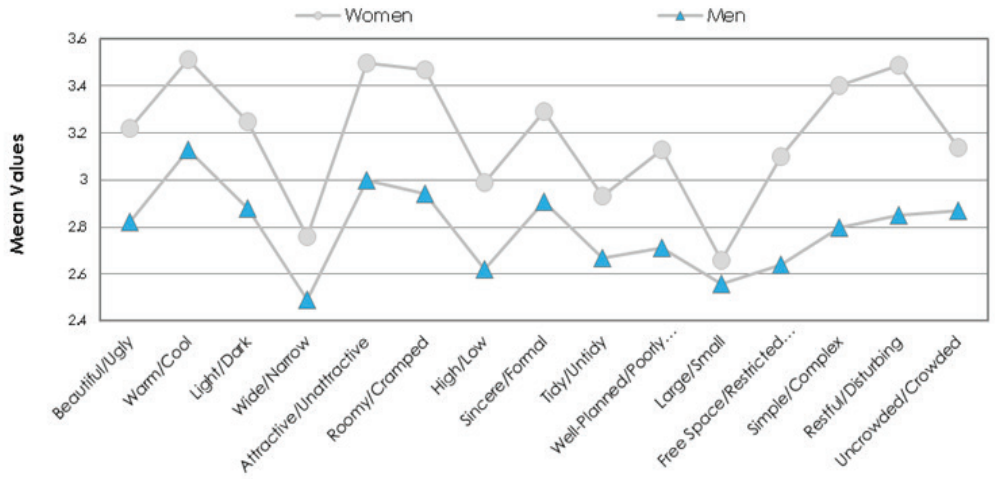


Figure 4. . Effect of participants' gender on dependent variables.

Note: Higher variable means indicate more negative answers.

According to these results, it is seen that men, compared to women, evaluate the environmental factors of their bedrooms statistically positively for all adjective pairs except one. This finding shows that the "Men will perceive the environmental factors of their bedrooms more negatively than women" and supports the hypothesis put forward in H3.

Age Findings

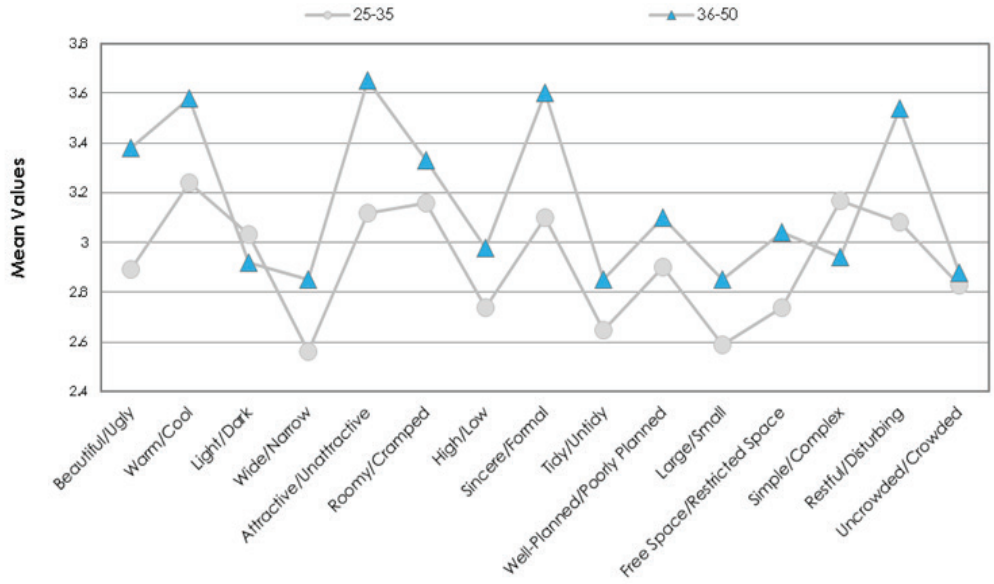
The analysis results of the data covering the perceptual evaluations of the research participants towards the environmental factors of their bedrooms, depending on their age groups (25-35, 36-40), are given in Table 6.

Table 6. Analysis results regarding participants' evaluations according to age.

Dependent Variables	Age						ANOVA Results		
	20-35		36-50		Total				
	M[a]	SD	M	SD	M	SD	F	df	Sig.
Beautiful/Ugly	2.89	1.72	3.38	1.82	3.04	1.76	2678	1	0.101**
Warm/Cool	3.24	1.90	3.58	1.91	3.35	1.90	1.084	1	0.299[is]
Light/Dark	3.03	1.70	2.92	1.54	2.99	1.64	0.152	1	0.697[is]
Wide/Narrow	2.56	1.48	2.85	1.65	2.65	1.54	1.194	1	0.276[is]
Attractive/ Unattractive	3.12	1.72	3.65	1.66	3.29	1.72	3.092	1	0.081**
Roomy/Cramped	3.16	1.73	3.33	1.77	3.22	1.74	0.320	1	0.572[is]
High/Low	2.74	1.54	2.98	1.62	2.82	1.57	0.749	1	0.688[is]
Sincere/Formal	3.10	1.78	3.60	1.82	3.25	1.80	2.648	1	0.105**
Tidy/Untidy	2.65	1.54	2.85	1.50	2.71	1.52	0.603	1	0.439[is]
Well-Planned/ Poorly Planned	2.90	1.59	3.10	1.43	2.96	1.54	0.606	1	0.438[is]
Large/Small	2.59	1.41	2.85	1.47	2.67	1.43	1.125	1	0.290[is]
Free Space / Restricted Space	2.74	1.62	3.04	1.50	2.84	1.59	1.169	1	0.281[is]
Simple/Complex	3.17	1.57	2.94	1.55	3.10	1.56	0.740	1	0.391[is]
Restful / Disturbing	3.08	1.61	3.54	1.70	3.22	1.65	2.659	1	0.104**
Uncrowded / Crowded	2.83	1.44	2.88	1.42	2.84	1.43	0.034	1	0.853[is]

Note: ** Significant at the level of p< 0.10, [is]: Insignificant at the level p< 0,05.
M: Average value. SD: Standard deviation. F: F value. df: Degree of freedom.
a: They are the average values of the variables listed from 1 to 7. High values are negative responses.

In Table 6, participants' perceptual assessments of the environmental factors in their bedrooms based on their age were found to be statistically significant at the levels of $p < 0.05$ and $p < 0.10$ for all adjective pairs except four. Consequently, it was observed that age significantly influenced participants' perceptual evaluations. A graphical representation of these findings is included in Figure 5.



Note: Higher variable means indicate more negative answers.

Figure 5. Effect of participants' age on dependent variables.

Figure 5 shows that participants aged 36-50 made more positive perceptual evaluations for the light/dark and simple/complex adjective pairs. On the other hand, participants aged 25-35 appear to have made more positive perceptual evaluations for adjective pairs for the other adjective pairs. This finding shows that the "Participants aged 25-35 will perceive the environmental factors of their bedrooms more positively than participants aged 36-50" and supports the hypothesis put forward in H4.

CONCLUSIONS AND RECOMMENDATIONS

In this study, the impact of bedroom environmental factors using three different colours (neutral, warm, cool) on the perceptual evaluations of participants varying in professions, genders, and ages was examined. The subsequent sections provide detailed results and recommendations concerning these evaluations.

Initially, it was found that three different colour types applied to bedroom walls based on single-colour harmony significantly influenced participants' perceptual evaluations. In this regard, environmental factors in bedrooms with neutral colours were generally perceived more favourably compared to those with warm and cool colours. It has been determined that the neutral-coloured bedroom space is perceived as more beautiful, large, attractive, roomy, high, tidy, well-planned, spacious, simple, restful and uncrowded compared to other spaces. It has been determined that the space where orange colour is used is perceived as warmer, brighter and more sincere compared to other spaces. These results confirm that, as stated in previous studies, orange colour tone creates a warm, bright and sincere atmosphere compared to others, while neutral colour tones are perceived as wider, more spacious, simple and uncrowded (Ergün et al., 2022). Likewise, in Savavibool and Moorapun's (2017) research, it was stated

that neutral colours are linked to concepts such as spaciousness, simplicity and order. These results clearly show that colour types play an important role in determining the users' preferences, especially depending on the function of the space and the emotional atmosphere desired to be created.

Based on their professions, it was found that architects and interior designers provided more critical perceptual assessments of the environmental factors in bedrooms with three different wall colours across all adjective pairs, compared to other participants. This may be because the architect and interior designer participants who received design training perceived the environmental factors of the bedroom space by abstracting from their meaning and benefits and evaluated them from a more critical perspective. These findings corroborate earlier conclusions reached by Müezzinoğlu et al. (2021), Coşgun and Yıldırım (2022), Yılmaz and Yıldırım (2022), and Yıldırım et al. (2012, 2015).

Based on the gender-related findings, it was observed that men evaluated the environmental factors of bedrooms with three different wall colours positively across all adjective pairs. This may be attributed to the generally more sensitive and critical perspective often exhibited by women. This result supports the conclusion suggested by Kim et al. (2013), Dube and Morgan (1996), Yıldırım et al. (2014, 2015, 2016, 2020), Ayalp et al. (2016) and Müezzinoğlu et al. (2021) studies that women's satisfaction levels with environmental factors are lower than men.

Based on the findings related to age, it was found that participants in the 36-50 age group tended to provide more favourable perceptual evaluations for adjective pairs related to light/dark and simple/complex aspects. Conversely, participants in the 25-35 age group showed more positive evaluations for adjective pairs other than these two categories. This finding generally supports the conclusion emphasized in the studies conducted by Yıldırım et al. (2007, 2014, 2015) that "young people's satisfaction levels with environmental factors are lower than the middle age group".

It is possible to conduct similar studies in the future to conduct experimental research on different colour types associated with various space functions. However, in addition to digitally designed and online data collection methods, which are more efficient in terms of time and cost, it can also be recommended to use face-to-face experiments in real locations. This diversified approach may allow research results to be more comprehensive and generally valid.

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Conflict of Interest

No conflict of interest was declared by the authors.

Authors' Contributions

The authors contributed equally to the study.

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Ethics committee approval was not required for this article.

Legal Public/Private Permissions

In this research, the necessary permissions were obtained from the relevant participants.

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Research Article

Regeneration of A Historical Urban Park and Its Evaluation by the Visitors: Gençlik Park Case, Ankara

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Abstract

Urban parks, which should be planned and managed with "economic, ecological, and social sustainability" in mind, benefit citizens' health in terms of these three components. This study assesses the social sustainability of parks using the example of "Gençlik Park". The study was conducted to investigate user perceptions of renovation work carried out after a large urban park, which contributed significantly to the capital city's identity, lost function and meaning and became a deteriorated area. The data were analysed with the SPSS 23 program, and variables were associated using the T-test and ANOVA. The users were questioned under the headings of "accessibility, comfort, appearance and aesthetics, adequacy and appropriateness of the activities in the park, safety" during the renovation work done in the park.

Keywords: Gençlik Park Regeneration, Urban Park Regeneration, Urban Park Visitors.

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Araştırma Makalesi

Tarihi Bir Kent Parkının Yenilenmesi ve Ziyaretçiler Tarafından Değerlendirilmesi: Gençlik Parkı Örneği, Ankara

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Özet

"Ekonomik, ekolojik ve sosyal sürdürülebilirlik" bağlamında planlanması ve yönetilmesi gereken kent parkları, bu üç bileşen açısından vatandaşların sağlığına faydalar sunmaktadır. Bu çalışma parkların sosyal sürdürülebilirliğini "Gençlik Parkı" örneğinde değerlendirmektedir. Çalışma, başkent kimliğine önemli katkı sağlayan büyük bir kent parkının işlevini ve anlamını yitirerek çöküntü alanı haline gelmesi sonrasında gerçekleştirilen yenileme çalışmalarına ilişkin kullanıcı görüşlerinin irdelenmesi amacıyla gerçekleştirilmiştir. Veriler SPSS 23 programıyla analiz edilmiş, değişkenler T testi ve ANOVA ile ilişkilendirilmiştir. Parkta gerçekleştirilen yenileme çalışmaları "erişilebilirlik, konfor, görüntü ve estetik, parktaki aktivitelerin yeterliliği ve uygunluğu, güvenlik" konularında yürütülmüş ve kullanıcılara bu başlıklar altında sorular sorulmuştur.

Anahtar Kelimeler: Gençlik Parkı Yenileme, Kent Parkı Yenileme, Kent Parkı Ziyaretçileri.

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INTRODUCTION

Gardens, green roofs, community forests, rivers, canals, and wetlands are examples of green spaces that benefit cities and society by serving a variety of purposes that are beneficial to the environment, the economy, society, and the human race (Harnik, 2003; Konijnendijk et al., 2013; Gore et al., 2013; Park & Kim, 2019; Kim et al., 2019; Biernacka et al., 2023) and socially and ecologically (Feyisa & Mailby, 2014; Speak et al., 2015; Mexia et al., 2018; Yu et al., 2020; Hajzeri, 2021; Shao & Kim 2022; Cooper et al., 2023), among other green spaces, particularly in city living. The fact that parks are places of public education (Yang et al., 2020), socialization and appreciation of middle class norms and human values requires a broader consideration of the functions of parks. Today, parks fulfil functions such as social control, cultural enlightenment (Zhu et al., 2020; Gai et al., 2023), improving physical and physiological health (Liu et al., 2017; Gong et al., 2023), providing tranquil environments within the city, acting as a kind of "urban recreation" for those who cannot go out of the city, and helping regular urban development (Özgüner, 2011). The presence of these landscape elements, both natural and man-made, such as parks, forests, green corridors and water features, in the city provides ecosystem services such as improved air quality (Xie et al., 2019). They also provide social and psychological contributions that are critical for the liveability of modern cities and the health of their inhabitants (Konijnendijk et al., 2013, Larson et al., 2016; Wajchman et al., 2021). Urban parks are also places that respond to the need of today's urban people for pedestrian spaces, just like the pedestrians of the Middle Ages, and make this healthy through natural elements (Sitte, 1965).

Urban parks and other public spaces, particularly when used for event planning, help to animate the area, make it attractive and viable, and contribute to the development of a city's identity and sense of "belonging". These could be reinforced by historically significant objects that are protected, like physical features and historical allusions to the region (Stepanchuk et al., 2021). The large parks previously mentioned, along with the leisure and recreational activities they offer, serve not only the local community but also the national, international, and regional levels.

According to Conway (1991), "what is happening to our parks reflect what is happening in the society". These parks can manage this as spaces where a variety of recreational and leisure activities they include. For this reason, the disciplines and managers who plan the urban park must establish a good balance between conservation and improvement efforts and the various uses and values that serve the society through the park.

Not only do urban parks provide highly desirable access to open space with the multitude of recreational activities they provide, from hiking and biking trails to basketball courts, playgrounds, soccer fields, and even more elaborate offerings such as amphitheatres, community centres, and interpretive stations; they have also been shown to consistently increase neighbourhood property values (Harnik & Welle, 2009; Lin et al., 2021). Urban parks instill a sense of community. They provide gathering spaces where people can interact with their neighbours, a rarity in today's world (Morris, 2011; Sezen & Aytatlı, 2019).

With the right planning, design and management efforts, a city park can fulfil these functions. General indicators of the appropriateness of planning and design can be considered as "diversity of use, accessibility, ease of use, image and sociability" (Yücel & Yıldızcı, 2006; Öztürk Kurtaslan, 2017).

Researchers have long noted the ways people interpret landscapes and the importance of symbolism in connecting to a "place." Various groups of people may each define uses in a landscape in various ways and have different values for the same landscape. In this context, landscapes can sometimes gain more importance as symbols of these values and uses, reaching the status of "special places", "heritage sites" or "sacred places" (Gobster, 2001). As in these cases, the legibility of the landscape's narrative is critical to its perceived value (Selman, 2008). The legibility of landscape narrative reflects an ethical relationship with the landscape and supports notions of personal identity and sense of place. Therefore, shifting legibility of landscape narrative over time can lead to deep unresolved conflicts with the landscape, and these conflicts can be exacerbated when interpretations of the existing landscape are challenged by rapid landscape change (Clingerman & Drenthen, 2013).

In many cities, park departments and civic groups are maintaining their efforts to restore the magnificent parks that have been the works of landscape architects such as Olmsted, Jens Jensen, Simmonds and their contemporaries over the last 150 years. Many of these parks have been neglected from time to time due to lack of funds and labour required for their maintenance.

Park restoration approaches consist of complex interactions between "physical, biological and social" aspects of landscape planning and design and require interdisciplinary involvement from various aspects such as landscape ecology, regeneration ecology. Thus, in landscape architecture and historic preservation and park regeneration approaches, experts try to incorporate cultural values alongside efforts to improve urban nature. However, it would be appropriate to make decisions to increase social interaction (e.g. through benches and playgrounds) and physical activity (e.g. through pathways, bicycle lanes and open spaces) in renovation works (Le Lay et al., 2013; Poppe et al., 2023).

Moreover, public support or reaction to regeneration and restoration projects of all other public open spaces, including parks, depends mainly on the distance between expert and public perception (Le Lay et al., 2013). Broad-based participation of citizens in the planning and implementation of regeneration efforts in public spaces and urban parks is as important as interdisciplinary professional participation; this empowers stakeholders and helps preserve the desired landscapes in the long term.

Open spaces and parks are important areas related to urban renewal initiatives that aim to help renew "cities" (Özgüner, 2011). In urban parks, which are considered within the scope of urban renewal studies, one of the most important goals in this process is to ensure the social sustainability of the parks. Parks contribute to urban social sustainability with the activities they provide to urban people and equal participation opportunities on the scales of age, gender, race, socio-economic status, economy-ecology and equality (Ostermann, 2009). Access to parks and open spaces is a fundamental human right. Revitalizing parks and open spaces has the potential to contribute to the renewal and revitalization of the city.

The purpose of this research is to ascertain the degree of satisfaction with the revitalization efforts undertaken to address both functional issues and issues that arose during the creation and planning process of Gençlik Park.

In order to ascertain the degree of visitor satisfaction with the revitalisation studies, it is crucial to ascertain the revitalisation activities that were carried out to address both functional issues and those that arose during the creation and

planning of Gençlik Parkı. Furthermore, the research data is significant because it serves as a basis for future research data.

URBAN TRANSFORMATION, RENEWAL IN PARKS

The changes that occur over time and the need for renewal in urban parks, which have a decisive role in the identity of the city and provide important functions, especially in close relationship with the city centre, are often closely related to the concept of urban transformation. As in the case of Gençlik Park, the changes observed in the park over time have emerged as a result of the physical and social collapse of the city centre where the park is located (Özkır, 2007). The urban transformation concept, emerged in the early 19th century when the city's social, cultural and economic needs brought on by physical factors and led the city to change. Due to aspects like unhealthiness, environmental pollution, and depression, it starts to become a region faced with social and economic deterioration (Üstün, 2008; Yenice, 2014).

Urban transformation can be defined as the process of reconsidering cities economically, socially and spatially, and transforming undesired urban textures in line with contemporary urbanism principles and planning principles (Daşkıran & Ak, 2015).

Urban transformation aims to improve the urban textures in question (old central business areas that have lost their attractiveness, urban protected areas, unhealthy and illegal buildings within the city, slum areas, etc.) in social, economic, physical and cultural aspects.

Urban transformation, which first started with interventions aimed at revitalizing socially and economically depressed areas in the cities of developed Western countries, has generally taken the form of implementing projects that will contribute to the economic development of the city in areas where the population has lost its population or where low-income groups live in poor economic and physical conditions and where social solidarity has been lost.

Between 1950 and 1980, in parallel with industrialization in Türkiye, the phenomenon of rural-to-urban migration caused some socio-economic changes in cities, housing areas became inadequate, and technical and social infrastructure deficiencies emerged. In the 2000s, the problem of accessing social services and education increased in relation to unemployment and impoverishment, and crime rates also increased in inner-city collapsed areas (Ataöv & Osmay, 2007). This situation has also reduced the user profile in city parks and other public spaces, as in the case of Gençlik Park.

Parks and other open and green areas, which are important planning and design tools in improving the quality of urban life, may also lose their importance and function in the city over time, and therefore they may become the subject of urban transformation projects, and in this context, frequently urban renewal projects.

As already mentioned, parks and other public spaces are important components of regeneration initiatives as they can create a visual message about the city and can serve as a site by which both visitors to the city and local people can identify with the city.

GENÇLİK PARK

Gençlik Park, Ankara's first " urban park ", has a special significance in the history of the republic for being the first city image the visitors saw upon arriving in the city by train as well as its physical structure designed as the area of modern life simulation (Ekinci & Sağlam, 2015). Citizens of Ankara, who had first met with open air theatre in "Millet Bahçesi" (National Garden), were further amused by another auditorium, the water sports with a club house, a casino, an ice rink, mini train lines and various recreation areas which became available in Gençlik Park. The park was used as a tool for the realization and the sustainability of social development. It can be said that the park was express itself more than a park in the years it was constructed. In the period of urbanization it was a breaking point for Ankara, a place which is a symbol of the time the old city ended and the new city started (Ekinci & Sağlam, 2015; Önge, 2007).

Gençlik Park was located in the capital Ankara, with a population of 122, 270 in the 1930s, and in an area surrounded by steppe land. Ankara has been specially planned since the foundation of the Republic, and the central government's service buildings were planned to be located first around the old city of Ulus, and then in the Ministries-Kızılay (Yenişehir) region. During this period, the "urban park" phenomenon, which existed in all western cities, was wanted to be implemented in Ankara as well. Gençlik Park project is seen as a continuation of the urbanization movement that started in 1923 (Anonymus, 2009).

The park is a large city park proposed and authored by Jansen upon the request of the founder and administrators of the Republic in the Ankara development plan finalized in 1932. The park was planned to be 260 decares and was a very remarkable and monumental work for the capital in those days. In the Ankara development plan prepared by Jansen for 1932, Gençlik Park constitutes an important component of the green area system that forms the backbone of the city (Figure 1). Genclik Park would provide green space and water facilities for Ankara, which was under the arid effect of the continental climate at that time. Besides that, park in the early Republican era, like other urban parks and many other public spaces, became the prestigious urban space, which represented the Republican ideology and the new modern lifestyle (Memlük, 2012; Bayraktar, 2016).

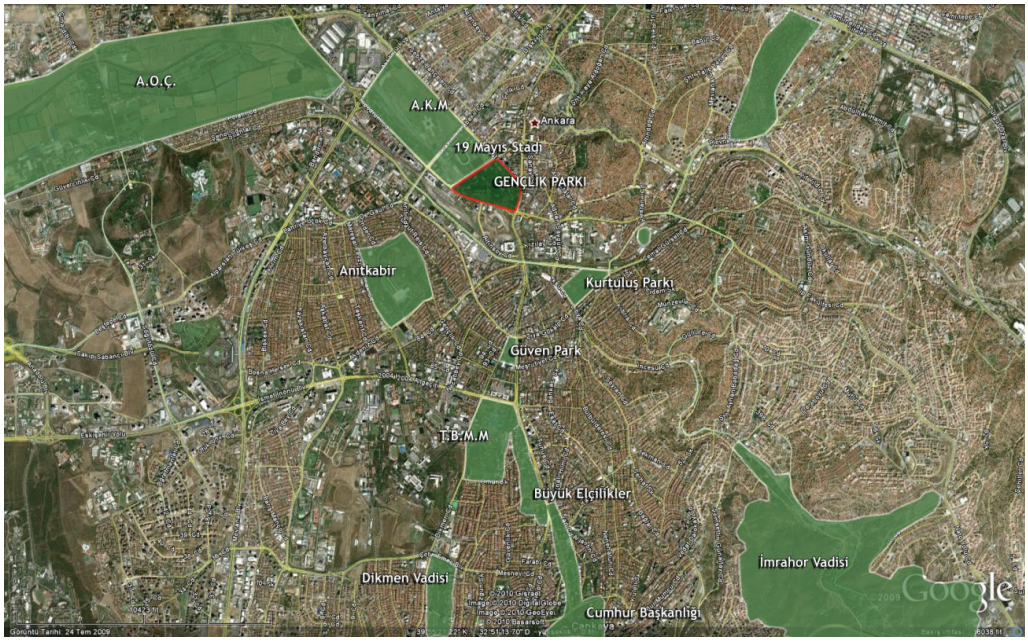

Figure 1. Location of Gençlik Park in the green area system of Ankara City (Anonymus, 2019).

There were 3 factors affected the development of Gençlik Park: first factor was the ideology of the new Republican regime to create a new social order; second factor was the need for the construction of an urban identity for the newly emerging capital as a first large urban park and third factor was the need for a social and recreational space for the society and social interaction (Uludağ, 1998; Memlük, 2012).

In 1956-1958 period, Genclik Park played a significant role in the social life of the people of the capital, with its weekend activities, casinos and picnics for the families of civil servants (Özkır, 2007). In 1957, TCDD started to operate two trains traveling through the track (Bayraktar, 2016). Later, an amusement park and wedding hall were established in the park. Until the early 1960s, water sports were performed and concerts were held in the large pool in the park (Boyacı, 2010). After this period, the park, which gradually lost public interest, was renovated by eliminating the trends of the early 1980s and reopened on August 30, 2009 and reached its current period (Anonymus, 2009).

Periods of Change in the Park

This section explains and discusses the history of the park under four main phases as; 1928 – 1950, 1950 – 1970, 1970 – 2009, 2009 – 2012. The developments in each period are briefly summarized below.

The period between 1928 - 1950

In Jansen's plan of 1928, Gençlik Parkı was a part of a recreational and green spine through Incesu Valley. This spine also included Hippodrome and a series of parks, such as Kore Parkı, Abdi Ipekçi Parkı, Kurtuluş Parkı and Gençlik Parkı (Orsan & Karadeniz, 2019).

Jansen envisaged Gençlik Parkı as an urban park of 260.000 m2 (26 ha). The park was designed to serve the whole city with an estimated population of 300.000 (Jansen, 1937).

Jansen's plan on Gençlik Park was based on three main principles:

- create shady areas of greenery for the citizens
- regenerate the beautiful scenery of the city with the help of this new green space.
- a large pool for rowing boats.

Various activities representing the new, modern life style and needs, such as theatre and sports activities, were used together without disturbing each other. The park also had a very safe and decent image, which motivated especially families and women to use it freely (Memlük, 2012) (Figure 2).

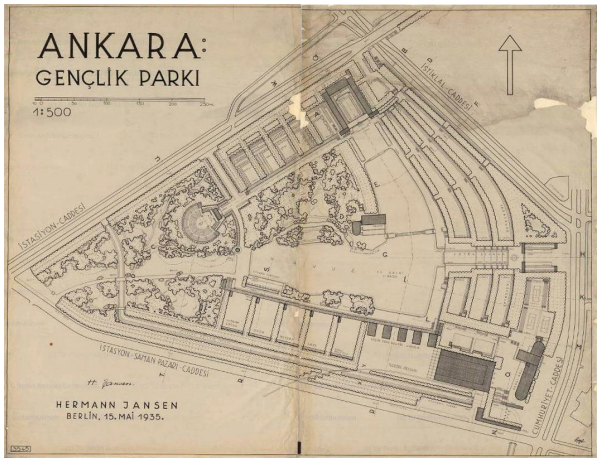

Figure 2. The last design proposal of Gençlik Parkı by Hermann Jansen dated 1935 (Akansel, 2009).

The period between 1950 - 1970

This term may be called as "golden age" of the park. The park offered variety of activities related to recreation, education, social programs and relaxation. The middle class felt welcomed to the space, while low-income groups were still using the park. (Memlük, 2012). "Throughout these years, despite its deliberately configured design and identity by the centralist and authoritarian power with no public consultation, Gençlik Park operated as a modern, secular and Western-style urban park, and an inclusive and democratic public space" (Akkar Ercan, 2017) (Figure 3).

Figure 3. The pool and the tea houses on the edge of it in 1965 (Akansel, 2009).

The period between 1970 – 2009

This period was the decline period which some deteriorations had been seen in the park. For example park entrances lost its significance and priority and access by vehicle was high. Because of the domination of low-income groups, middle class was no longer feeling welcomed within the space. Mainly newcomers' of the city (migrants) were dominating the space. There was a safety problem on park apparently. At this term, the urban transformation approach of the government effected the deterioration of the park as well. As a result of a competition held in the second half of the 1980s, implementations started with the Ulus Historical City Centre Development Plan, but the Gençlik Park, which had become a collapsed area, was ignored at this stage (Memlük, 2012) (Figure 4).

Figure 4. A view of Gençlik Park in 1970's (Anonymus, 2009).

The period between 2009 – 2012

At this term, traffic and uncomfortable design for pedestrians were the main barriers when accessing the park. In addition, majority of the users come to the park by public transportation. However, pedestrian access is no longer preferred. The park has lost its function as a connecting path and has no significant connection to the circulation around it.

In the 2000s, Gençlik Park became a neglected, unsafe park, not preferred by families, with fewer green areas and in ruins. The deterioration in the uses of the park during this period can be listed as follows:

- The entrances connecting the park's vehicle and pedestrian paths had lost their functional features, including security.
- Irregular structures such as warehouses, kiosks and restrooms were located in the park by the lake, thus the recreational uses by the lake were lost.
- In the whole park, the ratio of green area to built area had changed to the detriment of green area. The quality of green areas deteriorated due to poor maintenance (Özer, 2005; Özkır, 2007).
- Green areas were seen as a burden for local governments, and these areas were seen as non-revenue generating areas as well as loss of income due to maintenance and repair works (Özer, 2005; Özkır, 2007).
- Static and flowing water areas were neglected; bad appearance and malodorous was beginning to form. Users had difficulty in reaching the water. Although there was no change in the area of the water surface, which was measured at 45,000m² in 2005, there were deteriorations in water quality.
- There were not enough security guards in the park, and the park was generally poorly maintained and dirty. An unsafe environment prevailed in the park.
- Recreational functions in the park were significantly reduced compared to the past.
- Many equipment elements such as surfacing elements, lighting elements, seating elements, children's playgrounds, orientation and lighting elements had become unusable.
- The mini train line had lost its characteristic of being the symbol of the park and had become unusable (Özkır, 2007). According to Özer (2005), the security problem showed up with the buffets and third-class restaurants, whose numbers have been rapidly increasing since the 1970s and with the drug users in the park, whose numbers have been increasing since the 1990s. In 2006, Ankara Metropolitan Municipality closed down the park to reorganize it.

As a matter of course, deterioration in Gençlik Parkı caused it to be less preferred, and the level of park use decreased. The reasons of this can be summarized as follows:

- Inadequate attention of the administrative structure: institutional problems and lack of authority in the management of the park
- Planlessness: no future projections regarding the use of the park
- Economic reasons: Inability to allocate sufficient budget for the renovation of the park
- Problems arising from social structure

In 2006, upon the request of the Metropolitan Municipality, it is planned to design the park by considering the basic ideas in the establishment of the park, the identity of the park, the feature of being an urban park and the decisions of the national committee (Tokcan, 2009). Based on these elements, it is planned to make the following changes in the revision project of the park:

- Taking all the trees in the park area into surveying about the genre, size and

location, processing them on the existing maps and making identification for each tree,

- Dealing with the 5 entrances that make the park connect to the surrounding roads, vehicles and pedestrians, and considering other issues related to functionality, including security,
- Improvement of the square and its extension at Ulus entrance with café-tea buffets and pergolas, in a way that can also serve the employees who works in the vicinity of the park,
- At the entrance to the train station, partially cleared of the amusement park, the square has a variety of kiosks and pastry cafes, while at the entrance to the subway there are various kiosks, souvenir shops and tourist offices,
- Maintain the main circulation scheme of the park,
- The old city (Ulus) and the train station are on the main axis of the park, which has been recognized since the beginning. Removing the irregular settlements and uses around the pond on this axis and replacing them with pedestrian paths, seating areas and other activities in an enriched landscape,
- Placing the mandatory requirements of the park (café-tea gardens, restaurants, etc.) near to the walls forming a border with surrounding roads and placing the amusement park near to border railings so that these uses are located in places that can easily serve in quiet corners (due to their proximity to the surrounding roads).
- Preserving the structures to be protected as they were that were specified in the decision of the National Committee,
- Enriching the landscape of the square with sitting and waiting areas and removing the ugly building attachments around the Municipal Wedding Hall Building,
- Construction of an indoor parking lot of 200-300 cars available for the use of the park and opera house,
- Minimizing the amusement park in accordance with the decisions of the National Committee, making it a technological entertainment centre for education and science,
- Protection of the Mini-Train for nostalgic reasons, provided that it is between train station and Ulus entrance,
- Bringing the buffets to be scattered on the road together in the wooded area between Muhsin Ertuğrul Açık Hava Tiyatrosu and Sosyal Tesisler structure (Boyacı, 2010).

This project proposes to repair and enhance the park's architectural structures through artistic elements, lighting, and interior architectural arrangements (Tokcan, 2009). The park's revision project would also include the establishment of a Park Administration Building, the construction of new security structures and help desks, the reorganisation and definition of the park's entrances, and the development of stronger spatial relationships with the surrounding roads. The new uses that will provide more social and cultural services in the park are planned as follows: multi-purpose building complex and hall (3500 people), small movie theatres, restaurants, cafeteria, fast-food area, youth centre, cafe, pool hall, bowling hall, traffic signaling building (2000 m2), park administration building, mini golf, kiosks, semi-open areas (shadow play and show areas), science centre, indoor parking lot (100 vehicles capacity) (Tokcan, 2009).

It is seen that open area arrangements in the park are as follows. Outdoor facilities of the park were planned as excursion routes, sitting-resting areas, semi-open show area, children's playground, underpasses and overpasses, squares, republic monument complex, various playgrounds (intellectual games, shadow play, and others), nostalgic restoration of the old mini-train line and the addition of new elements (such as fairytale-like tunnels with music and lighting) and the arrangement of the island within the pool in accordance with the new function.

In the revision plan of the park, two more entrances were added to the park and it had 7 entrances. So, with the physical accessibility, the park is affected positively by the amount and availability of entrances (Figure 5). According to the new plan, irregular building units and uses on the base axis of the park were removed and pedestrian paths and seating areas were replaced (Figure 6) (Boyacı, 2010).

Figure 5. Some of the images of the park entrances- First image is the main entrance- (Original, 2017).

Figure 6. Seating elements and pedestrian routes in the park (Original, 2018).

MATERIALS AND METHODS

Study Area

Gençlik Parkı is located in Ulus, known as the historical centre of Ankara, the capital city. The location of the park in the country is shown in Figure 7.

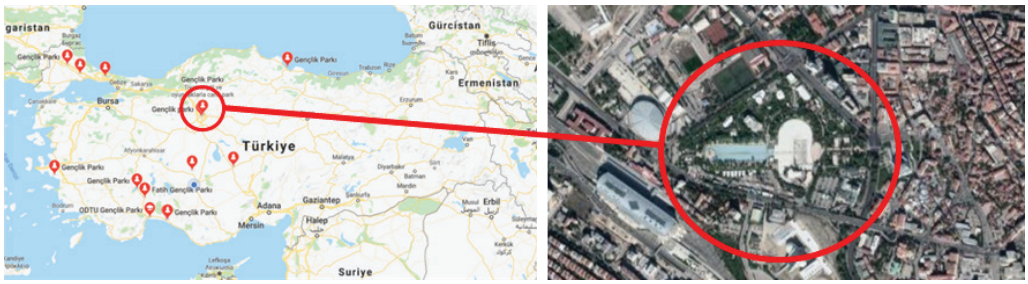

Figure 7. Location of the park in Türkiye (Anonymus, 2019).

The park is also an significant part of the urban green spine system with the other recreation areas in the heart of the city (Figure 8).

Figure 8. Location of the park within Incesu Valley, in the green spine (Anonymus, 2021).

Data Analysis

The primary sources of evidence for this research are survey, direct observation, archival documents, descriptive statistics of biodata, and analysis. Both quantitative and qualitative data are used in this study. For the scale utilised in the research section, reliability analysis was carried out and quantified through scoring. The reliability of the questionnaire questions was assessed using the Cronbach's Alpha test statistic.

This study provides explanations of the research's purpose, population and sample, data collection methods, and data analysis, in that order.

Population and Sample of the Research

The population of the study consists of all those who visited Gençlik Parkı in Ankara in 2018. Since there would be temporal problems in reaching the population,

In the study, "monographic sampling method", which is one of the non-probability sampling methods, was used. In this method, the researcher works on a set or subjects that he/she thinks can represent the universe based on his/her knowledge and predictions about the universe. In these group sampling methods, the researcher's wishes and subjective value judgments are effective in determining the sample to be selected (Ural, 2011). In this study, it was decided that 500 individuals who visited Gençlik Park would represent the population of Ankara, which constitutes the population of the research. The survey was conducted in June and July during the summer season.

Data Collection Tools

A questionnaire was used as data collection tool in the research. It consists of two parts. In the first part, there is a demographic information form to determine the personal information of the participants, and in the second part, the scale which includes the expressions prepared in the framework of the main topics about the park: "accessibility, comfort, image and aesthetics, adequacy and suitability of activities in the park, security".

The questions in the questionnaire are divided into 4 groups:

- Multiple-Choice Questions
- Scaled Questions (Likert Response Scale)
- Open-Ended Questions
- Demographic Questions

The questionnaire was applied to 500 people as 248 women and 252 men. Statistical analysis of the data obtained from the questionnaire applied to the participants was performed using SPSS (Statistical Package for Social Sciences) 23.0 statistical program. Reliability analysis was applied to the data in the first place. Internal consistency of the questions was measured by reliability analysis (Alpha Values). Frequency analysis was used for the demographic information of the participants. Then, t-test and ANOVA were performed to correlate the dependent variables with demographic variables. After ANOVA, appropriate post-hoc tests were used to determine the groups that are important for the formation of difference between the means. Numerical improvements were tested at 95% reliability level.

RESEARCH FINDINGS AND DISCUSSION

In this part of the study, the findings and interpretations about the demographic information of the sample group and the analysis of the obtained data with the appropriate statistical method are included.

According to Table 4, it is seen that the reliability of the Novelties Scale is a = 0.982 and the Attitude Scale is a = 0.984, and these values are sufficient for the research.

Table 4. Reliability of the scale.

	Cronbach's Alpha	Number of Items
Novelties	0,982	22
Satisfaction	0,984	20

According to Table 5, 49% of the participants are female and 51% are male. 2% of the participants visit the youth park once a week, 3% once a month, 35% whenever they have the opportunity and 60% rarely. 94% of the participants complete their visit in 0-3 hours, 4% in 4-7 hours and 2% in 8-12 hours.

59% of the participants see the youth park as a suitable place to meet with friends and 41% of the participants see the youth park as a suitable place to meet with friends. 66% of the participants see the youth park as a suitable place for family and 34% of the participants see the youth park as a suitable place for family. 25% of the participants have a low youth park visitor income profile and 75% of the participants have a medium youth park visitor income profile.

3% of the participants find the transportation of the youth park easy, 25% find the transportation of the youth park medium and 72% find the transportation of the youth park difficult. 41% of the participants benefit from in-park businesses and 35% do not benefit from in-park businesses. 19% of the participants have the opportunity to have a picnic in the youth park and 81% do not have the opportunity to have a picnic in the youth park. 44% of the participants think that the youth park is a fun environment suitable for children, activities are sufficient and 56% think that it needs to be improved for children. 47% of the participants visit the youth park before the regulation and 53% do not visit the youth park before the regulation.

		n	%
Gender	Women	248	49
	Men	252	51
	Total	500	100
1) How often do you visit the park?	Once a week	8	2
	Once a month	16	3
	As occasion serves	174	35
	Rarely	302	60
	Total	500	100
2) How much time do you spend on a visit?	0-3 hours	470	94
	4-7 hours	22	4
	8-12 hours	8	2
	Total	500	100
3) Do you see it as a convenient place to meet your friends?	Yes	293	59
	No	207	41
	Total	500	100
4) Do you think it is suitable for families?	Yes	331	66
	No	169	34
	Total	500	100
5) How do you evaluate visitors' income profiles?	Low	126	25
	Medium	374	75
	Total	500	100
6) What do you think about the ease of access to the park?	Hard	14	3
	Medium	125	25
	Easy	361	72
	Total	500	100
7) Do you benefit from the in-park enterprises?	Yes	323	65
	No	177	35
	Total	500	100
8) Is it possible to have a picnic in the park?	Yes	95	19
	No	405	81
	Total	500	100
9) What do you think about whether there is an environment where children can have fun?	Suitable for children, a fun environment; activities are sufficient	218	44
	Needs improvement for children	282	56
	Total	500	100
10) Did you use to visit the park before the arrangement?	Yes	236	47
	No	264	53
	Total	500	100

Table 5. Distribution of demographic characteristics of the participants.

According to Table 6 24% of the participants stated that the green space and plant arrangement in the park was insufficient, 16% had no opinion, and 60% stated that it was sufficient. In other words, the participants find the green space and plant arrangement in the youth park adequate.

For the expression "parking facilities", 60% responded that it was insufficient, 24% had no opinion and 17% said it was sufficient. In other words, the participants find the parking facilities in the youth park inadequate.

For the expression "restroom cleanliness", 58% responded "insufficient", 34% "no opinion" and 8% "sufficient". In other words, the participants find the toilet cleaning in the youth park inadequate.

For the expression "security", 34% responded "insufficient", 23% "no opinion" and 44% "sufficient". In other words, the participants find the security in the youth park adequate.

For the expression "food and beverage venues", 25% responded "insufficient", 25% "no opinion" and 50% "sufficient". In other words, the participants find the food and beverage venues in the youth park adequate.

For the phrase "entertainment and show areas", 32% of the respondents answered insufficient, 21% had no idea and 48% answered sufficient. In other words, it was found that the participants find the entertainment and show areas in the Gençlik Park are adequate.

Table 6. Distribution of demographic characteristics of the participants.

	Inadequate		I have no opinion		Adequate	
	n	%	n	%	n	%
Arrangement of green areas and plants	122	24	80	16	298	60
Parking facilities	298	60	119	24	83	17
Cleaning of WCs	292	58	170	34	38	8
Security	169	34	113	23	218	44
Food and beverage areas	127	25	124	25	249	50
Entertainment and show grounds	158	32	104	21	238	48
Children's playgrounds	201	40	96	19	203	41
Pools, water games and bridges	140	28	102	20	258	52
Sports fields	254	51	124	25	122	24
Arrangement of pedestrian roads and firm grounds	165	33	80	16	255	51

In Table 7, the following responses are shown for the statement: "I find it positive to reconsider the entrances that provide auto and pedestrian relations with the park's ring roads": 14% strongly disagree, 22% disagree, 7% are undecided, 45% agree, and 12% strongly agree.

15% strongly disagree, 16% disagree, 10% are undecided, 44% agree, and 15% strongly agree with the statement "I find it positive that the Ulus entrance square and its extension should be developed with cafe tea kiosks and pergolas so that those who work in the morning can also have breakfast."To the statement "I find it positive that the station entrance should be re-landscaped with a square freed from the amusement park extension and various buffets, patisseries and cafes" 14% strongly disagree, 13% disagree, 7% are undecided, 56% agree and 10% strongly agree.

To the statement "I find it positive that the metro entrance is enriched with various kiosks, souvenir sales and tourism promotion units." 15% strongly disagree, 11% disagree, 9% undecided, 51% agree and 13% strongly agree.

To the statement "I find it positive that the main circulation scheme of the park is preserved as it is." 14% strongly disagree, 13% disagree, 24% undecided, 41% agree and 9% strongly agree.

To the statement "I remember the Gençlik Park as it was before the arrangement." 14% strongly disagree, 14% disagree, 16% undecided, 35% agree and 21% strongly agree.

To the statement "I remember the state of Gençlik Park before the arrangement." 14% strongly disagree, 14% disagree, 16% undecided, 35% agree and 21% strongly agree.

To the statement "I think the arrangement was beneficial" 12% strongly disagree, 13% disagree, 9% undecided, 50% agree and 16% strongly agree.

To the statement "I think the number of visitors increased after the arrangement" 14% strongly disagree, 11% disagree, 16% are undecided, 42% agree and 16% strongly agree.

To the statement "I spend more time in the park than before." 13% strongly disagree, 25% disagree, 17% undecided, 31% agree and 13% strongly agree.

To the statement "I benefit from the services in the park (cafe, tea garden, amusement park, etc.) more than before" 14% strongly disagree, 22% disagree, 13% undecided, 39% agree and 13% strongly agree.

To the statement "I find it positive that each tree is given an identification number." 9% strongly disagree, 14% disagree, 18% are undecided, 41% agree and 18% strongly agree. To the statement "I find it positive that the unplanned settlements and uses around the pond should be removed and replaced with pedestrian paths, seating areas and other activities in an enriched landscape." 9% strongly disagree, 13% disagree, 9% undecided, 47% agree and 22% strongly agree.

To the statement "I favour the placement of mandatory needs (cafes, tea gardens, restaurants, etc.) on the sides of the walls limited to the peripheral roads and on the edges of the border railings of the amusement park so that these uses can be brought to a position where they can be easily served in quiet corners" 9% strongly disagree, 14% disagree, 6% undecided, 53% agree and 17% strongly agree.

To the statement "I find it positive to enrich the landscape of the square with seating and waiting areas by removing ugly building additions around the municipal wedding hall building" 14% strongly disagree, 11% disagree, 7% undecided, 52% agree and 16% strongly agree.

To the statement "I find it positive to build a 100-200 car parking garage open to the use of the park and opera house" 13% strongly disagree, 12% disagree, 9% undecided, 48% agree and 18% strongly agree.

For the statement "I find the abolishment of the Mini Train negative", 15% strongly disagree, 18% disagree, 33% are undecided, 24% agree and 10% strongly agree.

For the statement "I find it positive to remove the unplanned settlements and uses on the main axis of the park and replace them with pedestrian paths and seating areas", 10% strongly disagree, 15% disagree, 10% are undecided, 43%

agree and 21% strongly agree. The highest rate of 45% of the participants think that the entrances that provide the relationship between the park's perimeter roads and the automobile and pedestrian relationship should be reconsidered.

To the statement "I find it positive to have various playgrounds (shadow play, imaginative games and others)." 11% strongly disagree, 16% disagree, 11% are undecided, 47% agree and 16% strongly agree.

For the statement "Uses for children in the park are sufficient", 15% strongly disagree, 22% disagree, 22% undecided, 37% agree and 4% strongly agree.

"I find the removal of water skiing in the pond negative." 18% strongly disagree, 22% disagree, 19% undecided, 27% agree and 13% strongly agree with the statement.

To the statement "I find it positive that the Youth Centre Building (activities such as guitar, organ, binding, foreign language, table tennis, table football, billiards, internet, air-hockey, mini golf, 100-person movie theatre and cafeteria in the centre)" 11% strongly disagree, 13% disagree, 6% undecided, 46% agree and 24% strongly agree.

To the statement "I find it positive that the Cultural Centre Building is in terms of theatre and handicrafts." 9% strongly disagree, 15% disagree, 11% are undecided, 46% agree and 19% strongly agree.

Table 7. Distribution of expressions about the renewals in the park.

	Strongly disagree		Disagree		I have no opinion		Agree		Strongly Agree		Total	
	n	%	n	%	n	%	n	%	n	%	Avg.	SD
I find it positive the reconsidering of entrances that connect the cars and pedestrians and surrounding roads to the park.	68	14	109	22	36	7	227	45	60	12	3.20	1.29
Improvement of the square and its extension at Ulus entrance with café-tea buffets and pergolas, in a way that can also serve the employees who work in the vicinity of the park is a positive change.	74	15	79	16	51	10	221	44	75	15	3.29	1.31
At the railway station entrance, giving place to various buffets and patisserie cafes in the square, that is partially clear of amusement park is a positive change.	68	14	64	13	36	7	281	56	51	10	3.37	1.23
Including various kiosks, souvenir shops and tourist offices at the subway entrance is a positive change.	77	15	56	11	43	9	257	51	67	13	3.36	1.28
Preserving exactly the main circulation scheme of the park is a positive change.	68	14	64	13	118	24	204	41	46	9	3.19	1.19
I remember the pre-arrangement state of the park.	68	14	72	14	82	16	175	35	103	21	3.35	1.32
I think the arrangement is useful.	61	12	64	13	43	9	250	50	82	16	3.46	1.25

I think the number of visitors increased after the arrangement.	69	14	57	11	81	16	212	42	81	16	3.36	1.27
I spend more time in the park than before.	67	13	125	25	87	17	154	31	67	13	3.06	1.28
I benefit from the services in the park (café, tea garden, amusement park, etc.) more than before.	68	14	109	22	64	13	193	39	66	13	3.16	1.29
I find it positive to have an identification number for each tree.	46	9	71	14	89	18	204	41	90	18	3.44	1.20
I find it beneficial to remove the irregular settlements and uses around the pond and to replace them with pedestrian paths, sitting areas and other activities within an enriched landscape.	45	9	65	13	45	9	236	47	109	22	3.60	1.22
Placing the mandatory requirements of the park (café-tea gardens, restaurants, etc.) near to the walls forming a border with surrounding roads, and placing the amusement park near to border railings so that these uses are located in places that can easily serve in quiet corners are positive changes.	46	9	71	14	30	6	266	53	87	17	3.55	1.20
Enriching the landscape of the square with sitting and waiting areas and removing the ugly building attachments around the Municipal Wedding Hall Building are positive changes.	68	14	57	11	37	7	259	52	79	16	3.45	1.27
I find it positive to have an indoor parking lot of 100-200 cars, available for the park and opera house.	67	13	58	12	44	9	242	48	89	18	3.46	1.28
I find the removal of the Mini- Train negative.	75	15	88	18	165	33	121	24	51	10	2.97	1.19
I find it positive to remove the irregular settlements and uses on the main axis of the park and to replace them with pedestrian paths and seating areas.	52	10	73	15	52	10	216	43	107	21	3.51	1.26
I find it positive to have various playgrounds (Shadow play, intellectual games and others).	53	11	80	16	53	11	235	47	79	16	3.41	1.23
The uses for children in the park are sufficient.	74	15	111	22	110	22	184	37	21	4	2.93	1.16
I find it negative to remove water skiing in the pond.	91	18	112	22	96	19	135	27	66	13	2.95	1.32
I find it positive to have Gençlik Merkezi Binası (Youth Centre Building) (courses for guitar, organ, *bağlama*, foreign language; access to the Internet; table tennis, foosball, pool hall, air-hockey, mini golf, movie theater for 100 people and cafeteria).	53	11	65	13	30	6	228	46	116	24	3.59	1.28
I find it positive that there is a theater and craft department in Kültür Merkezi Binası (Cultural Centre Building).	45	9	73	15	53	11	226	46	95	19	3.51	1.22

According to Table 8, 13% strongly disagree, 16% disagree, 26% neither agree nor disagree, 38% agree and 7% strongly agree with the statement "Park entrances have become more prominent".
To the statement "It is easier to access the park" 11% strongly disagree, 11% disagree, 17% neither agree nor disagree, 48% agree and 13% strongly agree.

To the statement "I think I can reach the park staff more easily when needed" 13% strongly disagree, 22% disagree, 19% neither agree nor disagree, 34% agree and 11% strongly agree.

For the statement "I can easily reach any place in the park without losing my direction" 11% strongly disagree, 10% disagree, 18% neither agree nor disagree, 56% agree and 6% strongly agree.

For the statement "Parking facilities are better", 17% strongly disagree, 19% disagree, 24% neither agree nor disagree, 34% agree and 6% strongly agree.

For the statement "Rest areas in the park are more beautiful", 12% strongly disagree, 16% disagree, 13% neither agree nor disagree, 48% agree and 11% strongly agree.

To the statement "The rest areas in the park are better maintained" 12% strongly disagree, 16% disagree, 15% neither agree nor disagree, 49% agree and 9% strongly agree.

To the statement "Rest areas in the park are more useful" 10% strongly disagree, 16% disagree, 18% neither agree nor disagree, 46% agree and 10% strongly agree.

To the statement "The vegetative arrangements in the park are more beautiful than before" 9% strongly disagree, 12% disagree, 12% neither agree nor disagree, 51% agree and 16% strongly agree.

To the statement "The equipment elements in the park (garbage bins, lighting elements, benches, etc.) are more beautiful than before" 9% strongly disagree, 10% disagree, 13% neither agree nor disagree, 52% agree and 16% strongly agree.

To the statement "The image of the park in the city is better than before" 9% strongly disagree, 15% disagree, 12% neither agree nor disagree, 53% agree and 11% strongly agree.

To the statement "The arrangements around the lake are better than before" 8% strongly disagree, 11% disagree, 14% neither agree nor disagree, 57% agree and 10% strongly agree.

To the statement "Activities around the lake are more useful than in the past", 9% strongly disagree, 11% disagree, 15% neither agree nor disagree, 50% agree and 14% strongly agree. To the statement "The musical water curtain in the lake is good" 8% strongly disagree, 11% disagree, 13% neither agree nor disagree, 49% agree and 9% strongly agree.

To the statement "The quality of children's playgrounds is higher" 15% strongly disagree, 10% disagree, 22% neither agree nor disagree, 41% agree and 12% strongly agree.

To the statement "The quantity of playgrounds is more appropriate than before" 11% strongly disagree, 14% disagree, 22% neither agree nor disagree, 42% agree and 10% strongly agree.
To the statement "It is good that the amusement park was not removed" 11% strongly disagree, 13% disagree, 15% neither agree nor disagree, 41% agree and 20% strongly agree.

To the statement "It is a good feature that the number of paid activities in the park is higher than in the past", 17% strongly disagree, 16% disagree, 21% neither agree nor disagree, 38% agree and 9% strongly agree.

To the statement "The park and the different areas within it are generally safer" 17% strongly disagree, 11% disagree, 16% neither agree nor disagree, 50% agree and 6% strongly agree.

To the statement "The control and authority that was not felt in the park before is now felt" 11% strongly disagree, 16% disagree, 19% neither agree nor disagree, 47% agree and 7% strongly agree.

	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree		Total	
	N	%	N	%	N	%	N	%	N	%	Avg.	SD
Park entrances have become more pronounced.	66	13	81	16	130	26	188	38	35	7	3.09	1.16
Access to the park is easier.	53	11	57	11	84	17	242	48	64	13	3.41	1.17
I think I can reach the staff in the park more easily if necessary.	67	13	110	22	96	19	171	34	56	11	3.08	1.24
I can easily reach anywhere in the park without losing my direction.	53	11	51	10	89	18	279	56	28	6	3.36	1.09
Parking facilities have improved.	87	17	96	19	119	24	170	34	28	6	2.91	1.20
Recreation areas in the park have become more beautiful.	59	12	80	16	66	13	238	48	57	11	3.31	1.21
Recreation areas in the park have become better maintained.	60	12	79	16	74	15	244	49	43	9	3.26	1.18
Recreation areas in the park have become more useful.	52	10	80	16	89	18	228	46	51	10	3.29	1.17
Herbal arrangements in the park are more beautiful than before.	45	9	58	12	60	12	257	51	80	16	3.54	1.16
Reinforcement elements in the park (trash bins, lighting elements, benches, etc.) are more beautiful than before.	46	9	50	10	67	13	258	52	79	16	3.55	1.15
The image of the park in the city is better than before.	46	9	74	15	59	12	265	53	56	11	3.42	1.15
Arrangements around the lake are more beautiful than before.	39	8	57	11	69	14	286	57	49	10	3.50	1.07
Activities around the lake are more useful than before.	46	9	57	11	76	15	250	50	71	14	3.49	1.15
The musical water curtain inside the lake is a good novelty.	39	8	57	11	67	13	243	49	94	19	3.59	1.15
The quality of children's playgrounds has become higher.	76	15	50	10	110	22	206	41	58	12	3.24	1.24

Table 8. Distribution of expressions about the contentment from the renewals in the park.

The number of children's playgrounds is more appropriate than before.	54	11	72	14	112	22	212	42	50	10	3.26	1.15
It is good that the amusement park has not been removed.	54	11	65	13	75	15	206	41	100	20	3.47	1.25
It is a good feature that the number of paid activities in the park is higher than before.	83	17	78	16	105	21	191	38	43	9	3.07	1.24
The park and its different areas are generally safer.	83	17	56	11	81	16	251	50	29	6	3.17	1.22
Control and authority that are not felt before in the park are now felt.	54	11	78	16	97	19	236	47	35	7	3.24	1.13

The independent group t-test was used to see if the opinion scores regarding the park's renewals showed a significant difference based on the gender variable, as shown in Table 9. It is observed that there was no statistically significant difference between the arithmetic means of the gender groups (t = 0.058; p = 0.954> 0.05).

As a result of the independent group t-test conducted to determine whether the satisfaction scores about novelties in the park showed a significant difference according to the gender variable, it is seen that the difference between the arithmetic means of the gender groups was not statistically significant (t = 1,844; p = 0.066> 0.05).

Table 9. T-Test results by gender.

		N	Avg.	Fd	t	p
Novelties	Women	248	3,33	1,01	0,058	0,954
	Men	252	3,32	1,12		
Satisfaction	Women	248	3,40	0,93		
	Men	252	3,23	1,11	1,844	0,066

According to Table 10, the independent group T-Test was used to determine whether the opinion scores about the renewals made in the park showed a significant difference according to the variable of finding it suitable for meeting place, and it is seen that the difference between the arithmetic means of the meeting place groups was statistically significant (t = 2,307).

p = 0,022 <0,05). In other words, the opinions of the participants who chose the park as a meeting place are positive when compared to the participants who did not choose it as a meeting place.

As a result of the independent group T-Test to determine whether the satisfaction scores about the novelties in the park show a significant difference according to the meeting place variable, it is seen that the difference between the arithmetic means of the meeting place groups was not statistically significant (t = 0,098; p = 0,922> 0,05).

Table 10. T-test results according to suitability as a meeting place.

		N	Avg.	Fd	t	p
Novelties	Yes	293	3,42	1,11	2,307	0,022
	No	207	3,20	0,99		
Satisfaction	Yes	293	3,32	1,15	0,098	0,922
	No	207	3,31	0,83		

According to Table 11, as a result of the t-test conducted in order to determine whether the opinion scores about the renewals made in the park showed a significant difference according to the variable of suitability for families, it is seen that the difference between the arithmetic means of the suitability for families groups was not statistically significant (t = 1,428; p = 0.154 (0.05).

As a result of the independent group t-test conducted to determine whether the satisfaction scores about novelties made in the park showed a significant difference according to the variable of suitability for families, it is seen that the difference between the arithmetic means of the suitability for families groups was not statistically significant (t = 1,773; p = 0,066> 0,05).

Table 11. T-test results according to suitability for families.

		N	Avg.	Fd	t	p
Novelties	Yes	331	3,37	1,11	1,428	0,154
	No	169	3,23	0,98		
Satisfaction	Yes	331	3,37	1,06	1,773	0,066
	No	169	3,20	0,94		

According to Table 12, independent group t-test was used to determine whether the opinion scores about the renewals made in the park according to the visitor income profile showed a significant difference and it is seen that the difference between the arithmetic means of the visitor income profile groups was statistically significant (t = -2,881). p = 0,004 <0,05). In other words, the opinions of middle income participants about the novelties are positive when compared to the participants with low income profile.

As a result of the independent group t-test conducted to determine whether the satisfaction scores of novelties in the park show a significant difference according to the visitor income profile variable, it is seen that the difference between the arithmetic means of the visitor income profile groups was not statistically significant (t = -1.910; p = 0.057> 0.05).

Table 12. T-test results according to visitor income profile.

		N	Avg.	Fd	t	p
Novelties	Low	126	3,07	1,19	-2,881	0,004
	Medium	374	3,41	1,01		
Satisfaction	Low	126	3,16	1,02	-1,910	0,057
	Medium	374	3,36	1,03		

According to Table 13, independent group t-test conducted to determine whether the opinion scores about novelties made in the park showed a significant difference with respect to the utilization of the in-park enterprises, and it is seen that the difference between the arithmetic means of the groups benefiting from the in-park enterprises was found to be statistically significant (t =4,989; P=0,000<0,05). In other words, the opinions of the participants benefiting from the in-park enterprises about the novelties are positive when compared to the participants who do not benefit from these enterprises.

As a result of the independent group t-test conducted to determine whether the satisfaction scores about novelties made in the park showed a significant difference with respect to the utilization of the in-park enterprises, it is seen that the difference between the arithmetic means of the utilization groups in the park was found to be statistically significant (t = 3,008; p = 0,003 <0,05). In other

words, participants who benefit from the in-park enterprises are more content than participants who do not benefit from these facilities.

Table 13. T-Test results according to the utilization status of in-park enterprises.

		N	Avg.	Fd	t	p
Novelties	Yes	323	3,50	1,04	4,989	0,000
	No	177	3,01	1,04		
Satisfaction	Yes	323	3,41	1,08	3,008	0,003
	No	177	3,13	0,90		

According to Table 14, the independent group t-test was used to determine whether the opinion scores about the renewals made in the park showed a significant difference according to the possibility of having a picnic, and it is seen that the difference between the arithmetic means of having a picnic groups was statistically significant (t = 7,176; p = 0,000 <0,05). In other words, the opinions of the participants who have a picnic in the park about the novelties are positive when compared to the participants who cannot have a picnic.

As a result of the independent group t-test conducted to determine whether the satisfaction scores about the novelties made in the park showed a significant difference according to the possibility of having a picnic, it is seen that the difference between the arithmetic means of having a picnic groups was statistically significant (t = 5,556; p = 0,000 <0,05). In other words, the participants who can have a picnic in the park are more content than the participants who cannot.

Table 14. T-test results according to the possibility of having a picnic.

		N	Avg.	Fd	t	p
Novelties	Yes	95	3,96	0,93	7,176	0,000
	No	405	3,18	1,04		
Satisfaction	Yes	95	3,82	1,07	5,556	0,000
	No	405	3,19	0,98		

According to Table 15, the independent group T-Test was used to determine whether the opinion scores about the renewals made in the park according to the variable of suitability for children and it is seen that the difference between the arithmetic means of suitability for children groups was not statistically significant (t = -0,513; p = 0,608> 0,05).

The independent group T-Test was used to determine whether the satisfaction scores about the novelties in the park showed a significant difference according to the variable of suitability for children, and it is seen that the difference between the arithmetic means of suitability for children groups was statistically significant (t = 3,608; p = 0,000 <0,05). In other words, participants who think that the activities are sufficient and there is a fun environment suitable for children in the park are more satisfied than those who think that the park needs to be developed for children.

		N	Avg.	Fd	t	p
Novelties	There is a fun environment suitable for children and activities are sufficient.	218	3,30	1,14	-0,513	0,608
	The park needs improvement for children	282	3,35	1,01		
Satisfaction	There is a fun environment suitable for children and activities are sufficient.	218	3,50	1,01	3,608	0,000
	The park needs improvement for children.	282	3,17	1,02		

Table 15. T-Test results for according to suitability for children.

According to Table 16, the independent group t-test was used to determine whether the opinion scores about the renewals made in the park according to the variable of visiting status profile before the novelties showed a significant difference and it is seen that the difference between the arithmetic means of the visiting status before the novelties groups was statistically significant. (t = -2,265; p = 0,024 <0,05). In other words, the opinions of the participants who visited the park before the novelties are positive when compared to those who did not visit it before the novelties.

As a result of the independent group t-test conducted to determine whether the satisfaction scores about the novelties in the park show a significant difference according to the visitor income profile variable, it is seen that the difference between the arithmetic means of the visitor income profile groups was not statistically significant (t = -0,640; p = 0,523> 0,05).

		N	Avg.	Fd	t	p
Novelties	Yes	236	3,21	1,28	-2,265	0,024
	No	264	3,43	0,82		
Satisfaction	Yes	236	3,28	1,28		
	No	264	3,34	0,74	-0,640	0,523

Table 16. T-test results according to visiting status before novelties.

According to Table 17, the one-way analysis of variance was used to determine whether the opinion scores about the renewals made in the park show a significant difference according to the visit frequency variable, and it is seen that the difference between the arithmetic means of the visit frequency groups was statistically significant (t = 8,976; p = 0,000 <0,05). In other words, the opinions of the participants, whose frequency of visits to the park are once a month, as occasion serves, and rarely, about innovations are positive when compared to those who visit once a week.

The difference between the arithmetic means of visit frequency groups was found to be statistically significant as a consequence of the one-way analysis of variance that was carried out to ascertain whether the satisfaction scores regarding the novelties in the park show a significant difference according to the visit frequency variable (t = 11,077; p = 0,000 <0,05). In other words, the participants whose frequency of visits to the park are once a month, as occasion serves, and rarely are more satisfied than those who visit once a week.

Table 17. T-test results by frequency of visit.

		N	Avg.	Fd	F	p	Difference
Novelties	Once a week	8	1,77	0,00	8,976	0,000	Once a month > Once a week As occasion serves > once a week Rarely > Once a week
	Once a month	16	3,93	0,21			
	As occasion serves	174	3,21	1,05			
	Rarely	302	3,40	1,08			
	Total	500	3,33	1,07			
As for satisfaction,	Once a week	8	4,10	0,00	11,077	0,000	Once a week > As occasion serves once a month > As occasion serves Rarely > as occasion it serve
	Once a month	16	3,90	0,05			
	As occasion serves	174	3,00	1,11			
	Rarely	302	3,44	0,96			
	Total	500	3,31	1,03			

According to Table 18, as a result of the one-way analysis of variance conducted to determine whether the opinion scores about the novelties in the park show a significant difference according to the time spent on visits variable, it is seen that the difference between the arithmetic means of the groups was statistically significant (t = 7,274; p = 0,001 <0,05). In other words, the opinions of the participants, who spent 8-12 hours during the visit to the park, about the novelties are positive when compared to the participants who spend 0-3 hours and 4-7 hours.

As a result of the one-way analysis of variance conducted to determine whether the satisfaction scores about the novelties in the park show a significant difference according to variable of the time spent in visits, it is seen that the difference between the arithmetic means of the groups was statistically significant (t = 4,476; p = 0,012 <0,05). In other words, participants who spend 8-12 hours during their visit to the park are more satisfied than participants who spend 4-7 hours.

Table 19. T-test results according to the time spent during the visit.

		N	Avg.	Fd	F	p	Difference
Novelties	0-3 hours	470	3,30	1,06	7,274	0,001	8-12 > 0-3 8-12 > 4-7
	4-7 hours	22	3,39	0,98			
	8-12 hours	8	4,73	0,00			
	Total	500	3,33	1,07			
Satisfaction with the changes	0-3 hours	470	3,32	1,02	4,476	0,012	8-12 > 4-7
	4-7 hours	22	2,81	1,27			
	8-12 hours	8	4,00	0,00			
	Total	500	3,31	1,03			

According to Table 19, as a result of the one-way analysis of variance conducted to determine whether the opinion scores about the novelties in the park show a significant difference according to variable of transportation, it is seen that the difference between the arithmetic means of the transportation groups was not statistically significant (t = 2,049; p = 0,130> 0,05).

As a result of the one-way analysis of variance conducted to determine whether the satisfaction scores about the novelties in the park show a significant difference according to the variable of transportation, it is seen that the difference between the arithmetic means of the transportation groups was found to be statistically significant (t = 13,109; p = 0,000 <0,05). In other words, the participants who think that the access to the park is easy are more satisfied than the participants who find access to it as difficult and medium.

Table 20. T-test results according to transportation.

		N	Avg.	Fd	F	p	Difference
Novelties	Hard	14	2,84	0,87	2,049	0,130	
	Medium	125	3,25	1,13			
	Easy	361	3,37	1,05			
	Total	500	3,33	1,07			
Satisfaction with the changes	Hard	14	2,38	1,43	13,109	0,000	Easy > Medium Easy > Hard
	Medium	125	3,05	1,04			
	Easy	361	3,44	0,97			
	Total	500	3,31	1,03			

According to Table 20, there is a relatively moderate, positive and statistically significant relationship between the opinions about the renewals made in the park and the satisfaction with the novelties made in the park (r = 0,488; p = 0,000 <0,01). As the positive opinions about the renewals made in the park increase when compared to the past, the satisfaction with the novelties made in the park increases.

Table 21. Correlation analysis.

		Satisfaction
Novelties	r	0,488
	p	0,000
	N	500

RESULTS AND RECOMMENDATIONS

In this study, 51% of participants were men and 49% were women. Of the participants, 2% go to the park once a week, 3% go once a month, 35% go whenever they get the chance, and 60% go infrequently. Furthermore, 94 percent of the participants finish the visit in 0–3 hours, 4 percent in 4–7 hours, and 2 percent in 8–12 hours.

The study's findings indicate that 3% of participants thought visiting the park was easy, 25% thought it was medium, and 72% thought it was difficult. Furthermore, 35% of participants do not benefit from in-park enterprises, whereas 41% of participants do. About participants' satisfaction with the park's innovations, it is observed that 13% strongly disagree, 16% disagree, 26% neither agree nor disagree, 38% agree, and 7% strongly agree with the statement "Park entrances became more prominent."Fifty percent of the participants thought that overall, the park and its various areas were safer. Furthermore, 47% believe that the park now has control and authority that it did not previously have. When compared to previous years, the opinion scores regarding the park's renewals were not found to be statistically significant based on the gender variable. Regarding the gender variable, the novelties created in the park did not yield statistically significant satisfaction scores. It was found that the opinion scores about the

renewals made in the park were statistically significant when compared to the past, according to the variable of finding it as a meeting place. In other words, the opinions of the participants who chose the park as a meeting place are positive when compared to the participants who did not choose it as a meeting place. There was no statistically significant difference between the scores of opinions about the renewals made in the park according to the variable of suitability for families.

In addition, the difference between the opinion scores about the renewals made in the park according to the utilization of the in-park enterprises was found to be statistically significant. In short, the opinions of the participants benefiting from in-park enterprises about novelties are positive when compared to the participants not benefiting from them. In addition, it was found that the participants who benefited from the in-park enterprises were more satisfied than the participants who did not benefit from them.

As a result of the research, it was seen that the participants who thought that the access to the park was easy were more satisfied than the ones who found the transportation difficult and medium; and that as the positive opinions about the renewals increased, the satisfaction with the novelties made in the park increased, when compared to the past.

Suggestions

It is seen that some of the city parks which occupy an important place within the cities, lost their functions and semantic integrity in the past, and some have regained their value that they had in the past with proper planning and they can be converted into areas that can meet modern-day needs.

Ankara Gençlik Parkı, which constitutes the area of this study, was established in a period when settlement in the city was not dense. The park has gone through establishment, development, deterioration and renewal periods with the city in which it is located. In other words, the changes in the city and urban life have shaped the park, the functions of the park and the park users.

The regeneration plan of Gençlik Parkı was originally designed to give the park a modern image. However, ignoring a number of features of the park during the Republican Period, when the park was originally planned, led to a decline in the number of former users of the park. For example, the teahouses were removed and the wedding hall was left to deteriorate. Such segregation and decline observed in park use has led to losses in urban memory and urban awareness. From this perspective, it can be said that the main problem related to Gençlik Park is that the park couldn't have provided the multi-cultural and multi-class population in the regeneration process.

However, Gençlik Park has greatly increased its functions during the renewal period and has gained appreciation of the city in terms of its present functions. The reason for this is that the park is handled with a good planning system after the deterioration period and that a management structure to maintain this system is established. In order for the planning system to be successful, it is recommended that all the values the park possesses be taken into consideration during the renewal phase and that different professional groups come together to carry out these studies. In addition, the fact that the park has a management structure and a budget that ensures its continuity can be considered as another reason for its success.

Urban renewal plans and strategies in Turkey frequently come after practices rather than before them, as in the case of Ankara Gençlik Park. Rather than taking this approach, plans and strategies for urban transformation should incorporate the process of challenging the opinions and expectations of the user. As a result, liveable and socially responsible urban areas will be created.

Conflict of Interest

No conflict of interest was declared by the authors.

Authors' Contributions

The authors contributed equally to the study.

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Ethics committee approval was obtained with the decision of the Faculty of Architecture and Design, Selçuk University, number 08/04 and dated 09.10.2023.

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In this research, the necessary permissions were obtained from the relevant participants (individuals, institutions and organizations) during the survey, in-depth interview, focus group interview, observation or experiment.

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Research Article

An Analysis of The Use of Natural Stone and Marble in Contemporary Architectural Designs

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Abstract

Throughout history, many products have been used as construction materials. One of the oldest of these materials is natural stone. Natural stones can be processable with different techniques and be freely used in any desired place. It has been observed that the use of natural stone in architectural designs has changed compared to the past, with the discovery of new construction materials and techniques. The aim of this study is to make known the situation of natural stones in today's architectural designs by revealing the changes. For this reason, the use of natural stone has been examined through contemporary architectural designs. In the selected designs, what types of natural stones are selected according to their characteristics and design ideas have been examined. Due to the fact that each design has its own characteristics, the application details are specified by looking at the form, function, colour, pattern and texture of the natural stones. The reasons why natural stones continue to be preferred in architectural designs have been determined as a result of the examinations made. Accordingly, it can be ascertained that natural stones are durable, long-lasting, maintenance-free, and can be found in various functions, shapes, colours, patterns and textures according to their conditions. They are also subjected to different processes. In addition, they can be included in different solutions through application details, have wide reserves in our country, are recyclable and sustainable. For this reason, it is clear that natural stones will be the preferred materials in architectural designs in the future.

Keywords: Architectural Design, Marble, Natural Stone.

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Araştırma Makalesi

Çağdaş Mimari Tasarımlarda Doğal Taş ve Mermer Kullanımının İncelenmesi

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Özet

Tarih boyunca yapı malzemesi olarak pek çok ürün kullanılmıştır. Bu malzemelerin en eskilerinden biri doğal taşlardır. Doğal taşlar farklı tekniklerle işlenebilmekte ve istenilen her yerde özgürce kullanılabilmektedir. Yeni yapı malzemeleri ve tekniklerinin keşfiyle birlikte mimari tasarımlarda doğal taş kullanımının geçmişe göre değiştiği gözlemlenmiştir. Bu çalışmanın amacı, doğal taşların günümüz mimari tasarımlarındaki kullanımlarını inceleyerek malzemenin günümüzdeki durumunu ortaya koymaktır. Bu nedenle çalışmada doğal taşlar, çağdaş mimari tasarımlar üzerinden incelenmiştir. Seçilen tasarımlarda kullanılan doğal taşların özelliklerine ve tasarım fikirlerine göre hangi türünün seçildiği incelenmiştir. Her tasarımın kendine has özellikleri olması nedeniyle doğal taşların formu, fonksiyonu, rengi, deseni ve dokusuna bakılarak uygulama detayları belirtilmiştir. Doğal taşların mimari tasarımlarda tercih edilmeye devam edilmesinin nedenleri yapılan incelemeler sonucunda ortaya konulmuştur. Buna göre doğal taşların dayanıklı, uzun ömürlü, bakım gerektirmeyen bir malzeme olduğu, durumuna göre çeşitli fonksiyon, şekil, renk, desen ve dokularda bulunabileceği tespit edilmiştir. Ayrıca farklı işlemlere tabi tutulabilmeleri, uygulama detayları ile farklı çözümlere dahil edilebilmeleri, ülkemizde geniş rezervlere sahip olmaları, geri dönüştürülebilir ve sürdürülebilir olmaları da doğal taşların mimari tasarımlarda tercih edilmelerinin nedenleri olduğu belirlenmiştir. Bu nedenle gelecekte mimari tasarımlarda doğal taşların tercih edilecek bir malzeme olacağı açıktır.

Anahtar Kelimeler: Mimari Tasarım, Mermer, Doğal Taş.

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INTRODUCTION

Natural stones have been used by humanity in different forms since ancient times. Primitive periods when even writing did not exist took their names from natural stones. People used natural stones to make tools, equipment and weapons. While stone is the main element of caves that people sometimes use as shelter, it has also been the preferred material in the making of simple figurines. The use of fire, which is one of the important inventions of history, was discovered thanks to the use of flint.

People extracted the local stones found in their surroundings and processed them using various methods. Natural stones have been used in different areas, from dye production to leather processing. A material with such a wide range of uses has also affected an educational department such as architecture. Natural stone was used especially in many structures that have survived to the present day and are acknowledged monumentality (Taşlıgil & Şahin, 2016).

There are different reasons behind the preference for natural stone as a construction material throughout history. The most obvious reason is the presence of natural stones as raw material in the environment where the buildings are constructed. Although the natural stone materials used in buildings are local, the processing methods of the materials are also developed in parallel. Another reason is related to the structural features of natural stones. Natural stones are more resistant to external factors than adobe and wooden materials. For this reason, the use of natural stone stands out in the majority of buildings that were built many years ago and have survived to the present without much damage. Considering the historical process of architectural structures, natural stones appear in different forms, such as an element used in the foundation of buildings, a structural element or a covering element (Erbaş, 2018).

In recent years, the use of natural stones in the construction sector has been increasing due to awareness of issues such as sustainability and recycling. This situation leads to a comparison of natural stones with other materials. Natural stones are long-lasting, sustainable and environmentally friendly. Their maintenance costs are low. They are durable and solid. In addition to their heat and sound insulation properties, they also show fire resistance. They can be used together with other building materials. Since they offer a wide variety of colours, textures and patterns, they also have unique aesthetic possibilities (Angı et al., 2023).

According to Krüger, natural stones are more efficient in production than other construction materials. They require less energy and can be used in buildings. However, they must go through some processes before they can be used (Krüger, 2022; Yıldırım et al., 2023). When these processes are completed, natural stones can be used in many different areas thanks to their structure, appearance and processing methods. The important point here is that natural stone, which exists originally only as a block of stone, comes together with the structure as a result of the right method and design decisions (Yıldırım et al., 2023).

However, there is a lack of information about the material. There is much written about the usage possibilities of materials such as wood, adobe, straw, clay and sand, along with a discussion of their place in different environmental conditions and application techniques. As for natural stones, similar resources are limited or focused on traditional architectural methods. The study aims to explain the subject through selected examples by examining the use of natural stones in today's architectural designs. In this context, the usage of natural stone material

and its reflections on architecture are explained. In this way, it is thought that a wide range of information will be provided about the application details and aesthetic conditions of natural stone material, which will facilitate the selection of this material in the sector.

Material and Method

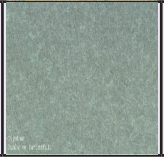
The aim of this study is to make inferences about the status of natural stone used in architectural and landscape designs, by examining various criteria. Detailed information about the application areas will be obtained by revealing data about natural stones through structures.

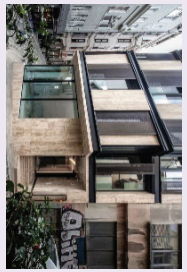
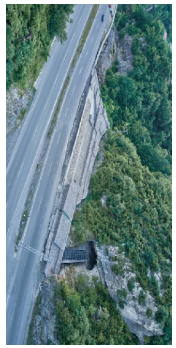
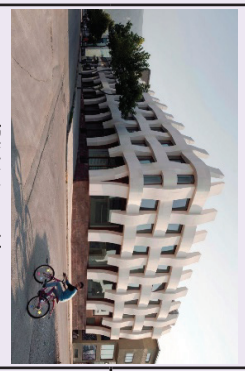
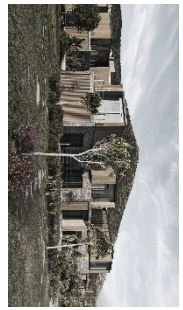
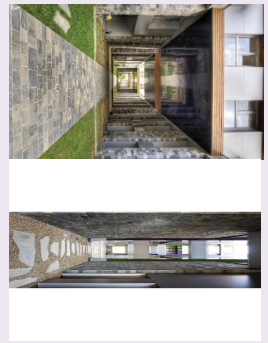
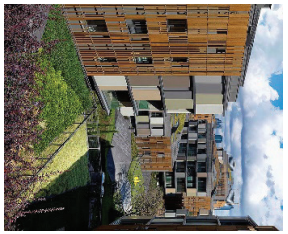
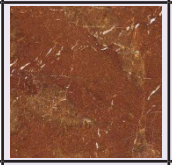
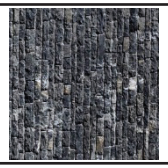
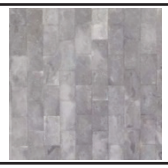
For this purpose, architectural designs containing natural stones were determined through online or printed architecture magazines, and by getting the opinions of natural stone supply companies and architects in the sector. To this point, 20 different architectural projects were selected and examined. The limitation of the selected projects was determined according to the following criteria:

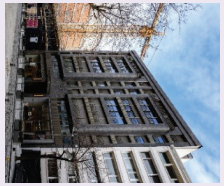
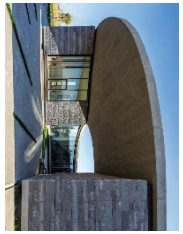
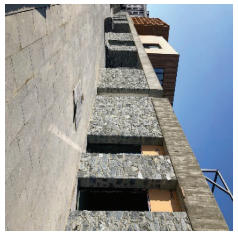
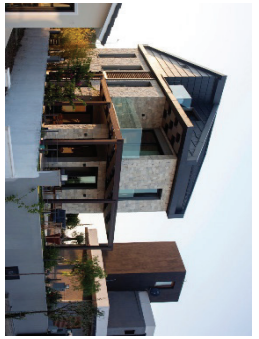
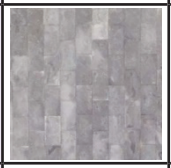
- It has been observed from the data obtained that the use of natural stone in architectural designs has increased in the last 25 years. For this reason, projects designed in the last quarter century were discussed.
- Buildings built in Türkiye were chosen as locations.
- The use of natural stones in architectural designs was focused on. Since architectural designs are taken as a whole with their surroundings, landscape designs are also included in the study.
- Since it was thought that architectural designs in the private sector would be freer in material selection, such structures were concentrated on and public buildings were not included.

The selected architectural designs and information about them are shown in Table 1.

Table 1. Selected architectural designs.

PROJECT	ARCHITECTS/ PROJECT YEAR	PROJECT IMAGE	NATURAL STONES	IMAGE	AREA OF USAGE
Square of Medipol University Kavacık Campus	DS Mimarlık/ 2016-2018	 (DS Mimarlık, n.d.)	Basalt		Floor covering
Four Seasons Hotel Courtyard	DS Mimarlık/ 1997	 (DS Mimarlık, n.d.)	Basalt		Floor covering
			Slate		Landscape element
			Diabase		Seperating different landscape textures

Galata Apartment	Zonguldak Caves Visitor Centre		Argül Weave		Vicem Bodrum	Kemerlife XXI Landscape Project		Housing of Ulus Savoy Landscape Project
WE're Mimarlık/ 2016-2019	Yalın Mimarlık/ 2021		BINAA 2012-2014		DS Mimarlık- EAA Architects 2010-2013	DS Mimarlık/ 2005-2008		DS Mimarlık/ 2012-2013
(WE're Mimarlık) 	(Karakaya, 2022) 		(BINAA, n.d.) 		(DS mimarlık, n.d.) 	(EAA, n.d) 		(Uzunkaya, 2013) 
Travertine	Granite	Limestone	Aegean burgundy marrble	Patara Marble	Slate	Slate	Tarvertine	Basalt
								
Façade element	Floor covering	Wall covering	Wall covering	Wall covering	Wall covering	Landscape element	Floor covering	Wall and floor covering

No. 45	Farm of 38° 30°		House of Karahan Landscape Project		Fatma Ana Djemevi and Cultural Centre		Latus Park	House of NTA	
Rhizome Architects- Toner Mimarlık/ 2016-2018	Slash Architects- Arkizon Architects/ 2014-2016		DS Mimarlık- Rota Mimarlık/ 2008-2009		9016 Mimarlık / 2016-2020		NTT Mimarlık/ 2016-020	GIG Office/ 2017-2018	
 (Rhizome Architects, n.d.)	 (Slash Architects)		 (DS Mimarlık, n.d.)		 (9016 Mimarlık)		 (NTT Mimarlık,n.d.)	 (GIG Office)	
Quartzite	Andesite	Basalt	Onyx	Granite	Basalt	Slate	Limestone	Travertine	Urla Stone
									
Wall covering	Floor covering	Wall covering	Lighting element	Separating different landscape textures	Floor covering	Wall covering	Wall covering and seperating different landscape textures	Floor covering	Wall covering

House of BD	Paker Mimarlık/ 2018	(Paker Mimarlık)	Slate		Wall covering
House of Has-Kisakürek	Paker Mimarlık/ 2018	(Paker Mimarlık)	Slate		Wall covering
House of Danişment	SARD Studio/ 2021	(Sard Studio)	Limestone		Main wall element
			Travertine		Floor covering
Folkart Blu	DILEKCI Architects-DDA/2017	(DDA Mimarlık)	Limestone		Wall covering
House of Barbaros	Onurcan Çakır-Önderler İnşaat/ 2015	(Çakır, n.d.)	Composite stones		Wall covering
Binnaz Hatun Mosque	ARCHIST Mimarlık/ 2015	(ARCHIST Mimarlık)	Andesite		Wall covering
			Basalt		Floor covering

Criteria were generated for the analysis of natural stones. While creating these standards, the physical and chemical properties of natural stones, their economic status and application details, function, form, colour, pattern and texture were analysed. Artistic and technical features were blended in creating the criteria. These criteria were determined according to the following contexts:

• Unction is the reason for the use of the element in which the natural stone is used in the design. Accordingly, different usage functions of natural stones have been found, such as cladding elements, facade panels, and separating elements between different textures. The relationship between the properties and functions of natural stone was examined. The function in this subheading is the quantitative purpose of natural stone. The functions of natural stones in design are mentioned in the general information section.

- Form covers the appearance of shapes; they can be handled in geometric or non-geometric situations (Güngör, 2005). In this study, form is used in a geometric sense, and the physical appearance and measurements of the natural stones used are included. Inferences about this information were obtained from architectural drawings and photographs of the designs.
- Colour refers to the stone's main colour. The colour undertones of the natural stones in the designs are taken from the photographs of the design obtained from the offices or the catalogues of the manufacturers. Thanks to a computer web program, the dominant primary colours of the natural stone images and the undertones of these colours were determined. The information obtained is grouped in the tables. The connection between the design idea and the natural stone colour is expressed verbally.
- Although the concept of texture is thought to appeal especially to the sense of touch, it also creates a visual effect. According to this visual effect, textures may be perceived as contradictory concepts, such as hard or soft (Köylü & Yılmaz, 2021). Therefore, visual inferences were made about the textures of natural stones in the designs examined, and the textures were expressed with adjectives such as simple and complex, hard and soft, dynamic and static, limited and unlimited, cold and warm. While expressing the concept of texture, general information given by the designers was used. Since the concept of pattern is thought to appeal to the visual sense, the two concepts have been combined and the relationship between the intended design idea in architectural design and the texture and pattern of the natural stone used is specified. Using a computer program, the light, reflection, shadow and depth conditions of natural stone images were obtained and presented. An ambient occ map containing illumination data was used for the light condition, a specular map containing glare data on the surface was used for the brightness condition, and a displacement map was used for shadow and depth.

The economic situation is included in the study because it affects the choice of materials in the designs.

In the application details, particulars about the natural stones included in the architectural drawings such as plans, sections and views obtained from architectural offices about architectural designs are included. Since the function and form of use of natural stone are different for each project, the application details are shaped accordingly. For this reason, it has been stated that in some cases natural stone is used simply, and in other cases it is combined with different materials to form a design whole.

The determined criteria are grouped according to architectural projects and presented in separate figures. The findings obtained as a result of the analyses are stated. According to the data obtained about the examined projects, architects' opinions were taken about the semantic context between the design goals and the use of natural stone. The sample projects examined in the study were questioned in line with the determined criteria.

In the Conclusion and Recommendations section, the results of the findings are presented. At this point, suggestions have been determined in light of the results obtained regarding the use of natural stone in designs. In this context, the properties of natural stones suitable for use in designs are explained. It is thought that the suggestions presented as a result of the examinations will be a guiding resource regarding the use of natural stones in architectural designs.

GENERAL INFORMATION ABOUT NATURAL STONES

Some of the earth's stratums, which were formed in different periods of geological stages and hardened over time, are called stones. Stones are divided into three groups: magmatic, sedimentary and metamorphic, according to their formation status. Magmatic stone is a group of natural stones formed by the hardening of magma. This group of natural stones is also called igneous stone because it has been formed as a result of the eruption of magma. Sedimentary stones are natural stones formed from sediments in layers. Metamorphic stones are formed as a result of the transformation of igneous and sedimentary stones under suitable temperature and pressure conditions (Karahan, 2018). Table 2 shows the grouping of natural stones and marble according to the types described.

Table 2. Natural stones and marbles by type.

MAGMATIC	SEDIMENTARY	METAMORPHIC
• Granite • Syenite • Serpentine • Andesite • Basalt	• Limestone • Travertine • Sandstone • Dolomite • Conglomerate	• Gneiss • Marble • Quartzite

During the process, one natural stone group can transform into another stone group under suitable conditions. This situation is called the rock cycle (Karahan, 2018).

Physical and Chemical Properties of Natural Stone and Marble

Stones contain many physical and chemical properties. They appear in different areas and shapes according to these features. Physical and chemical properties affect the appearance and patterns of natural stones as well as their resistance to external factors. Natural Stones are used in combination with other materials such as concrete, metal and wood. Knowing the physical and chemical structure of the material used is important in terms of predicting its behaviour with other materials and finding appropriate detailed solutions in the face of a possible negative situation.

Physical properties of natural stones and marble include conditions such as porosity, grain size, colour, hardness, water absorption, resistance, thermal conductivity and sound insulation. The chemical properties are generally closely related to the components the stone contains along with the proportions of these components. Depending on their chemical structure, the reactions of natural stones with acids or carbon dioxide and their transformations under high temperatures vary. However, at this point it should be noted that the state of the chemical components of natural stone is often reflected in its physical properties, causing its colours, patterns and textures to differ from each other.

Porosity

Natural stones contain a certain number of voids. These volumetric gaps determine whether they can accept polish, their durability and the state of structural cracks. Porosity is a feature found in every natural stone, but turning this feature into visible structural cracks is a situation that reduces the quality of the material. Porosity is expressed as a percent. This value is the ratio of the volume of the pore space to the total volume (Görcelioğlu, 2014).

Grain size

Natural stones are classified as fine, coarse and coarse- grained according to the grain size of the components they contain (Karahan, 2018). While marble with small mineral grain sizes is generally less common, marble with large mineral sizes is more common. This makes marble varieties with small mineral grain sizes more valuable. This characteristic directly impacts the cost of natural stones. While the costs of common natural stones are low, the costs of rare stones are high.

Colour

Natural stones take on different colours depending on the type and ratio of minerals they contain. Marble, which is a type of natural stone, is called massive, laminal, schist and brecciated, accordingly. Massive marble intensity of colour and pattern changes are minimal. Laminal marble has a coloured stripe appearance and contains different mineral structures. Schisti marble has a leafy structure and contains a significant amount of mica. Brecciated marble is filled with secondary minerals. The main fillings can be of different colours and mineral content (Karahan, 2018).

Natural stones come in a wide range of colours due to the different minerals they contain or the substances within their structure. This diversity in colour and texture offers versatile design opportunities in architectural projects. When used in the right combinations, natural stones can harmonize with the surrounding environment, while also helping to highlight specific design elements. This makes it possible to create designs that blend seamlessly with nature and stand out in their own right depending on the main design approach.

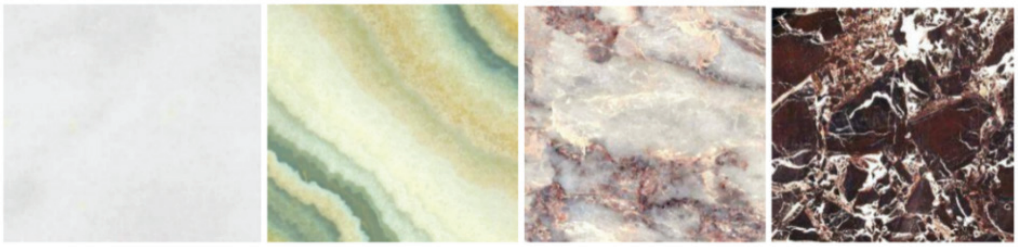


Figure 1. Stones' appearances by colour (Karahan, 2018).

Hardness

The hardness of natural stones is classified according to the Mohs scale of mineral hardness. Although soft stones can be processed more easily, they also may be more easily eroded due to external factors. Hard stones, on the other hand, are much more difficult to process, and this causes the material cost to increase (Bilgin, n.d.). Cost plays a significant role in the construction processes. An increase in overall costs can delay the timely completion of designs. For this reason, natural stone is sometimes not preferred in structures due to its expense.

Water absorption

Natural stones show different capacities depending on the amount of water they absorb, depending on their grain size and porosity properties. Natural stones with high water absorption capacity are also likely to stain. However, this situation can be prevented with surface protection techniques (Angı, 2023).

Resistance

The resistance of natural stones is measured by their ability to remain intact against environmental factors over a long time. The change in the structures of natural stones due to environmental influences is called weathering. While natural factors such as gases in the atmosphere, salty sea water and earthquakes may

be effective in weathering, artificial factors such as vandalism, restoration, faulty workmanship and use of natural stone in the wrong place are also effective (Angı, 2023).

Thermal conductivity and sound insulation

Natural stones have properties such as thermal conductivity and sound insulation. This affects the selection of natural stones to be used in the building. For example, basalt, one of the natural stones, is known for its thermal conductivity and heat absorption (Günerhan, 2004). Each material has a unique thermal conductivity coefficient. Materials with a low heat conduction coefficient have high heat conduction resistance. Therefore, such materials have high thermal insulation performance (Karakoç et al., 2011). The sound insulation feature is related to how much energy the material can absorb when exposed to a certain sound intensity. Sound intensity is expressed in decibels (Kaya et al., 2017).

Chemical components

The chemical components and their ratios in all natural stones differ from each other. Properties of natural stones such as colour, texture, hardness and resistance vary, depending on the chemical components they contain and their ratios. In addition, the ratio of chemical components plays a determining role in issues such as the extraction and processing of natural stones from reserves and, accordingly, ease of application. The main chemical components of classically named marble originate from different regions of our country and are named accordingly (Yavuz et al., 2002). Although the wide variety of natural stones enables the creation of diverse designs, it makes the process of compiling an extensive catalogue quite difficult. Therefore, fully understanding the material and using it correctly in architecture becomes more challenging.

Usage Areas of Natural Stone and Marble

The architectural use of natural stones as construction materials is seen after the Palaeolithic Period (Erbaş, 2018). Before this period, natural stone used structurally consisted of the carving out of caves only to meet the need for shelter. Afterwards, natural stones appear as building materials, carrier elements, covering elements and architectural decorations.

The fact that natural stones used as building materials dates back to the Palaeolithic Period shows that this material has a long history. Humanity, which started using natural stone with tools and weapons, used this material in all kinds of monuments, temples, tombs, castles, religious buildings, stadiums, etc., especially with the transition to settled life. In this period, natural stone appears as the main element that keeps the structure standing, such as foundations, basements, load-bearing columns and walls. The fact that lighter materials were initially preferred for the covering system changed over time with the development of stone processing knowledge and the tools used. There was a tendency to use natural stone for the covering system.

Natural stone structures are the most commonly found throughout history. They have survived to the present with little damage. Natural stone is one of the oldest construction materials and is more resistant to external factors such as weather, climate and people compared to other materials used in the historical period. For this reason, it is seen that most buildings have survived to the present day.

The area where natural stones are most commonly used today is flooring. This is followed by interior and exterior cladding, monuments and cemeteries, ornamental and decoration manufacturing and other areas (Ekincioğlu et al., 2014; Taşlıgil & Şahin, 2016). Other areas include baths, fountains, fireplaces,

lintels, jambs, gargoyles- (which allow the water accumulated on the roofs to be transmitted to the ground and found abundantly on old buildings), mosques, kitchen and bathroom counters, tabletops, shower trays, railings and other staircase elements, containers, bowls. Thanks to newly developed techniques, many different pieces of furniture and all kinds of materials that people use in daily life are shown as examples.

Structurally, natural stone and marble appeared as the main structural elements in the early days. The main material in most of the masonry buildings at that time was natural stone, used in more or less processed forms. While we sometimes encounter structures made entirely of stone, sometimes natural stone is used in the foundations of wooden or adobe structures. With the process, people improved their tool- making. In this way, they were able to process natural stones more easily and use them in their structures. Thus, they added natural stone and marble decorations to their structures. Some architectural elements such as jambs, gargoyles and finials, can be seen used in different places.

Nowadays, it is possible to process natural stones using robotic technology. Thanks to CNC (Computer Numerical Control) machines, which are controlled by computer programs, it has become possible to process natural stones in different shapes and sizes. Designers transfer the desired drawing into the program in three dimensions, and digital models are created. In this way, natural stones can be easily processed for designs that look challenging. This not only saves time but also increases quality (Krüger, 2022). These advantages show that things that could not be done before in an architectural sense could now be done. The use of these materials in architecture could not be abandoned.

FINDINGS AND DISCUSSION

Findings Regarding Designs

The study focuses on the use of natural stones in architectural designs. Since architectural designs affect landscape designs in the projects examined, these projects are also included in the study. For this reason, the projects examined are divided into three categories: architectural design, landscape design, and designs that contain both.

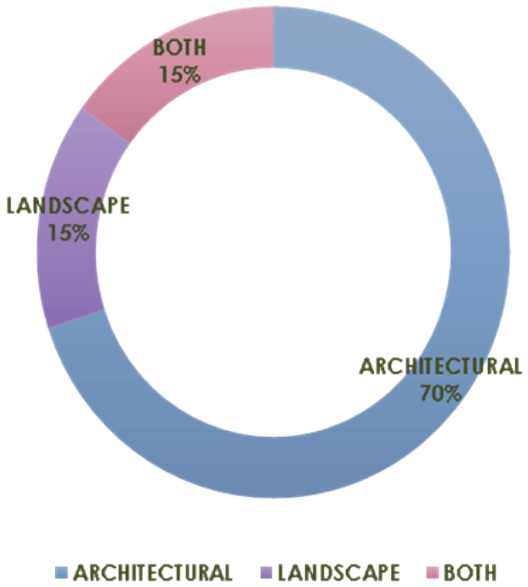


Figure 2. Distribution of project types.

According to Figure 2, the designs selected and analysed are 70% architectural and 15% landscape design. The proportion of natural stones in both landscape and building design is 15%. Accordingly, it is determined that natural stones were mostly used in architectural designs in the projects examined.

The usage functions of the designs examined vary. It has been determined that the project functions in the designs are housing, gardens, squares/-parks, social facilities, residences, religious facilities, office- store- showrooms, factory sales centres and hotels. According to Figure 3, 40% of the designs examined are residential buildings. These were followed by garden designs for private residences with a rate of 16%. Squares and parks, social facilities, commercial housing and religious facilities are 8%. Other functions remained at 4%. According to the findings in the graph, the greatest use of natural stone was found in residential buildings.

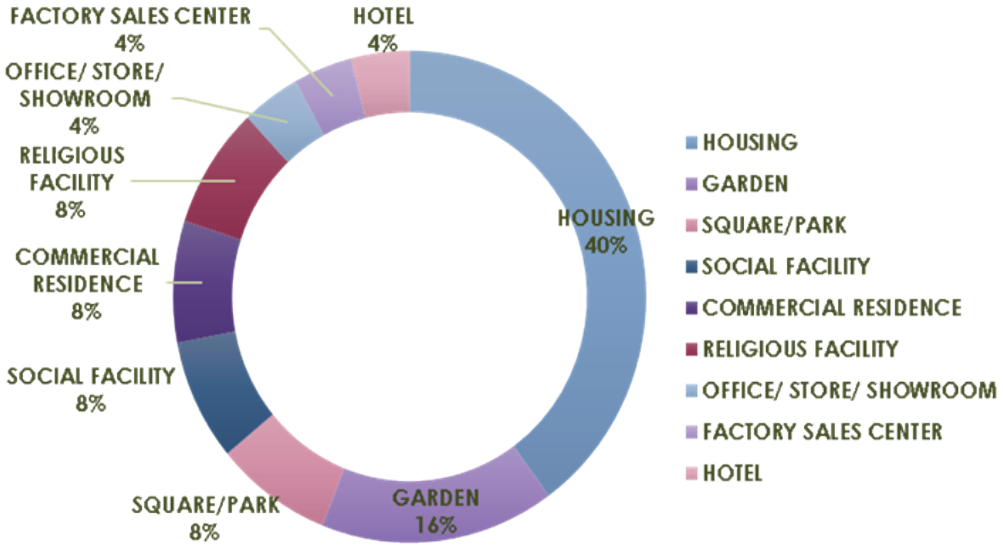


Figure 3. Distribution of project functions.

Data regarding the construction years of the designs are presented in Figure 4. Accordingly, the designs examined were completed mostly in the year 2019, with a rate of 20%. This is followed by 2008, 2013, 2015, 2020 and 2021 with a rate of 10%. Again, according to the data in the figure, the construction of the projects was completed in 1997, 2009, 2014, 2016, 2017 and 2019 with a rate of 5%.

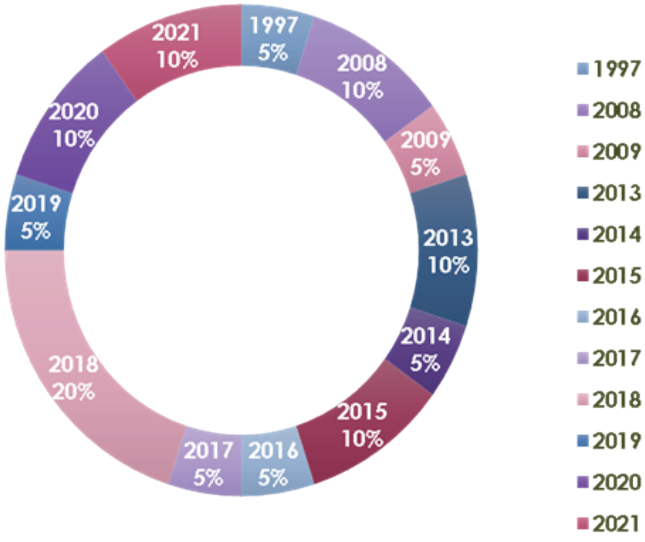


Figure 4. Distribution of project construction years.

As a result of the selection criteria of the study, designs in our country were selected. However, the provinces where the designs are located differ from each other. Findings regarding the construction locations of the designs are given in Figure 5. The designs examined were mostly located in Istanbul with a rate of 45%, followed by Izmir with 15% and Muğla with 10%. In provinces such as Bursa, Çanakkale, Adana, Afyon, Zonguldak and Kayseri, the rate is 5%.

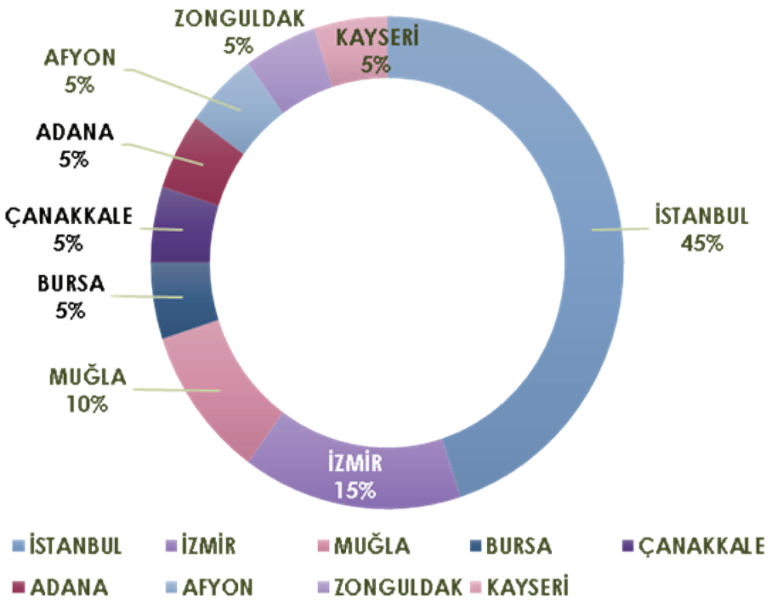


Figure 5. Distribution of project locations by province.

Findings on the Use of Natural Stone in Designs

The natural stones used in the architectural designs examined according to the determined criteria are listed in Figure 6. Accordingly, the most common natural stones used in designs are basalt, limestone and slate. These three natural stones are followed by marble, travertine, granite and andesite. The fact that basalt, limestone and slate are most common in the structures can be explained by the fact that these natural stones are easily extracted from our country's reserves, processed and generally cost-effective. Since the ease of use of the material is higher than with other natural stones, it is seen that it was more preferred in the designs examined.

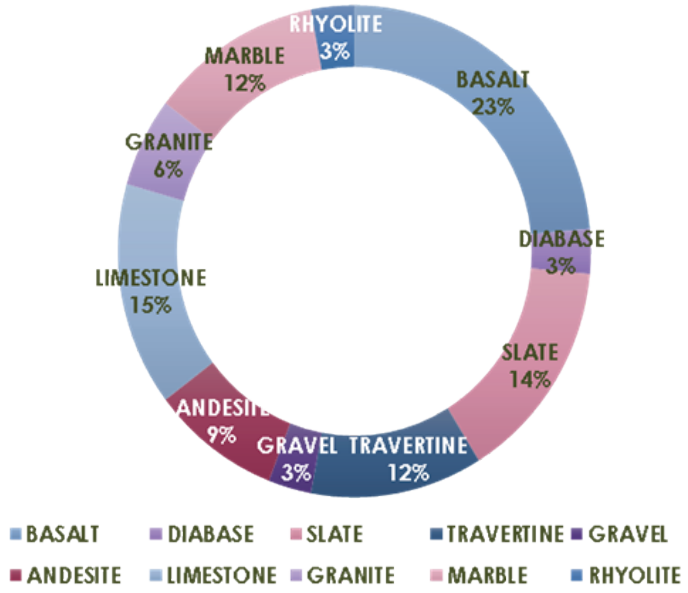


Figure 6. Used natural stones on selected projects.

In Figure 7, the functions of natural stones used in the architectural projects are examined. Consequently, it is seen that natural stones are mostly preferred as cladding elements on exteriors and facades of today's buildings. This is followed by the use of the stones as an outdoor floor covering material. The aim is to protect the structure against uncontrollable external factors and to extend the life of the structure. In addition, considering that the first part of the architectural buildings that will be experienced by the human eye is the building facade and its general appearance, it should not be overlooked that the aesthetic status of the natural stones preferred on the facades also affects this.

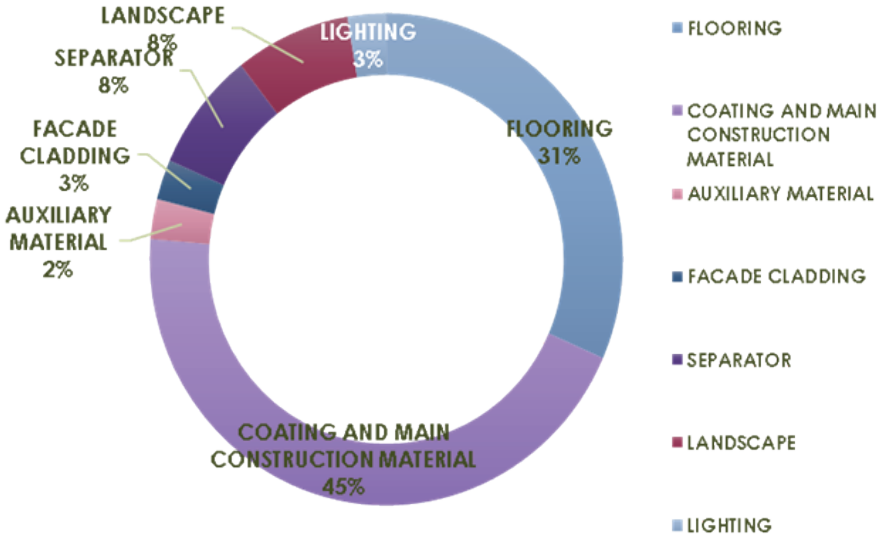


Figure 7. Functions of natural stones.

The forms of natural stones used in the architectural projects are examined in Figure 8. Natural stones appear in three different forms. These forms are the processed and specially shaped rectangular form, the curvilinear form shaped according to the design and generally used with computer-aided programs, and the free form used with the more natural state of the stones.

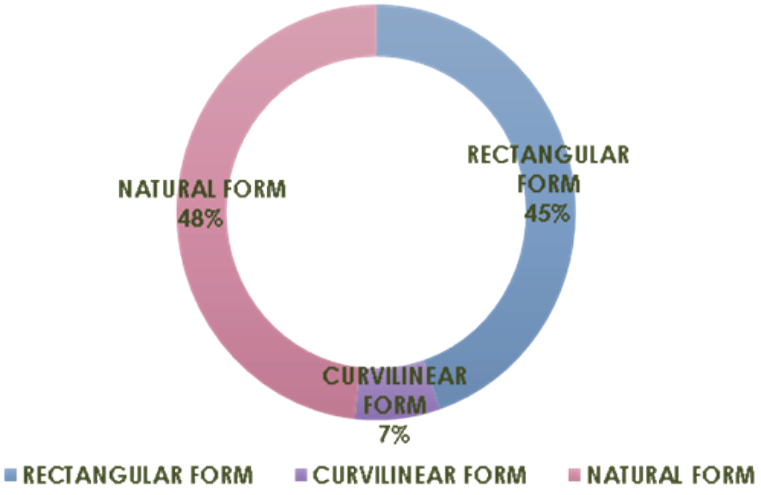


Figure 8. Forms of natural stones.

However, there is no connection between the type of natural stone and the difference in shape. For example, limestone is included in its free form in some projects, while in others it is shaped rectangularly. This situation seems to depend on the design structure rather than the physical and chemical properties of the natural stone.

Figure 9 gives the main colours of the natural stones in the designs. It is seen that the natural stones in the selected projects are used in six different main colours. However, natural stones are mostly found in shades of grey. This is followed by yellow. The reason for this situation is the physical and chemical properties of natural stones. The fact that a single type of natural stone has more than one colour results in diversity in designs. Most of the time, this feature of the material allows the design to take shape.

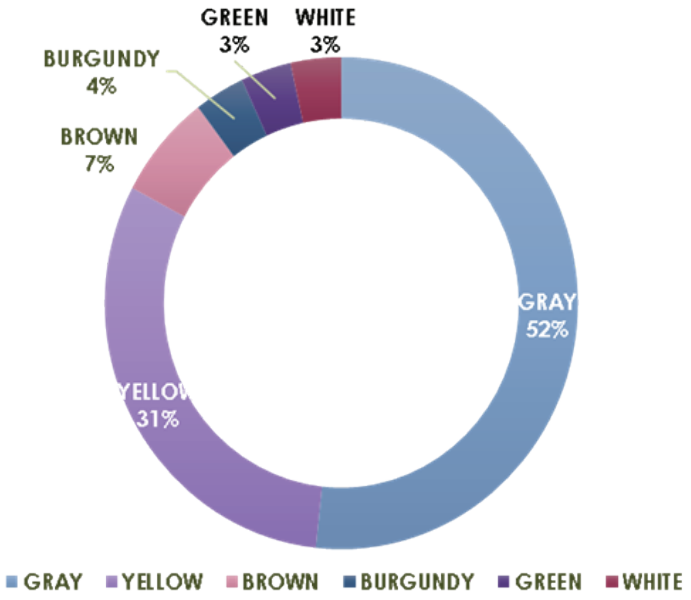


Figure 9. Colours of natural stones.

The texture and pattern perceptions of natural stones used in the examined architectural projects are given in Figure 10. In reference to this, even if the type of natural stone is the same, the perception of texture and pattern also changes as its other properties differ. For this reason, the relationship between the natural stone used and its texture and pattern is unique for each project.

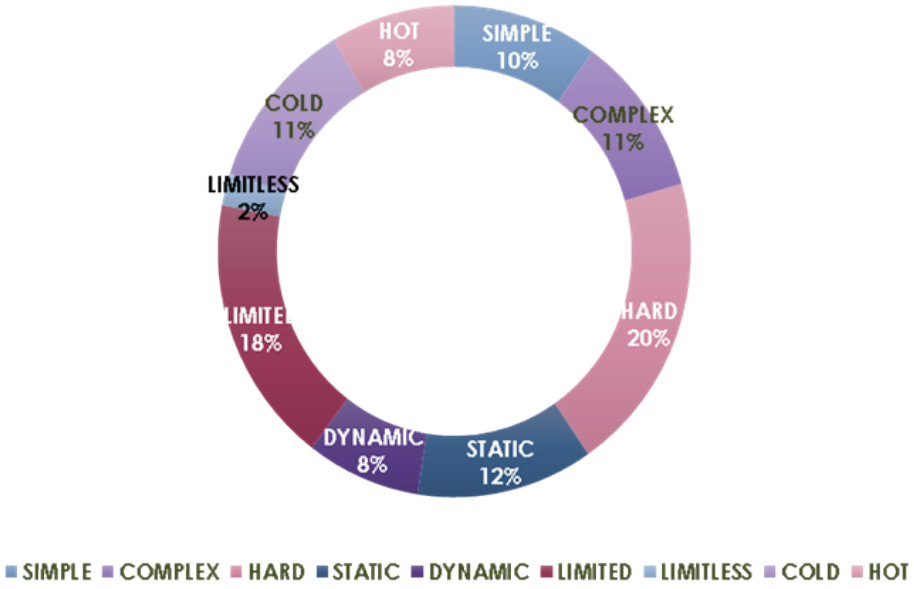


Figure 10. Perception of texture and pattern of natural stones.

The physical and chemical properties of natural stones vary depending on their type, place of extraction and rate of foreign matter in their components. This situation not only affects the economic dimensions, but also affects the processing and ease of application of natural stone, either positively or

negatively. When the natural stones included in the designs are examined, many different features are encountered. However, there is no common point between the usage situations and the physical-chemical properties of the selected natural stones in the project. Although the factors affecting the choice of natural stone depend on physical and chemical properties, the choice of natural stone used in a project depends on its colour, while the use of the same natural stone in a different project is to adapt to the locale, and in another, the ease of application of natural stone independent of each other.

A similar situation can be discussed for the economic dimension. All natural stones used in the projects are supplied from our country's reserves. However, natural stone that is seen and applied as an economic choice for a project cannot necessarily be seen as an economic choice for a different project because the reserve could be located far from the building construction area. Therefore, the economic dimension varies from project to project.

The application details of natural stones in the designs examined can be grouped under four main headings: jointed application, free application with mortar, jointless anchoring application, and other applications. In jointed applications, the natural stone used as flooring or facade cladding is formed into the desired shapes and then mounted with an auxiliary material, such as adhesive, and the joints are filled. The material between the joints varies depending on where the natural stone is used and whether it is flooring or the facade cladding. The material between the joints in facade cladding may be a chemical compound. In floor coverings, permeable materials can be used for the joints. The free application is the more traditional masonry technique. Even if this technique is applied in the projects examined, except for the garden wall, the main load-bearing system of the structures differs from reinforced concrete and steel. Even if the free technique were applied, natural stone was not used as the main load-bearing masonry system in any of the projects examined, but was included as an auxiliary and support element to the main system. In jointless anchoring applications, an auxiliary structure is created that is mounted on the main carrier system, and natural stone plates are mounted to this system chemically or physically. This method has been preferred, especially in more complex designs. In other applications, natural stone is made suitable for use with different materials such as a honeycomb. In this application, the natural stone is thinned considerably, preserving its strength and reducing fragility. Figure 11 shows the application situations of natural stones divided into 4 main headings.

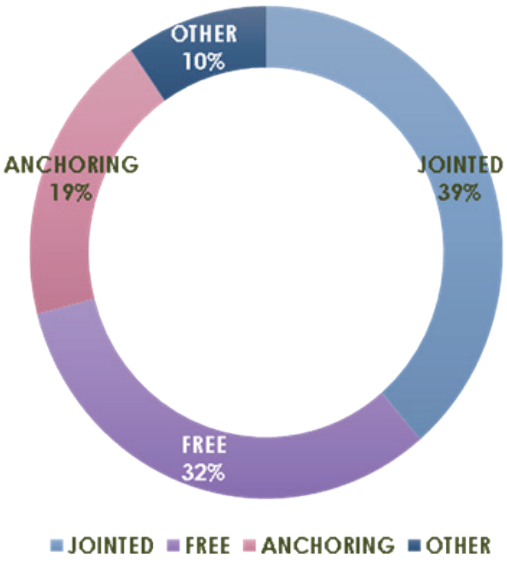


Figure 11. Application techniques of natural stones

The most preferred application detail in designs is the joint application. Subsequently, comes a free application. This technique, which is seen as more traditional, is used less currently. This is followed by the anchoring application and other techniques.

Each project examined has required a different design decision. For this reason, the reasons behind material selection also vary from project to project. Accordingly, the design goals of natural stone selection in projects are different from each other, especially regarding the durability of the material, its aesthetic status such as colour-texture-pattern, its adaptation to the local texture, its ability to be processed in different ways, and its ability to transmit light, space formation and cost. The design goals of the same type of natural stone in different projects are also different.

Natural stones have been used structurally in projects such as flooring, roofing and facade covering materials, hard flooring, elevation and boundary determination, masonry construction elements and lighting elements. They are located on vertical and horizontal planes.

When interviews were conducted with architectural project designers, it was determined that some meanings were attributed to the natural stones in the projects. Of the 32 natural stones used in the samples examined, the number of natural stones with a significance of design is 11. In this case, different meanings were attributed to proportionally 34% of the use of natural stone.

Each natural stone used was used with different materials. These materials are concrete, steel and other metals, glass, brick, wood and other natural stones, respectively. Even natural stones used as masonry are supported with different materials.

A total of 27 of the natural stones are not considered local materials. However, it was determined that for 22 of them, even if there was no local material, they were supplied from nearby regions. Our country is rich in natural stone reserves. In this way, each natural stone included in the projects was procured from local reserves.

Although some of the selected natural stones may seem a little more costly at first, the situation changes when the lifespan of the structures is considered. In terms of general cost, the maintenance cost of each natural stone is low, easy to clean and long-lasting. They are also thought to be a more environmentally friendly and natural material than newly produced construction materials. It is clear that the material will provide an advantage in the long run in terms of the economic situation, thanks to these properties.

Our country is also rich in underground natural stone resources, and there is a variety of natural stone types. Local stones extracted from different regions have been used as the main carrier material of buildings for centuries. Historical buildings using natural stone, one of the oldest construction materials can be found almost everywhere in our country.

New materials discovered along with technological developments have pushed the use of natural stone in the construction sector into the background. In today's conditions, the use of natural stone as the main construction material in buildings is very rare, except for restoration projects. However, in today's architectural projects, the situation of this material being pushed into the background is changing.

According to this study:

- Natural stones are mostly found in architectural designs and housing projects. This situation is related to the higher rates of architectural design and housing projects compared to all projects. Additionally, private housing projects provide flexibility in terms of design and material selection.
- Since 2018, the use of natural stone has become more prevalent. The return to natural materials also increases the use of natural stones. This situation is increasing in today's projects.
- Istanbul stands out on a provincial basis, which is the centre of the construction industry.
- The most commonly used natural stone is basalt. The general properties, durability and cost, are the main factors. It is preferred for practical reasons; its design and aesthetic features are in the background. This natural stone is found especially in large areas and in places that are not protected against external influences.
- Natural stones are more common in the facade designs of the exteriors of buildings. Different types of natural stones allow diversification of facade designs.
- A rectangular form is more preferred. However, the use of free forms is also quite common.
- Natural stones are used in grey colours. In general, harmony is at the forefront of colour selection.
- Texture-pattern perception is complex, hard, static, limited and cold. The structural properties of natural stones are reflected in this situation.
- The purpose of using natural stones in designs is related to the durability of the material.
- Natural stone is mostly used as a structural coating material. It does not have a structural bearing feature. However, support is provided to the structure in projects used together with steel structures.
- The meanings attributed to natural stones in design are in the background, but they stand out with their physical and chemical properties. The significance of stone is ensuring adaptation to the local texture. However, this is only valid in places where the natural texture does not deteriorate much.
- In each project, natural stones were used with different materials or textures.
- Preference for local materials is in the background, but it is preferable to procure the materials from nearby places.
- The material has low maintenance costs, is long-lasting and resistant to external factors, and is a highly accessible material.
- In today's conditions, natural stones have many application details to meet different problems. The important point is to use the appropriate detail in the appropriate place.

CONCLUSION AND RECOMMENDATIONS

Natural stones have been used in the load-bearing systems of buildings and in creating space since the times when humanity's need for shelter arose. The periodic use of natural stones in a structural sense was originally limited to local stones obtained from the immediate environment. This has led to the materials used in buildings in a particular region being similar. In addition, its use has

played a major role in the development of knowledge and the processing of local natural stones. Although the physical and chemical properties of natural stones are quite different from each other, they are generally resistant to external factors and human use, are long-lasting and require little maintenance. For this reason, the use of natural stone stands out in the majority of period structures that have survived to the present.

The discovery of new construction materials and methods along with technological developments causes the use of natural stone in today's buildings to change. Compared to historical buildings, natural stones are applied with different details today. It is seen that the developments in construction materials and methods first put the use of natural stone into the background. However, the interest in natural, environmentally friendly, long-lasting and sustainable materials that has emerged in recent years has led to the return of natural stones in the building and construction sector. Unlike its past use, criteria such as colour, texture, pattern, shape, size, physical and chemical properties, different application details, economic and aesthetic status of natural stones have also become important in today's buildings.

When sample projects were examined, many advantages were identified regarding the use of natural stones in buildings. It can be seen that natural stones are very durable materials. Despite their durability, they can be processed differently. Each different process enables the usage area of natural stone to expand. They can be found in different colours, patterns and textures depending on the proportions of the components in their structure. This helps create a wide catalogue in terms of aesthetics. It also provides diversification of architectural designs.

When the application details are examined, it is seen that a different detailed solution has been developed for each problem that may be encountered. In particular, combining stones with other materials is one of the detailed solutions developed.
It has been stated that the use of natural stone increases the overall cost in the initial process, especially when compared to artificial materials. However, since the material can be obtained from our country's resources, the cost of transportation of natural stones to the construction site decreases. In addition, being a long-lasting and low-maintenance material provides an advantage in the long term.

The loss rate of natural stones as waste material is very low. For example, if the stone used as a facade cladding material in a building turns out to be damaged, it is possible to use the material as crushed stone in landscape designs. In addition, if the natural stone used in a structure is durable, it can be reused in other structures. This is an important point in making natural stones sustainable materials. Similarly, the possibility of reusing the material also provides an advantage in the overall cost.

Technological developments in the construction sector have, for the first time in the historical process, negatively affected the use of natural stone. These new and artificial materials are lighter and less costly than natural stones. However, they are inferior to natural stones in terms of durability and longevity. They cannot be used to support the main structure system, as seen in the examples in the examined projects. The main purpose of the production of artificial stones is to, as much as possible, make them visually similar to natural stones. For this reason, their surfaces are coloured with harmful chemicals to imitate natural stones. Although this increases the resistance of artificial stones used outdoors

to weather conditions, it also increases the possibility of the material harming human health. For this reason, the use of artificial materials that look like natural stones in designs is not encouraged.

However, there are also many benefits that technological developments have brought to the use of natural stone, especially in the last 25 years. Thanks to computer-aided machines, natural stones can be shaped in precise dimensions, organic lines and as thin a section as possible. In this way, the desired design can be presented with clean workmanship, regardless of the design scale. Similarly, shaping natural stones into thin sections to be light and flexible paves the way for their use in different designs, especially furniture.

Despite all these advantages, the structural properties of even the same type of natural stones vary depending on where they are mined, making effective cataloguing difficult. Differences in structural features also limit the prediction of problems that will be encountered during application. However, it is thought that examining the condition of the materials on the structures built in recent years will reduce prejudices about natural stones and improve the details of their use in practice. In this way, the way is paved for this natural material to be preferred in contemporary buildings.

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Conflict of Interest

No conflict of interest was declared by the authors.

Authors' Contributions

The authors contributed equally to the study.

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Ethics Committee Approval

Ethics committee approval was not required for this article.

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