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In the Name of God

Dear Readers,

I, on behalf of the editorial board, am proud to present this issue of the *International Journal of Applied Arts Studies (IJAPAS)* under the sponsorship of the Islamic Azad University, Yazd Branch. We were driven to found the *IJAPAS* by a noticeable lack of journals, in the Islamic Republic of Iran in particular, devoted to architecture, urban design, urban planning, architectural conservation and restoration, painting, art history, graphic, digital arts, fashion design, performing art, industrial design, aesthetics and semantics. Although the academic world is increasingly driven by cross-disciplinary visions and models, we seek multi-disciplinary views, an attempt to inform researchers, graduate students, and professionals about the trends, ideas and innovations being put forward in applied arts. To this end, in addition to standard articles, in every volume of the *IJAPAS* we hope to provide a special issue related to a respective field with innovation.

We are also sending out a call for papers related to *Applied Arts* to appear in the next issue of *IJAPAS* in Feb – Mar 2026.

Finally, I should mention that we are committed to a speedy refereeing process for every article submitted to us. We effort to reply to all papers submitted within five weeks' time with a response about acceptance or rejection. We also do not require formatting for submissions in our style until *after* the paper has been accepted by us for publication.

I would like to thank our Editorial Board for their work so far in helping to establish the *IJAPAS*. And, finally, I would like to extend my deepest gratitude to Dr. Ali Boloor, the assistant editor of the *IJAPAS*, for all of his hard work to ensure the timely completion of the issue.

I am delighted to invite you to visit us at www.ijapas.org.

Sincerely,

Dr. Abolfazl Davodi Roknabadi
Editor-in-Chief
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Educational Model of Architecture Based on the Professor's Position (Case Study: Students of Selected Universities of Iran)[1]

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ABSTRACT

Among the elements of the education system, the teacher element is the most important one, so professors and teachers are the underlying agents for the renewal of pedagogy. It is hoped that the lack of effective position of man in traditional education of architecture is removed in contemporary architecture education by investigating the human component, profound vision, and principles that architect masters acquired when they were solving the problems ruling the implementation of the building, creating a relationship between new building and environment' texture, illustrating accurate human relationships and teaching these principles in details and accurately to their students.

This study aims to improve the quality of higher education through an introduction to a model of a competent professor in Iran's higher education. To do this, a qualitative study with a content analysis approach was done. Semi-structured interviews and participant observation were used to collect data.

The main question of this study is asked students of Selected universities of Iran about the characteristics of a competent professor. The information indicates that the average of the total dimensions of human existence, cognitive dimension, wisdom dimension and skill dimension were reported as 3.605, 3.701, 4.097 and 3.017, respectively. It can be seen that the average score of the total score as well as the average score of the cognitive dimension was above average, the average score of the wisdom dimension was desirable and excellent, and the average score of the skill dimension was poor.

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[1] The present article is derived from the first author's doctoral dissertation entitled *"Explaining the architectural education model based on human position research case of architectural engineering bachelor's course*", which is being developed under the supervision of second, and the advisor of the third author at the Islamic Azad University, Science and Research Branch, Tehran.

Introduction

Historical evidence shows that architectural education in Iran was once based on a deep relationship between teacher and student, and relied on religious, philosophical, and experience-based teachings; however, today, with the advent of the modern and academic education system, this deep human and epistemological bond has diminished. In such circumstances, the position of the teacher is no longer simply reduced to that of a transmitter of knowledge, and his educational role and role as a role model for students are given less attention.

On the other hand, global developments and the increasing needs of society require that architectural education not only focus on the transfer of design techniques and common software, but also provide a basis for cultivating critical thinking, creativity, and identity formation. However, the current education system, in many cases, lacks a coherent mechanism to achieve these goals.

Architecture education is one substantial and key subject in architecture's future, progress, and development. Emphasizing sustainable values, the traditional architecture of Iran has had a specific position. At the same time, it has faced a kind of ambiguity and confusion in the present era due to the emergence of dual terms of tradition and modernity from the regretful view towards the past to fascination with European models and patterns (Khorramshad, Adami, 2009).

The traditional architecture of Iran is full of spirituality and beauty. In contrast, our contemporary architecture has lost its identity and covert values of traditional architecture. What are the factors leading to such considerable difference, and among them, what is the role of education in forming an architect’s character as the main agent shaping architectural and urban spaces? (Taghi, 1995).

Global changes have made individuals learn knowledge and special skills to cope with coming challenges, so it requires paying attention to individuals’ learning because most modern progress is born from knowledge and skill. Therefore, learning is required to acquire knowledge and skills. Hence, education and training systems must make education more effective and lead to higher learning levels among individuals (Zarafshani et al., 2021).

The presence of capable professors providing appropriate academic and ethical competencies is undoubtedly one of the fundamental efficient factors in the quality of higher education systems. Professors contribute to students’ learning by using their knowledge, teaching texts and skills, and creating a suitable atmosphere. Characteristics of a professor would facilitate the teaching-learning process, and even cover the defects of books and lack of amenities; on the contrary, it may convert the best teaching situation or topic to an inactive and unattractive environment due to the inability to create a desirable communication (Ghadami et al., 2007) (Bonakdari et al., 2013: 118).

Professors are social classes that receive the highest social dignity. A professor not only is an expert in educational fields but also a role model and advisor for learners that gives consultation with students and solves problems they face in the research process. The professor is the underlying agent for creating optimal conditions for achieving educational goals (Gillespie, 2005). It is not just the experience and academic viewpoints of professors that are efficient but it is their personalities that influence the learning conditions and develop learners (Benett et al., 2002).

It is highly important to know the desired characteristics of a teacher and is before knowing other factors, such as learners. Individual characteristics of professors may affect their academic and scientific capabilities because education highly depends on the personality, traits, and abilities of the teacher, which affect all educational factors (Abedini et al., 2010) (Bonakdari et al., 2013: 118). A competent professor must provide many characteristics to enhance the reputation of an educational organization. Improvement in the activities of faculty members not only requires specialty in a certain academic major but also needs strengthening other skills and professions such as learning psychology, the learned assessment techniques, management, and organization of educational and group-based processes. In contrast, most faculty members have not received any systematic or comprehensive education or any training in the field of pedagogy and teaching (Menges, 1991). In many countries, including Iran, graduates are immediately employed as faculty members at universities regardless of such competencies. However, many university professors acquire these skills and competencies through time by observing others and the trial-error process. Although this approach helps to have competent university professors after several years, it is a time-consuming process for such professional development, especially in the current competition arena of globalization in which, time is highly precious and many professors do not have sufficient time (Buller, 2010).

This article attempts to examine the role of the professor in the learning process and the formation of the professional personality of the architecture student, through a comparative look at architectural education in the past and present, and to show how, by reviewing educational methods, existing gaps can be reduced and the groundwork for a return to an identity-based architecture can be laid.

Research Background

This part of the study examines the subject accurately and determines its main area based on the previous research generations to review various databases recorded about one subject within different forms that have conceptual connections with specific research issues in this context. In the vase of some subjects like the topic considered in this study that have been influenced by many theories and is now inevitably facing many opinions, literature review and summarization

based on the available opinions help researchers to outline their attitude toward the topic background then take a step to develop it.

"Like architecture, architecture education also depends on the time, place, social norms and beliefs, and humans' worldview," as Isaa Hojjat explains in the book "Architectural Practice" (Hojjant, 2010). Hojjat examines the foundations of traditional and modern architecture education in his book titled "Tradition and Modernity in Architecture": architecture education in a modern society that has broken its traditional structure but is still loyal to its sustainable values must consist of all three components of skill, knowledge, and wisdom (Hojjat, 2012). "This study relies on a practical experience based on the theoretical foundations of education confirming that such practices in which, students can find solutions for a problem are essential for architecture education," Farzian and Karbasi (2014) emphasize in their paper titled "(handcrafts-personal experience) Learning by doing in architectural design education" providing a sample of practices for handcrafts designed by students. "If we consider professor, student, and education topic as the main bases of education, the emotional attraction between student and professor can be added to the emotional attraction of topic based on the equilibrium theory, which strengthens the learning transfer in Haskell's expression," Nadimi explains in a study titled "Apprenticeship method, a second view." Many researchers have attempted to introduce the role model of a competent professor. Lowman (1995) presents a model for effective academic teaching. He introduces two main dimensions for teaching based on his studies; one dimension is the intellectual and logical aspect of teaching and another one is associated with emotional and interpersonal relationships. In His opinion, an extraordinary master or teacher is a person who is good at both aspects (Bonakdari et al., 2013: 120). Omalley (2000) introduces a transformational professor as a person who develops students' intellectual aspect helping them to be thinkers, searchers, and active. On the other hand, in the interpersonal dimension, the teacher provides the field for the development of students' talents by making emotional relationships, mutual respect, and admitting opposing views (Bonakdari et al., 2013: 120). Bain (2004), introduces the best teachers in a field study. There are professional teachers in their special major intellectually and academically, who use diverse educational techniques, expect their students to be top, win the trust of their students, have flexible personalities, and their assessment technique is fair.

In the study titled "Explaining the effective out-of-university factors of Architectural education on contemporary Iranian Architects from the Perspective of university professors," Gooran et al. aim to identify the effective factors in education and their effects on contemporary architecture from the perspective of architect professors. This study tends to clarify, reveal, and explain the factors and components considered by architecture professors (Gooran et al., 2022). The study under the title of "A study on the architectural education system in Iranian universities to solve the identity crisis of contemporary Iranian architecture aims to provide a model for

architectural education to overcome the crisis and improve the identity of Iranian architecture by determining the relationship between architecture education and identity crisis in contemporary Iranian architecture (Zarafshani et al., 2021).The study "A Reflection on the relationship between master and Disciple in Art Education with an Emphasis on the Traditional System" conducted by

Seifi et al. (2017), examines the relationship between master and apprentice, which indicates the artists' worldview in the past (Seifi et al., 2017). In the paper titled "A Look at Architecture Education in the Contemporary Era," Taghi pays attention to the difference between contexts of contemporary and traditional architecture and the difficulties that contemporary architecture faces. This study also points to evolutions in architecture education from traditional to modern education and their considerable consequences (Taghi, 1995). Afsharian and Omidvar have conducted a comparative study of traditional and contemporary architectural education in their research and have emphasized that the lack of proper connection between these two educational systems can lead to a decrease in the quality of architectural education. They suggest that by utilizing the rich teachings of traditional architecture and combining it with modern methods, we can help improve architectural education(Afsharian and Omidvar, 2023). Ghaffari has also studied the possibility of combining traditional and modern architecture in an article and has emphasized that by combining these two approaches, we can create functional spaces that are appropriate to the needs of modern humans while at the same time benefiting from the beauty and structure of traditional architecture (Ghaffari, 2024). Sedaghati and Gholizadeh have studied the interaction between the principles of modern and traditional architecture in the design of contemporary Iranian places. They believe that a balanced integration of traditional ideas with modern technologies and aesthetics can lead to the creation of stunning, useful and sustainable environments that simultaneously consider both innovation and tradition (Sadaghati and Gholizadeh, 2024).

At the international level, Yagitbas et al. (2023) have examined the use of augmented reality (AR) and virtual reality (VR) technologies in architectural education in a systematic review. They emphasize that these technologies can help improve visualization and interaction with building models and play an important role in architectural education (Yagibas et al., 2023).

Theoretical Foundation

Architectural education is one of the key issues in shaping the future of this profession. Traditional Iranian architecture, with its emphasis on sustainable values, has always had a special place. However, in the present era, with the emergence of a duality between tradition and modernity, it has faced challenges. Today's architectural education, which has abandoned its traditional form but remains committed to its traditional beliefs and values, must include all three components of skill, knowledge, and wisdom. In the meantime, the role of professors in the educational system has an unparalleled position, because they are considered the most

fundamental factor in recreating the education process. This research, while reviewing the literature on the subject, reviews categories of architectural education and analyzes educational methods in three theoretical structures (traditional, contemporary, and desirable). Finally, a conceptual model for desirable architectural education is presented.

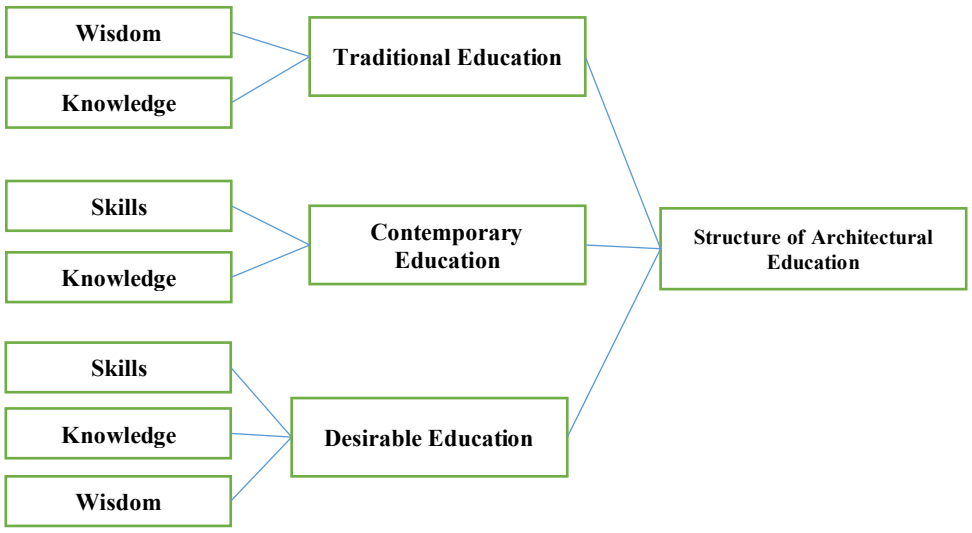

Figure 1. Structure of Architectural Education.

Traditional education: wisdom and Knowledge

Before modernization and the advent of contemporary schools, architecture education in Iran was an education based on tradition and two components skill and wisdom. These skills and wisdom appeared during the construction of the building based on the master's practice from the apprentice's perspective. This technique was related to a closed society with stable norms and values, as well as given techniques and materials with the presence of eligible masters and obedient apprentices. This education technique has lost its effectiveness due to wider information borders and dealing with other cultures, philosophies, and thoughts, development and diversity in construction techniques and materials, variety of living, environmental and livelihood conditions, minor role of the architect in the process, and disobedient apprentices.

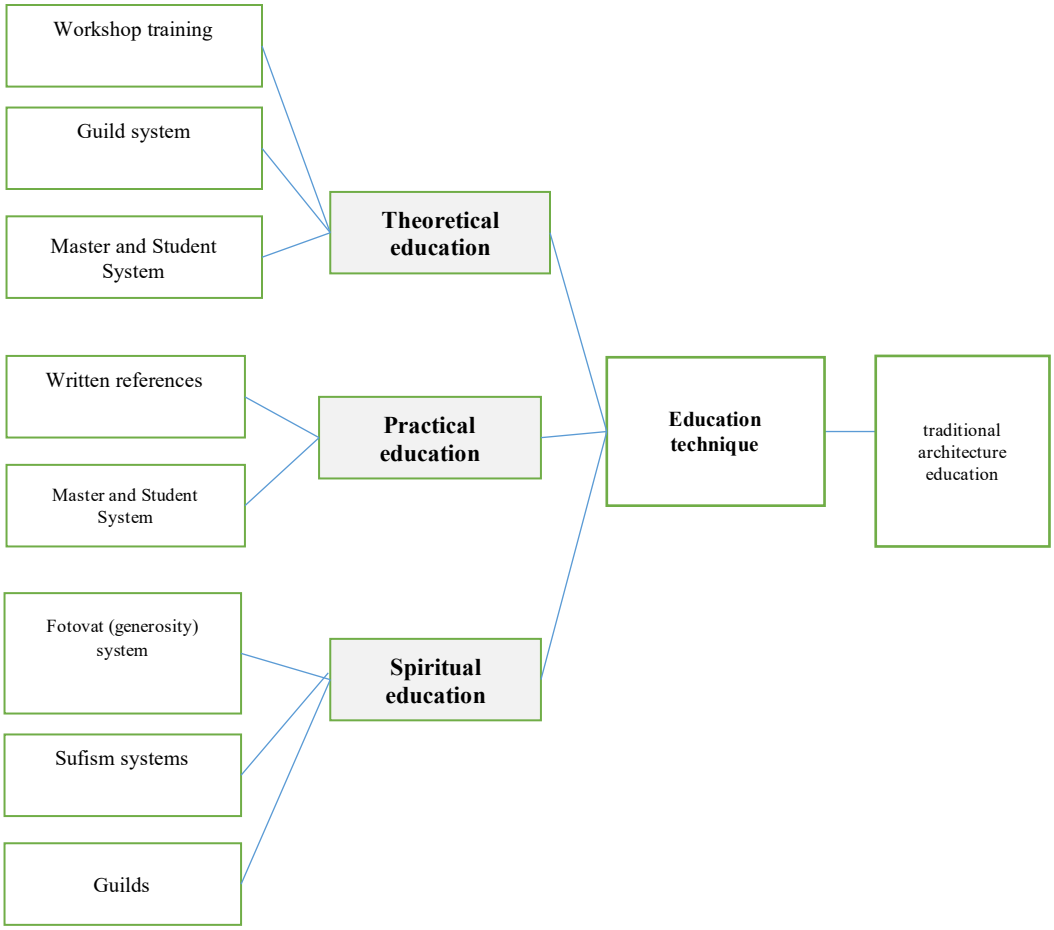

Figure 3. Evaluation of traditional architecture education system

Contemporary Education: skill and knowledge

Architecture education in contemporary schools of Iran has mimicked the European education system becoming an uncertain education based on novelty and two components of skill and knowledge. These skills and knowledge. These skills and knowledge are provided for apprentices with various interests and thoughts in separate fields through different techniques and by masters with different specialties. Regarding its global nature without overconcentration on the culture, territorial, indigenous, and intrinsic characteristics of people, this method equips apprentices with new and modern sciences and techniques and gradually pushes them away from their ritual and territorial values and identity. The seven-decade experience of architecture education based on the contemporary method in Iran implies this cultural gap between architecture and community.

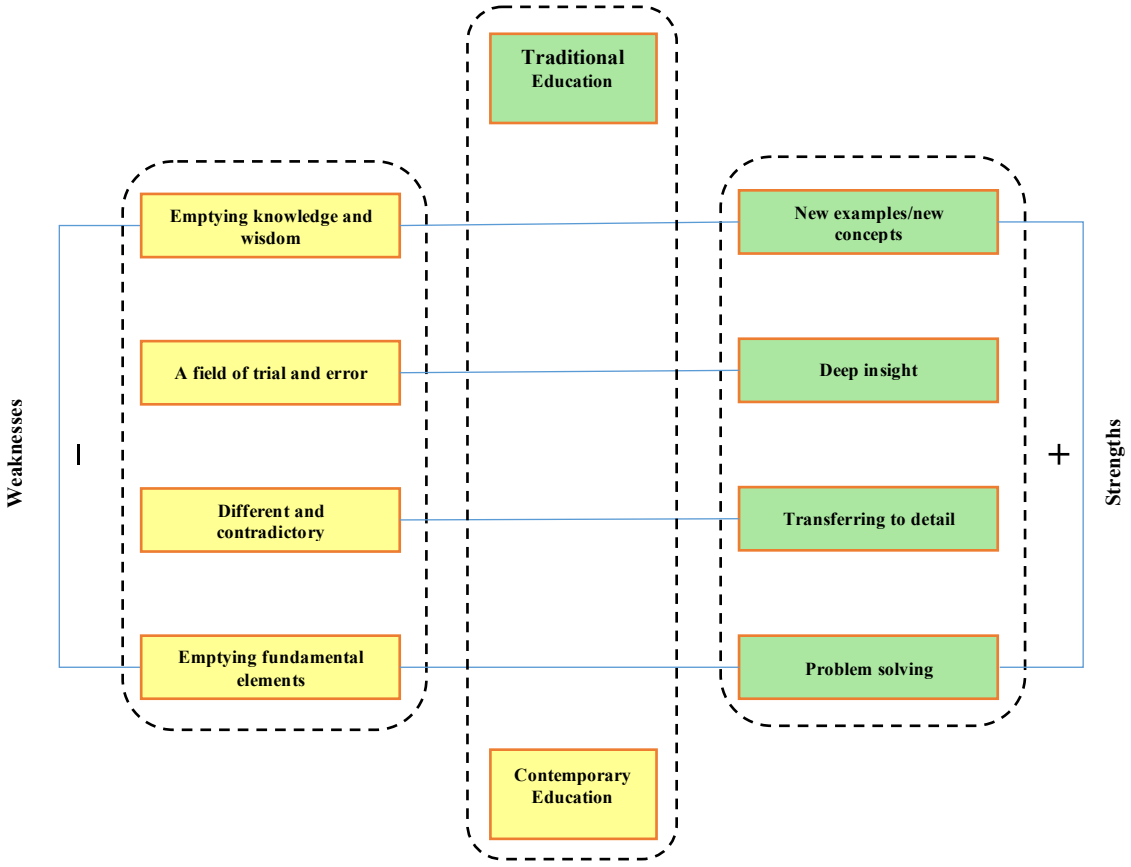

Figure 4. Strengths and weaknesses of traditional and contemporary architecture education system

This model provides a comparison between traditional and modern education, showing that traditional architectural education has depth, wisdom, and effective knowledge transfer, while modern architectural education in some cases seems superficial, experimental, and lacking in fundamental elements. This model attempts to show that in order to improve the impact of the teacher on the student, architectural education should integrate the strengths of the traditional method with modern methods.

Desirable education: skill, knowledge, and wisdom

In an Iranian community that has broken its traditional structures but remained loyal to its beliefs and values, architecture education must comprise three components of skill, knowledge, and wisdom, so that the trained architect who has the required skills and knowledge and is familiar with domestic and global experiences in this process can bring an outcome based on the wisdom and knowledge that are matched with precious norms and values of the society, and

convert the separation between architecture and original cultural values in the country to a new connection.

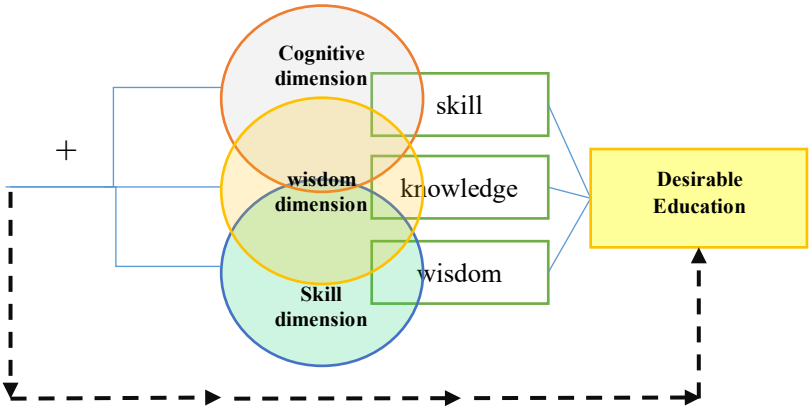

Figure 5. Desirable education: skill, knowledge, and wisdom.

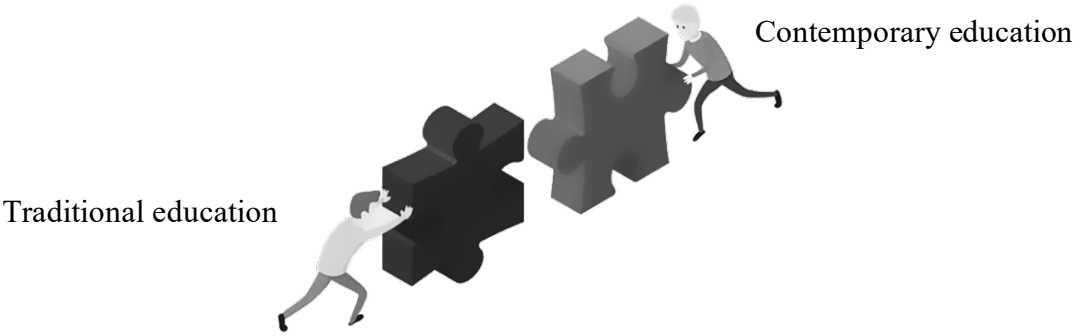

Figure 6. Desirable education.

This model suggests that the desirable education is a balanced approach that combines both traditional and contemporary teaching methods. In addition to teaching theoretical knowledge and technical skills, this model fosters critical thinking, aesthetic understanding, sustainable principles, and the relationship of architecture to culture and social needs. This method trains architects who are not only capable of designing and implementing, but also have a deeper understanding of the philosophy of architecture and its impact on society.

Research Methodology

This research is descriptive-analytical research based on field observations, library studies and a case study in the form of data collection through questionnaires from students in three

countries: Iran, Turkey and Canada. By examining their strengths and weaknesses and analyzing the data, an appropriate design idea and solution is presented. The research in question is applied in terms of purpose and descriptive-analytical in terms of data collection. This research uses regression and correlation as the main tools based on statistical analysis.

Statistical population

The number of people in the statistical population is 360 people. The statistical population in this study is selected students in Iran.

Sample size

The Cochran formula was used to determine the sample size in this study. The number of samples using the Cochran formulai is 122 people.

Research instrument

The instrument used in this study is the SPSS26 software questionnaire, graphs and descriptive statistics were extracted from it. the answers to the questions will be entered into SPSS software and graphs and statistical results will be extracted and analyzed. The results will be weighted on a Likert scale ranging from zero to 6. The answers to the questions are divided into the following categories from 0 to 6: 0 = No answer, 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Somewhat agree, 5 = Agree, 6 = Strongly agree

Variables under study

- Independent variable 3: Cognitive dimension
- Independent variable 2: Judgmental dimension
- Independent variable 1: Skill dimension
- Dependent variable: Improving human status

Findings

Table 3. Statistical indicators of dimensions of human existence in selected universities of Iran according to their subscales.

Category	Dimension	Mean	Standard Deviation
Cognitive dimension	Mastery over content	4.164	1.471
	Presenting content in an organized and clear way	3.361	1.558
	Being up-to-date	4.410	0.977
	Ability in the research scope	4.279	1.456
	Creativity and initiative	3.157	1.066
	Theory-practice combination	4.311	0.986
	Being experienced	2.239	1.159
	Having a neat and tidy appearance	3.393	1.333
The total score of the cognitive dimension		**3.701**	**0.640**
	Respect and sincerity	4.565	1.135

Wisdom dimension	Creating motivation and enthusiasm among students	3.279	1.162
	Commitment and responsibility	3.906	1.194
	Cultivating and increasing the ability of students	4.512	1.090
	Optimism and positive thinking	4.225	1.049
The total score of the judgmental dimension		**4.097**	**0.542**
Skill dimension	Eloquence	3.906	1.544
	Positive interaction with students	2.070	1.045
	Getting out of boredom and creating passion in students	3.172	1.257
	Fair assessment	1.803	1.237
	flexible management	3.459	1.186
	Questions from students during teaching	4.229	1.303
	Initial assessment of students	4.188	1.433
	Spreading critical thinking among students	1.959	1.411
The total score of the skill dimension		3.017	0.527
The total score of dimensions of human existence in selected universities of Iran		**3.605**	**0.4**

The mean and standard deviation of human existential dimensions and their subscales in selected Iranian universities are shown in Table 3. The information indicates that the average of the total dimensions of human existence, cognitive dimension, wisdom dimension and skill dimension were reported as 3.605, 3.701, 4.097 and 3.017, respectively. It can be seen that the average score of the total score as well as the average score of the cognitive dimension was above average, the average score of the wisdom dimension was desirable and excellent, and the average score of the skill dimension was poor. With a closer look at each component, we see that the average components of Mastery over content (4.164), being up-to-date (4.410), Ability in the research scope (4.279) Theory-practice combination (4.311), respect and sincerity (4.565), Cultivating and increasing the ability of students (4.512), optimism and positive thinking (4.225), Questions from students during teaching (4.229) and the initial assessment of students (4.188) is optimal and excellent. After that, the average Presenting content in an organized and clear way (3.361), creativity and initiative (3.157), having a neat and tidy appearance (3.393), creating motivation and enthusiasm among students (3.279), Commitment and responsibility (3.906), Eloquence (3.254) Getting out of boredom and creating passion in students (3.172), flexible management (3.459), is in the average level and it is also observed that The average Being experienced (2.239), positive interaction with students (2.070), Fair assessment (1.803) and Spreading critical thinking among students (1.959) was lower than the average, which shows weakness in the component. are mentioned. It is necessary to explain that the standard deviation of the answers given in the dimensions and their sub-scales have favorable numbers due to small fluctuations and show that the data is more focused on the average.

Conclusion

The results of this study showed that neither of the two dominant approaches in architectural education—the traditional approach and the contemporary approach—is capable of responding to all the educational, mental, practical, and human needs of architectural students on their own. In the meantime, students often experience confusion, duality, and sometimes educational identity lessness at the intersection of these two trends. The lack of integration between the qualitative and semantic values of traditional education and the analytical and technological skills of contemporary education has created a kind of educational gap that ultimately weakens the ability to design humane, indigenous, and committed architecture in many graduates.

Accordingly, the present article emphasizes the necessity of forming a third model: a hybrid, intermediate, and integrated model that has been introduced and explained in this study as the "desired education model."

In this direction, the role of the professor in the desired education model is of fundamental importance. The professor is no longer simply a transmitter of knowledge or a judge of the design; Rather, he is a mentor, guide, inspirer, and facilitator of the process of understanding and creating human architecture. In the ideal education model, the professor must have the ability to create a bridge between the two worlds of tradition and contemporary: therefore, improving the status of the professor in architectural education is not a marginal desire but one of the pillars of realizing the ideal education model. A space must be provided where the professor can act as an architect of architect education; someone who simultaneously transmits knowledge, insight, and character. This requires a review of the educational structure of universities, defining a new role for the professor, strengthening soft skills in professors, and creating a multidimensional qualitative evaluation system.

Emphasizing the human dimension in architectural education will lead to the creation of a new generation of professors who not only value technical skills, but also the importance of ethics, social responsibility, and interpersonal skills of students. These professors can also act as valuable consultants and guides in professional areas to design more humane environments that are in line with the real needs of society.

Improving the status of the human in architectural education means paying more attention to the human dimensions, individual needs, and capabilities of students, and educating the future generation of architects with a more humane approach. This approach not only affects the quality of education, but can also lead to improving the status and role of professors. The main reason is that paying attention to the human dimensions in architectural education requires a fundamental change in the teaching method and role of professors, which can have profound effects on their status and value in the educational environment.

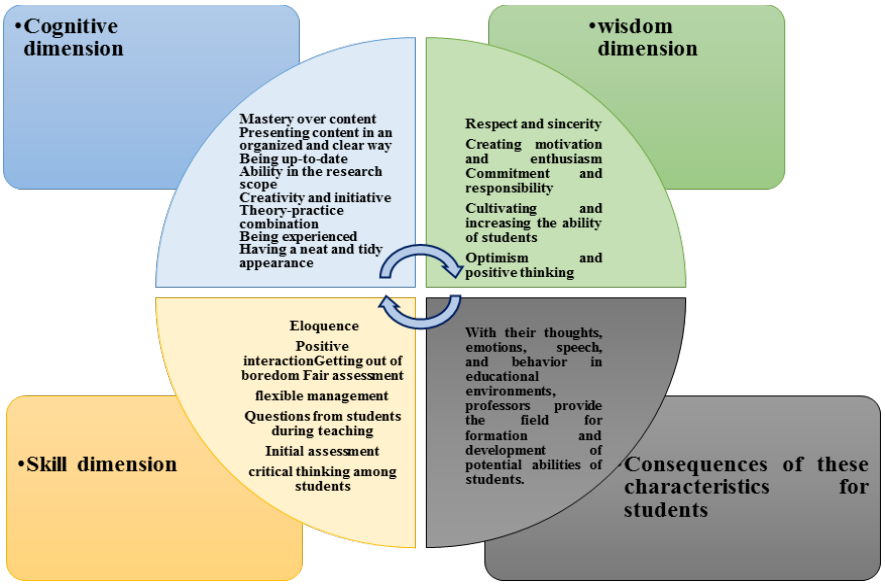

Figure 7. Summarization.

Improving the status of the human in architectural education can also improve the relationship between professors and students. When professors take on new and more active roles in educating people who are aware and sensitive to the environment and society, students also see them as trustworthy and influential. This closer relationship, based on mutual respect, can lead to the creation of a dynamic and supportive environment in universities and educational institutions. Therefore, professors in such an environment not only find a higher status, but also contribute to creating a memorable experience for their students. On the other hand, professors with an elevated status can play an important role in improving the mental and psychological conditions of students.

In general, the elevation of the status of the professor in architectural education can have positive effects on all aspects of student life; from increasing motivation and academic productivity to improving mental conditions and creating effective social connections. This process transforms students into more capable, more informed, and more responsible individuals who are better prepared to face their professional and social challenges in the future.

Ultimately, when architectural education is based on the advancement of the human condition, both faculty and students will reach a level of excellence and development that will enable them to play a more effective role in society. This path not only helps them grow professionally and technically, but also enables them to serve society as committed and responsible architects and citizens.

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

Data Availability Statement

Data available on request from the authors.

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Ethical considerations

The authors avoided data fabrication, falsification, plagiarism, and misconduct.

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Conflict of interest

The authors declare no conflict of interest.

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$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left(\frac{z^2 pq}{d^2} - 1\right)}$$

[i]

[i] **Cochran Formula:**
n = sample size: Cochran's formula was used for random sampling in this research.
N = size of statistical population (population size of city, province, etc.)
t or z = the standard error percentage of the acceptable confidence factor
p = a proportion of the population without a certain attribute (for example, the population of men)
q (p-1) = a proportion of the population without a certain attribute (for example, the population of women)
d= degree of certainty or possible accuracy
According to the above formula, if we want a sample size with a population gap of 0.5 (that is, half of the population has a certain characteristic. The other half does not have it. We usually consider p and q as 0.5. The value of z is usually 1.96 .

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Layered Semiotic Analysis of Al-Ghadir Mosque in Tehran

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ABSTRACT

In contemporary architectural discourse, semiotics has emerged as a critical method for interpreting the identity, symbolism, and communicative capacity of built environments. Architecture is increasingly understood not only as a physical structure but also as a layered system of signs that reflect cultural, historical, and metaphysical meanings. This study analyzes the Al-Ghadir Mosque in Tehran through the lens of layered semiotics, focusing on three key dimensions: physical structure, functional configuration, and symbolic representation. The mosque, constructed during the late Pahlavi era, is a unique example of postmodern religious architecture that integrates traditional Iranian-Islamic forms with modernist principles. Using a qualitative approach based on field observations, documentary research, and grounded theory, this research identifies multiple semiotic layers embedded in the mosque's spatial hierarchy, geometry, materials, and symbolic elements such as light, water, and ornamentation. The findings reveal that the architectural meaning of the mosque is not confined to a single visual or formal aspect but is distributed across interconnected layers that require interpretation. The design creates a spiritual and cultural narrative through the interplay of explicit forms and implicit meanings. This research contributes to the understanding of how architectural semiotics can decode the communicative power of sacred spaces and provides a conceptual framework that may inform future mosque design rooted in both tradition and contemporary interpretation.

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Introduction

In contemporary architecture, the concept of the sign has transitioned from an intrinsic structural component to a symbolic and communicative tool. Historically, architectural forms were deeply intertwined with cultural and metaphysical meanings. Each building embodied a coherent ideological system in which structural elements were inseparable from symbolic expression (Ghobadian, 2013; Grütter, 2009). The symbolic dimension was not decorative but essential, reflecting social values, religious beliefs, and cosmological order (Clark and Pause, 2009; White, 2017).

With the emergence of modernism and later postmodernism, this unity of form and meaning gradually weakened. Architecture became more abstract, distancing itself from metaphor and ambiguity, often favoring formal autonomy over cultural signification (Unwin, 2009; Panahi, 2009). However, in postmodern discourse, there has been a renewed interest in semiotics as a tool for understanding the communicative role of architecture (Sojoodi, 2016). Semiotics offers a framework for analyzing buildings not merely as spatial objects but as layered systems of signs that operate across physical, functional, and symbolic dimensions. In semiotic theory, signs possess both a manifest (denotative) and latent (connotative or symbolic) layer. The apparent features—such as form, color, and material—carry deeper cultural meanings shaped by context and intertextuality (Chandler, 2008; Eco, 1976). Layered semiotics, as developed by scholars like Sojoodi (2004) and Panahi (2018), emphasizes the multiplicity of meaning and the dynamic interaction of architectural codes at various levels. In the context of Iranian religious architecture, mosques serve not only as places of worship but also as symbols of collective identity, spiritual continuity, and socio-political expression (Mirhosseini et al., 2019; Behnoud, 2022). The Al-Ghadir Mosque, designed in the late Pahlavi era by architect Jahangir Mazlum, represents a hybrid architectural language that combines vernacular elements with modernist aesthetics. This mosque offers a rich case for semiotic interpretation due to its formal complexity and symbolic depth.

This research aims to investigate how architectural meaning is constructed in Al-Ghadir Mosque through a layered semiotic approach. It addresses the following question: How do physical form, spatial organization, and symbolic elements of the mosque interact to generate architectural meaning? The study contributes to current discourse by proposing a semiotic reading model that can reveal the implicit cultural and symbolic layers embedded in sacred architecture.

Theoretical Foundations and Research Background

Semiotics, as a field of study, investigates the structure, function, and interpretation of signs within systems of meaning. In architecture, semiotic analysis allows scholars and designers to explore how built forms convey cultural, symbolic, and experiential messages beyond their material or functional attributes (Chandler, 2008; Grütter, 2009).

Classical semiotic theory, especially that of Ferdinand de Saussure and Charles Peirce, laid the groundwork for understanding the relationship between signs, signifiers, and the signified. However, modern and postmodern perspectives—such as those by Eco (1976), Barthes (1972), and Hjelmslev—have emphasized the fluidity, context-dependence, and intertextual nature of meaning. Umberto Eco's concept of the "open work" highlights how meanings are not fixed but shaped by the interpreter's cultural background and prior knowledge. In this view, signs do not operate in isolation but within broader signifying systems and cultural codes (Eco, 1976; Sojoodi, 2016).

The layered semiotics approach, as developed by Iranian scholars like Sojoodi (2004, 2016) and Panahi (2018), views architectural meaning as emerging from multiple, overlapping levels: structural, environmental, spatial, and symbolic. Each layer carries its own set of codes and contributes to a richer, more holistic interpretation of the architectural "text." This view aligns with Hjelmslev's emphasis on form and content as interdependent and inseparable in the process of meaning-making (Hipkiss, 2014). In this framework, the sign is not a static object but a dynamic function realized through interaction between form, context, and reception.

In Islamic architecture, especially mosque design, symbolic and spatial hierarchies play a central role. Elements such as domes, courtyards, minarets, water features, and light are not only functional but deeply symbolic. These components guide spiritual movement from the profane to the sacred and reflect cosmological and metaphysical structures (Mirhosseini et al., 2019; Soltanzadeh and Mirshahzadeh, 2024). Behnoud (2022) further connects architectural symbolism to Jungian archetypes, suggesting that certain spatial forms carry collective unconscious meanings.

The architectural semiotics of the Al-Ghadir Mosque has received limited scholarly attention, despite its rich symbolic layering and hybrid formal language. Built during the late Pahlavi era, the mosque integrates pre-Islamic forms (e.g., ziggurat geometry), Islamic spatial typologies, and postmodern metaphors. Its analysis through a layered semiotic model provides insight into how Iranian religious architecture continues to negotiate between tradition and modernity. Previous studies have examined architectural semiotics in both general and Islamic contexts (Panahi and Rahimi, 2015; Panahi, 2009), but few have proposed an applied, multilayered model specific to case studies. This research builds on these theoretical frameworks by applying them directly to a contemporary mosque in Tehran, contributing to both architectural theory and practice. (ibid., pp. 198-200).

Thus, in layered semiotics, the text is a physical phenomenon but not definite. It is a physical phenomenon in the sense that it is received through the senses of sight, hearing, touch, and even smell or taste, and it is not definite in the sense that other layers may continuously and potentially be involved in it and gain importance in its interpretation. Undoubtedly, depending on the text, some layers or even sometimes one layer are considered more primary than others and have a more

constant presence in different textual manifestations (and of course not a more constant interpretation and reception) and other layers are variable (ibid., p. 210).

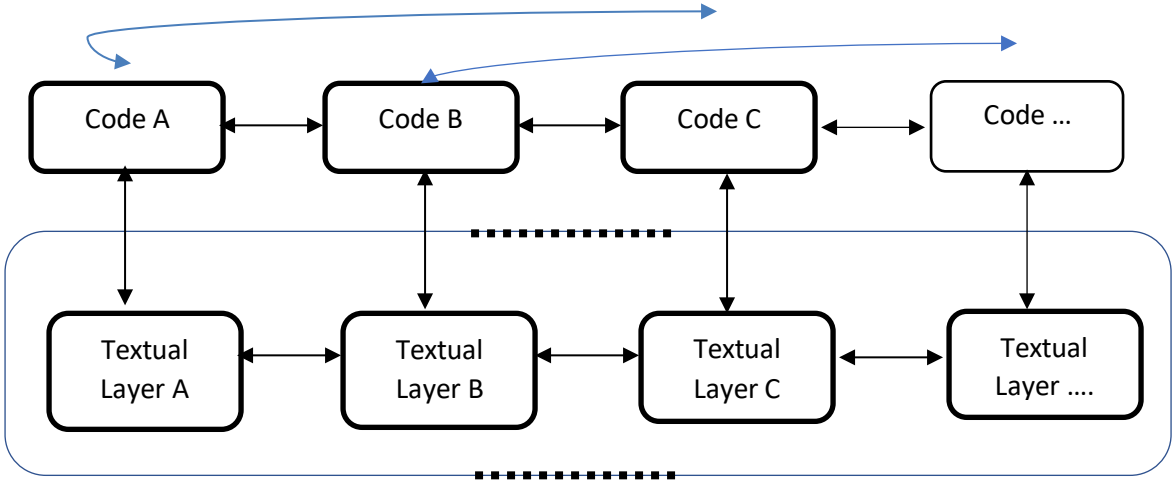

Diagram 1. The relationship between layers and codes in different texts. The dotted line in the rectangle named text indicates the openness of this phenomenon (Sojoodi, 2016).

The relationship between text and context is also one of the issues addressed in layered semiotics. This approach does not accept the primacy of text over context and that context only exists to provide the conditions for receiving the text. In this type of semiotics, context itself is a semiotic reality and, based on code systems, intervenes in reception, is produced and interpreted, and also intervenes in how the text is received and read. Thus, the text is realized in the context, and the context continuously creates the text, and the image that this definition of text provides is the same open-layered structure, layers that are themselves the result of different codes. Therefore, "text is a repetitive concept in which each textual layer is itself a text that, in interaction with other textual layers, expands its textuality, and this process is open and endless" (Namvar Motlagh, 2012, 166). As shown in Mirhosseini et al. (2019), spatial hierarchy in mosque architecture plays a crucial role in guiding users from public to sacred spaces. This notion supports the idea of layered meaning embedded within structural and spatial configurations. The study by Mirhashemi Routeh, Soltanzadeh, and Mirshahzadeh (2024) offers a valuable reflection on Gülru Necipoğlu's theories, emphasizing the symbolic function of geometry and ornamentation in Islamic architecture. This aligns with the current study's focus on the semantic function of form and detail in Al-Ghadir Mosque. Behnoud (2022) highlights the relevance of Jungian archetypes in architectural design, suggesting that spatial configurations and symbols can evoke subconscious cultural and spiritual responses. This perspective is especially relevant when interpreting the symbolic structure of sacred spaces such as mosques. According to Sojoodi (2004), since the early developments initiated by Saussure and Peirce, semiotics has undergone numerous theoretical transformations. Schools of

thought such as French structuralism, post-structuralism, and academic traditions from Paris, Copenhagen, Prague, Moscow, and Tartu, have critically expanded the field. These developments gradually moved semiotics beyond linguistics into broader domains such as literature, visual arts, media, and architecture, laying the foundation for its interdisciplinary role in the humanities (Sojoodi, 2004). Panahi (2018) offers a comprehensive framework for applying semiotics in both architecture and cinema. His concept of layered semiotics is accompanied by a visual diagram and a conceptual model that demonstrates how different levels of meaning interact in spatial and visual narratives (Panahi, 2018). Jakobson (2004), along with other structuralist and post-structuralist theorists such as Saussure, Shklovsky, Genette, and Derrida, contributed foundational perspectives on language, form, and meaning. These theoretical developments laid the groundwork for later applications of semiotics in art, literature, and architecture (Jakobson, 2004). Panahi and Rahimi (2015) apply an intertextual lens to Bernard Tschumi's architecture, highlighting how spatial ambiguities and intermediate spaces can act as semantic mediators. This notion of spatial intertextuality parallels the metaphorical reading of transitional spaces in Al-Ghadir Mosque (Panahi and Rahimi, 2015).

Umberto Eco's concept of the "open work" underscores the dynamic interaction between the observer and the architectural artifact, suggesting that meaning is not fixed but evolves through interpretation (Eco, 1976). Roland Barthes further elaborates on this by introducing the idea of multiple layers of meaning denotative, connotative, and symbolic that coexist within a single architectural element (Barthes, 1972). Christian Norberg-Schulz emphasizes the significance of "genius loci" or the spirit of place, asserting that architecture should resonate with its environment and cultural context to evoke a sense of belonging and identity (Norberg-Schulz, 1980). This perspective aligns with the principles of Islamic architecture, where structures are often designed to reflect the spiritual and communal values of the society. In the context of mosque architecture, studies have explored how semiotic principles manifest in spatial hierarchies and symbolic elements. For instance, (Mirhosseini et al, 2019) analyze the spatial hierarchy in Iranian mosques, highlighting how architectural elements guide worshippers through a journey from the profane to the sacred. Similarly, Soltanzadeh and Mirshahzadeh (2024) Soltanzadeh and Mirshahzadeh (2024) argue that geometric ornamentation in Islamic architecture serves not only decorative functions but also conveys deep spiritual and cosmological meanings. This view supports the current study's interpretation of dome geometry and spatial rhythm in Al-Ghadir Mosque. Moreover, Behnoud (2022) examines Jungian archetypes and their application in architecture, contributing to an understanding of the psychological and symbolic layers of sacred spaces. Panahi (2009) explores the dissolution of architectural identity in contemporary design under what he terms "the empire of signs," where formal gestures often override contextual and cultural meaning. This critique resonates with the symbolic disconnection observed in many postmodern religious structures. Panahi, S., and Honar Parvar, A. (2020). In their philosophical study, Panahi and Honar

Parvar (2020) revisit the ancient Greek notion of techne to argue that the essence of design lies in its capacity to reveal truth through making. This perspective supports a layered understanding of architectural meaning that transcends surface form (Panahi, Honar Parvar, 2020).

These insights inform the current study's approach to analyzing Al-Ghadir Mosque in Tehran. By employing a layered semiotic framework, the research aims to decode the interplay between structural design, symbolic motifs, and environmental context, thereby uncovering the deeper meanings embedded within the mosque's architecture.

Materials and Methods

This research adopts a qualitative approach rooted in interpretive and hermeneutic traditions. The study employs a descriptive-analytical methodology grounded in layered semiotic theory, aiming to decode the architectural meaning of Al-Ghadir Mosque through multiple levels of signification.

The selection of Al-Ghadir Mosque as a case study was based on purposive sampling, due to its unique historical position, symbolic richness, and hybrid architectural language that integrates traditional Islamic and modernist elements.

Data Collection

Data were gathered through three complementary methods:

1. Field Observation. Several visits to the mosque were carried out to document spatial hierarchy, circulation patterns, lighting conditions, and symbolic elements. Observations were recorded through field notes and sketches.
2. Documentary Research. Archival resources, architectural drawings, historical documents, and previous scholarly works were reviewed to contextualize the mosque within Iranian architectural discourse.
3. Photographic and Visual Analysis. A series of photographs were taken during field visits to capture spatial qualities, material textures, and symbolic details. These visual records were later categorized and interpreted as complementary data for semiotic analysis.

Analytical Framework

The data were analyzed using layered semiotic analysis, consisting of three main interpretive levels:

- Denotative Level (explicit): Focused on observable elements such as geometry, materials, color, and spatial organization.
- Connotative Level (implicit): Examined cultural meanings derived from design logic, functional strategies, and spatial experience.
- Symbolic Level (metaphorical): Interpreted metaphysical, archetypal, and religious meanings embedded in architectural signs.

Additionally, the study applied open coding and axial coding techniques, informed by Grounded Theory methodology, to categorize and conceptualize findings into five architectural layers:

- Structural Layer (materials, spatial configuration)
- Environmental Layer (light, climate, orientation)
- Access Layer (circulation, hierarchy, movement)
- Physical and Functional Layer (form-function relationships)
- Landscape Layer (contextual integration, visual narrative)

Validity and Reliability

To ensure the validity of findings, triangulation was employed by comparing field data with documentary sources and prior architectural studies. Researcher bias was minimized through iterative cross-referencing and peer consultation during the coding process. The use of a structured semiotic framework allowed for reproducible and traceable interpretation paths across the layers of analysis.

Findings

The analysis of Al-Ghadir Mosque reveals that its architecture operates through a complex system of signs distributed across five interrelated layers. These include the structural, environmental, access, physical-functional, and landscape layers. Each layer contributes to the building's overall meaning by embodying cultural, spiritual, and symbolic codes.

1.Structural Layer

The structural elements of the mosque—such as thick external walls, a twelve-sided prism, and extensive use of brick and turquoise tile—highlight vernacular construction techniques. These features symbolically connect the building to pre-Islamic Iranian architecture, especially the Sassanid tradition. Light enters the mosque through strategically placed windows and under-dome openings, creating dynamic visual effects.

Symbolic interpretation: The geometry of the dome chamber and use of local materials reflect cultural continuity, while the stacked vertical design recalls ancient ziggurats as symbolic pathways to the heavens.

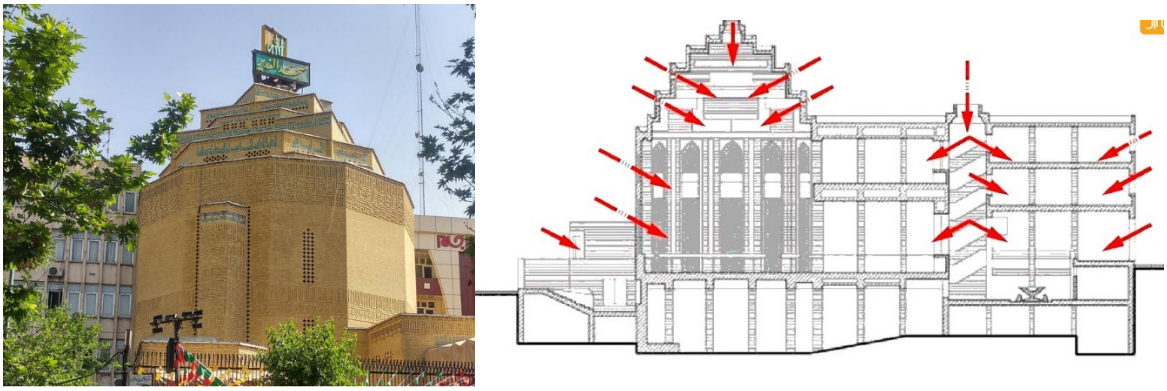

Figure 1. Exterior view of Al-Ghadir Mosque in Tehran, showing its dodecagonal geometry and l tile facade.

2.Environmental Layer

The building is intentionally detached from its immediate urban surroundings, emphasizing its spiritual autonomy. The emphasis on axial symmetry and light-shade contrast fosters a meditative interior atmosphere.

Symbolic interpretation: The use of light as a sacred element evokes transcendence, while environmental insulation underscores the concept of retreat from worldly distractions.

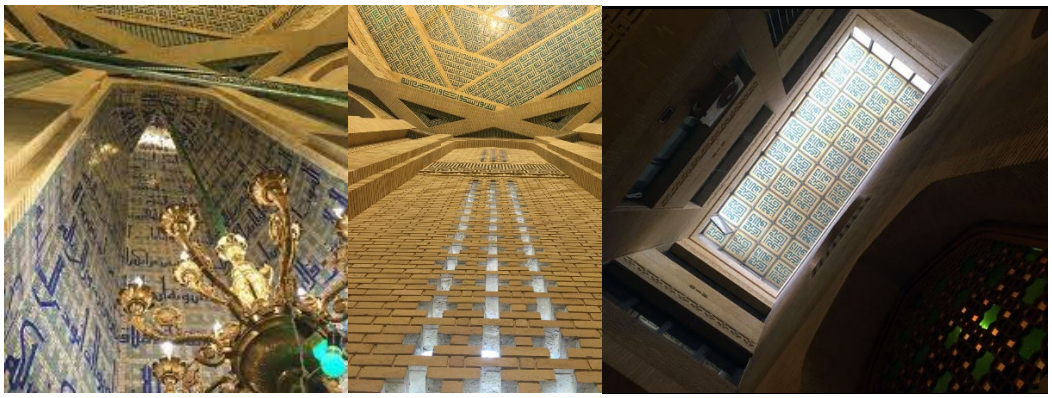

Figure 2. Interior view highlighting the play of light and shadow created by side windows.

3.Access Layer

Mirhosseini et al. (2019) emphasize the importance of spatial hierarchy in mosque design as a guide from public to sacred realms. The stepped circulation and axial symmetry in Al-Ghadir Mosque align closely with this principle. The circulation system of the mosque is organized along a central axis, guiding users from the outer courtyard into the dome chamber. Radial pathways and level changes mark a gradual transition from profane to sacred space.

Symbolic interpretation: Stairs at the entrance act as ritual thresholds, recalling symbolic separations in Indian and Persian mosque traditions.

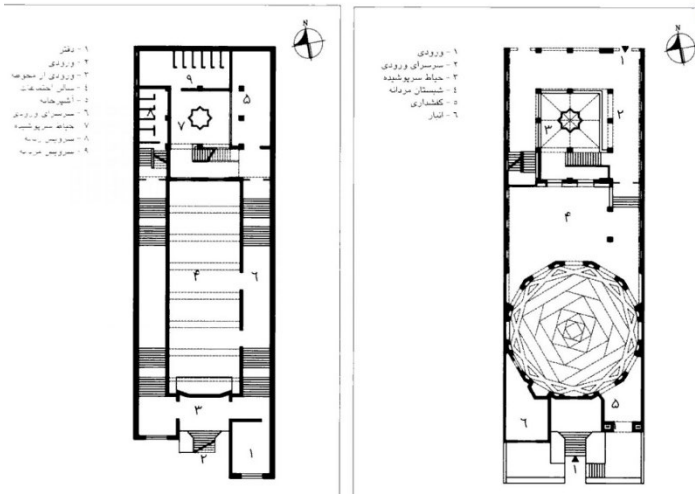

Figure 3. Architectural plan of Al-Ghadir Mosque, illustrating the axial circulation from courtyard to dome chamber

4.Physical and Functional Layer

The mosque integrates multiple geometric forms—including rectangular volumes and a dodecagonal prism—to define spatial hierarchy. The presence of a pool at the entrance and semi-circular arches enhances visual coherence.

Symbolic interpretation: These elements represent purification, harmony, and balance. The transformation of square bases into circular domes reflects unity arising from multiplicity—a core concept in Islamic cosmology.

Figure 4. Exterior and interior views of the dome, symbolizing transcendence and the connection between earth and heaven

5.Landscape Layer

As Behnoud (2022) suggests, Jungian archetypes can evoke collective cultural and spiritual responses in sacred architecture. The symbolic configuration of elements in Al-Ghadir Mosque—such as the use of water at the entrance or the vertical ziggurat form—may unconsciously activate these shared archetypal meanings. Though limited in physical scale, the mosque's landscape layer incorporates traditional Iranian elements such as water, plants, and skyline orientation. These features support contextual integration despite the building's symbolic detachment.

Symbolic interpretation: The pool and garden elements reference paradise imagery in Islamic thought, reinforcing the mosque as a symbolic microcosm of spiritual order.

Figure 5. Landscape elements around the mosque, including limited greenery and water, referencing Persian garden traditions.

Summary of Coded Meanings

The coding of the mosque's architectural features reveals a multi-level system of interpretation:

- Explicit meanings correspond to visible architectural forms (e.g., materials, geometry, light).
- Implicit meanings emerge through spatial experience and cultural familiarity.
- Symbolic meanings derive from metaphors, archetypes, and religious symbolism embedded in form and function.

Overall, Al-Ghadir Mosque exemplifies a postmodern-historicist approach to Islamic architecture. Its design not only revives classical forms but also reinterprets them through modern techniques and symbolic layering. The integration of layered codes enables users to engage with the building both physically and spiritually, reinforcing its identity as a sacred, meaningful space.

Table 1. Conceptualization of research data and extraction of representational elements of Al-Ghadir Mosque

Architectural Layer	Row	Representational Elements of Signs in Each Layer (Conceptualization with Open Coding
Structural Layer of Al-Ghadir Mosque	1	Main facade materials are brick and tile work
	2	Use of thick external walls
	3	Light enters from under the dome
	4	Use of brick and turquoise tiles for facade
	5	Use of stairs at the building entrance
Environmental Layer of Al-Ghadir Mosque	1	Detached from the surrounding environment
	2	Dense texture
	3	Emphasis on the main axis with a ziggurat-shaped design
Access Layer of Al-Ghadir Mosque	1	No boundary between the site and external space
	2	Emphasis on the main axis
	3	Direct paths and radial design in the prayer hall plan
	4	Presence of open space on one level
Physical and Functional Layer of Al-Ghadir Mosque	1	Symmetry in the whole
	2	Presence of the main axis in the building
	3	Combination of two rectangular volumes with variable height and a dodecagonal prism with a regular polygonal plan
	4	Provision of light with arched windows
	5	Presence of semi-circular arches in windows
	6	Use of a pool at the entrance
	7	Level difference at the entrance
Landscape Layer of Al-Ghadir Mosque	1	Attention to the skyline
	2	Use of plant and natural elements on a small scale in design and their combination with the environment
	3	Use of a pool at the entrance
	4	Use of Iranian architectural elements in the texture

Table 2. Coding of the first level (explicit meanings), second level (implicit meanings), and third level (symbolic meanings).

Architectural Layers	Row	Type of Codes Selected for Interpretation	Open Coding of the First Level (Explicit Meaning)	Coding of the Second Level Subject of the Sign (Implicit Meaning)	Coding of the Third Level, Subject of the Sign (Symbolic Meanings)
Structural Layer of Al-Ghadir Mosque	1-5	Form	Use of local and accessible materials	Representation of pre-Islamic Iranian architecture (Sassanid period architecture)	Vernacular
Environmental Layer of Al-Ghadir Mosque	1-3	Function	Maximum use of light	Creating a mystical state with the contrast of light and shadow	Islamic Iranian architecture
	1-3	Function	Use of stairs at the entrance	Separating the pure and sacred space from the external space	Islamic architecture
	1-3	Function	Maximum use of sunlight	Light and color change at different times	Islamic architecture
	1-3	Function	Creating private space	Attention to traditional and local design after Islam	Islamic Iranian architecture
Access Layer of Al-Ghadir Mosque	1-5	Function	Ease of movement	Ease of movement and access	Spatial readability
	1-5	Function	Spatial hierarchy of the mosque between the courtyard and the dome chamber	Greater readability	Dome-chamber mosques
Physical and Functional Layer of Al-Ghadir Mosque	1-5	Form	Purity of the volumes used, ease of movement and access from the courtyard to the dome chamber	Better movement and view along the axis, greater readability	Transparency in Iranian architecture

	1-5	Function	Provision of light for spaces from the dome	How light enters the prayer hall	Suspension of the dome and creation of a sacred space
	1-5	Function	Level difference at the entrance	Separating the pure space from the external space	Indian mosques
	1-5	Function	Use of Iranian architectural proportions and transformation of the square base into		

Table 3. Architectural Codes

Technical Codes (Primary Elements of Architecture)	Syntactic Codes (Architectural Elements in Associative Relationships)	Semantic Codes (Architectural Elements in Relation to Explicit and Implicit Meanings)
The purity of the volumes used, the combination of two rectangular cuboids of varying heights, and a tall twelve-sided prism with a regular polygonal plan form the overall design of the building. The use of brick materials and tile decorations in the facade, the integration of past architectural elements with a contemporary interpretation, and the triangulation of the dome ceiling to transition from a twenty-four-sided shape to a twelve-sided, then an eight-sided, and finally a four-sided structure are notable features. The application of Iranian architectural proportions and the transition from a square base to a circular dome, a method common in the Sassanian era, symbolize the unity derived from multiplicity.	At the entrance of the mosque, steps have been used, similar to Indian mosques, symbolizing the separation of the sacred and pure space of God's house from the outside world. The mosque's spatial hierarchy follows a courtyard-dome chamber pattern. Al-Ghadir Mosque belongs to the category of domed mosques.	The tiered dome, reminiscent of ziggurats, acts as a staircase toward the sky and symbolizes the heavens. The dissolution of boundaries between the earth and the cosmos and the spatial integrity of the universe within the prayer hall, achieved through variations in spatial quality due to light entry and color changes at different times, create a dynamic spatial experience in the mosque's interior. The explicit function of the dome is to cover the roof of the prayer hall, while its implicit function is to signify the presence of a mosque. In Al-Ghadir Mosque, the tiered dome, similar to ziggurats, serves as a stairway to the sky and symbolizes the heavens. The way light enters from beneath the dome

	creates a sacred atmosphere in the dome chamber.
	The hanging chandeliers suspended with long chains symbolize enlightenment and spiritual purification.
	The presence of water at the mosque entrance, as a heavenly and pure element, serves to cleanse individuals of sin.

Table 4. Explicit Meanings or Primary Functions.

Architectural Elements	Primary Function
The use of steps at the entrance, similar to Indian mosques, symbolizes the separation of the sacred space from the outside.	The spatial hierarchy between the courtyard, the mosque, and the dome chamber is evident.
The Al-Ghadir Mosque is an example of a domed mosque.	stepped dome, like ziggurats, serves as a ladder towards the sky and symbolizes the heavens.
The changing light and colors at different times create a variable spatial quality in the prayer hall.	The explicit function of the dome is to cover the roof, while its implicit function is to signify the presence of a mosque.
The hanging chandeliers symbolize the enlightenment of the mind and the purification of the soul.	The presence of water at the entrance purifies humans from sin.

Results

The semiotic analysis of Al-Ghadir Mosque indicates that architectural meaning emerges from the dynamic interaction of physical forms, spatial hierarchies, cultural codes, and symbolic references. The layered structure of interpretation reveals how meaning is not fixed but distributed across multiple interconnected levels.

The results, organized according to the five interpretive layers, are as follows:

1.Structural Layer

The explicit use of brick and turquoise tile reflects a conscious return to Iranian architectural heritage. The twelve-sided prism geometry and under-dome light openings provide both structural logic and spiritual resonance.

Result: The structural layer reinforces identity and continuity with Iranian architectural roots while accommodating modern construction techniques.

2.Environmental Layer

The manipulation of light and spatial orientation creates a contemplative interior. Detachment from the surrounding urban fabric adds to the mosque's introspective quality.

Result: Light acts as a symbolic agent of divine presence, making the environment integral to the religious experience.

3.Access Layer

Radial circulation, axial emphasis, and level changes organize movement as a spatial narrative. The physical act of entering the mosque mirrors a spiritual transition.

Result: Access design supports symbolic progression from the profane to the sacred, enhancing the mosque's ritual function.

4.Physical and Functional Layer

The mosque's combination of geometric forms and proportional harmony serves both functional clarity and symbolic coherence. Elements like pools, arches, and dome geometry contribute to visual order.

Result: The form-function relationship is enriched through symbolic layering, which adds meaning without compromising spatial clarity.

5.Landscape Layer

The limited use of plantings and water features evokes classical Persian garden traditions and Quranic imagery of paradise.

Result: Even in a compact site, the landscape elements symbolize purification and divine order, contributing to the building's metaphysical meaning.

General Finding

Across all layers, the mosque's design reflects a postmodern-historicist strategy that blends traditional Islamic symbolism with modern formalism. The findings affirm that architectural meaning in sacred spaces is not singular but accumulative, formed through the interaction of physical structure, spatial experience, and symbolic associations.

The study demonstrates the effectiveness of layered semiotics as a framework for understanding contemporary mosque design. It offers insights for architects seeking to integrate cultural continuity and symbolic depth into modern religious architecture.

Discussion

The findings of this research demonstrate that the architectural meaning of Al-Ghadir Mosque emerges through the interaction of structural, environmental, functional, and symbolic layers. This layered interpretation is consistent with previous studies that emphasize the symbolic hierarchy of mosque architecture. For example, Mirhosseini et al. (2019) highlighted the spatial transition from courtyard to dome chamber as a recurring principle in Iranian mosques, which is clearly observable in the circulation system of Al-Ghadir Mosque (see Figure 3). Similarly, Norberg-Schulz (1980) and Soltanzadeh & Mirshahzadeh (2024) emphasized the symbolic role of light in sacred spaces; this research confirmed their insights by showing how the manipulation of daylight in Al-Ghadir Mosque fosters a contemplative atmosphere (see Figure 2).

Furthermore, Behnoud (2022) discussed the archetypal dimension of dome geometry in Islamic architecture. The results of this study reinforce his view by illustrating how the multi-layered dome of Al-Ghadir Mosque functions both structurally and symbolically (see Figure 4). In addition, the presence of water and limited landscaping elements echoes classical Persian garden traditions, aligning with White's (2017) interpretation of landscape as a semiotic sign of paradise (see Figure 5).

By integrating these findings with existing literature, the study shows that layered semiotics not only provides a systematic framework for interpreting sacred architecture but also bridges the gap between theoretical concepts and empirical case studies. This approach offers a stronger link between literature and data analysis, addressing one of the key limitations identified by reviewers.

Conclusion

This study examined the Al-Ghadir Mosque in Tehran through a layered semiotic framework, uncovering how architectural meaning is constructed across five interpretive dimensions: structural, environmental, access, physical-functional, and landscape layers. The analysis showed that each layer contributes both explicit (visible) and implicit (symbolic and cultural) meanings, working together to generate a coherent architectural narrative rooted in Iranian-Islamic identity.

The mosque's design strategy integrates traditional forms, such as ziggurat-inspired domes, axial hierarchies, and vernacular materials, with modern construction logic. By employing elements such as light, geometric clarity, water, and symbolic ornamentation, the architect has created a space that invites spiritual reflection while preserving cultural continuity.

A key finding of this research is that meaning in sacred architecture emerges not from isolated elements, but from the dynamic interplay among layers of spatial, symbolic, and experiential codes. The layered semiotics approach provides a structured method to decode these relationships and may serve as a valuable design tool for contemporary architects working within religious or culturally sensitive contexts.

Practical Implications

- Architects can use the five-layer framework (structure, environment, access, function, landscape) as a checklist for integrating symbolic meaning into design.
- The model emphasizes the continuity of cultural codes within modern forms, suggesting that innovation and tradition need not be in conflict.
- Future mosque designs can benefit from understanding the symbolic roles of light, water, and geometry not merely as aesthetic choices, but as cultural signifiers rooted in Islamic thought.

Conceptual Model

The following conceptual model summarizes the process of meaning-making in the Al-Ghadir Mosque based on layered semiotic analysis:

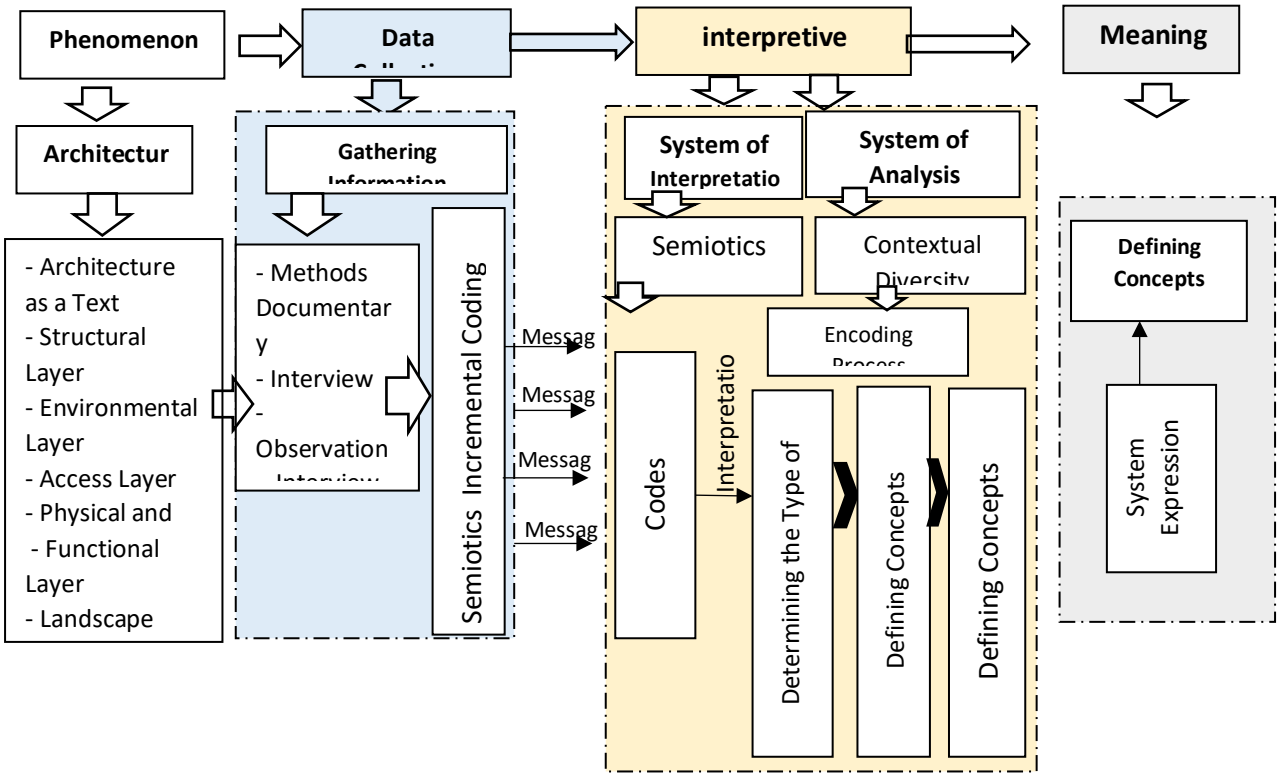

Diagram 2. Conceptual research model of Al-Ghadir Mosque (Authors).

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

Data Availability Statement

Data available on request from the authors.

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Ethical considerations

The authors avoided data fabrication, falsification, plagiarism, and misconduct.

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Conflict of interest

The authors declare no conflict of interest.

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Typology of Suburban Caravanserais in Center of Iran Based on the Spatial Combination of the Main Architectural Elements

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ABSTRACT

Objective: The aim of this research is the physical typology and typology of architectural elements of caravanserais in the studied area.

Methods: The research method of this study is developmental and applied, and the method of obtaining information is inductive and with an interpretive, historical and comparative approach. The method of collecting information is also based on library studies and field observations. In this study, the main architectural elements such as the entrance, vestibule, porch, verandah in front of the room, courtyard, room, portico, stable and tower have been evaluated and typified from the perspective of their spatial composition, and then the similarities and differences of the caravanserai have been explained. The main elements of the caravanserai have been examined according to the historical periodization of the caravanserai. The sampling method is purposive (non-probability).

Results: The practical result of the research will be that a comparative study of architectural elements and their typology will determine which of these elements are common in caravanserais and are related to the spatial or functional structure of the building, and which of the physical elements of the building have changes compared to the other. Identifying common elements and understanding different elements can provide solutions for future restorers to provide more appropriate restoration solutions in caravanserais that have lost parts or damaged parts.

Conclusion: It should be stated that physical and metaphysical components such as: climatic, cultural, social, economic, religious, technical, and structural factors have caused various types to form in the overall shape and architectural elements of caravanserais.

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Introduction

Caravanserais are divided into two main types: inner-city and outer-city. Since the scope of this study is outer-city caravanserai, only the architectural features of inner-city caravanserai will be described in the definition of caravanserai architecture. Caravanserai, like other Historical buildings, have elements and components. These elements take shape and identity together and together. Caravanserais have an entrance system that can be one or two stories. This entrance can be raised and recessed or be at the same level as the exterior facade. After the entrance, there is a vestibule space that is square or polygonal in shape. The role of the vestibule is to determine the access to the spaces. After the vestibule, there is usually a long corridor that also ends in a porch. After the porch, there is a central courtyard that can be square, rectangular, or polygonal. The central courtyard provides access to the verandas, chambers, verandahs, and stables. The chambers are located around the central courtyard and usually have a verandah in front of them. Behind the chambers and in the ring surrounding the last caravanserai, there is a stable, which is an elongated, corridor-like space. Inside the stables there is usually a dock and a seating platform. At the entrance to the stables, there are rooms for the shepherds. From the outside, the caravanserais are like an impenetrable castle, with a strong tower and rampart on their exterior. Some caravanserai uses wind catcher technology for ventilation to make the ambient temperature more balanced. Caravanserais usually have a pond or reservoir inside them or a Qanat and a spring outside the caravanserais to provide the required water (Pirnia and Afsar, 1971; Kiani and Klais, 1994; Siroux, 1978). In this study, the physical typology is based on the combination of the main architectural elements. The main elements of the caravanserais have been examined according to the historical periodization of the caravanserais.

The spatial composition of the elements is the presence or absence of the elements and the spatial placement of these elements in the general plan of the caravanserais. In addition to the main elements, the caravanserais also have secondary elements, but these elements are not present in all of these caravanserais. Factors such as physical and metaphysical components such as climate, cultural and social, political, religious, technical and structural factors cause the formation of the main and secondary elements together. Considering the facilities of the intermediate buildings, the caravanserais are of three types: simple, intermediate and combined. Simple caravanserais include only the caravanserai, intermediate caravanserais are a combination of the caravanserai with an independent water tank outside the caravanserai, and combined or complex caravanserais are a combination of the caravanserai with components such as a garden, bath, mosque, bridge, water mill, water tank, and other components. The formation of architectural patterns of caravanserais is influenced by numerous physical and metaphysical factors. Social, climatic, cultural, religious, structural, and economic aspects are among these factors. Each of these aspects has in some way led to the formation of architectural patterns. The

process of architectural evolution of caravanserais has been gradual. According to the needs of the caravanserai, their architecture has also evolved. For example, early caravanserais lacked a stable or a watering place, but with the passage of time and the needs of the caravanserai, their architectural elements have found diverse patterns in terms of shape, geometry, proportions, structure, and placement. Research shows that all the architectural elements of caravanserais have changed during the emergence of caravanserais, and the physical and metaphysical aspects mentioned above have had a significant impact on the formation of these patterns. The architecture of caravanserais is very diverse, so that a fixed and specific design cannot be explained for all of them. The diversity of caravanserais architectural patterns has resulted from the experience, ability, and high creativity of architects, the physical needs of caravanserais, and the economic capabilities of the builders of caravanserais, including governments, benefactors, wealthy individuals, and related organizations. By examining the architectural plans of caravanserais, one can see both diversity and evolution in them. With the passage of time and the evolution of Iranian architecture, the architecture of caravanserais underwent transformation and changes according to their needs and those of travelers. During the early Islamic period until the fourth century, there was not much change in the architecture of caravanserais, and their pattern followed that of pre-Islamic caravanserais. The architectural evolution of caravanserais began during the Seljuk period and reached its peak in the Safavid period. The design of the transformed caravanserais often included an entrance that was often prominent and had one or two floors, a vestibule that was quadrangular or octagonal, and a long corridor that ended in a porch and entered the central courtyard from the porch. The central courtyard, which was designed as a square, round, polygonal shape, was located at the focal point of the building and was surrounded by rooms. Behind these rooms, camel houses were located, and usually the way to access the camel inns was from the courtyard. The exterior of the caravanserais also had guard towers, a high rampart, and verandahs on the exterior of the caravanserais. After the Safavid era, the architecture of the caravanserais did not change much, and the designs were generally the same and differed in minor details. This research, for the first time, intends to review and explain the typology of the main architectural elements of the caravanserais, which include; the entrance, the verandah, the central courtyard, the porch, the rooms, the verandah in front of the room, the stable, and the tower. In the present research, the physical typology is based on the spatial composition of the main architectural elements. In the present study, the spatial composition of the main architectural elements such as: entrance, porch, room, verandah in front of the room, stable, courtyard, portico verandah of the exterior facade, and tower has been studied and evaluated.

Research Questions

1. How do physical and metaphysical components affect the formation of architectural designs and types?

2. How can the commonalities and differences of caravanserais help in the conservation and restoration of caravanserais?

Literature Review

A number of relevant sources of study are mentioned below. Considering the review of the research background and the present study, some innovations have been achieved in the area of study that completed previous studies. These achievements have been achieved at four levels of architecture, typology, pathology, and restoration and conservation. In his master's thesis, an author has conducted a comparative study of 4 Seljuk caravanserais in Qom, examined their architecture, and expressed their similarities and differences (Hossein Jamal, 2014). In an article, researchers have studied the architecture of 12 Seljuk caravanserais on the Khorasan Highway and compared their architectural patterns (Sultan Ahmadi and Seyyed Hamzeh, 2016). In a study, the authors have studied the entrance space of Safavid caravanserais in Khorasan, such as the front hall, entrance, vestibule, and hallway, and compared them with each other, and compared the entrance elements in the study samples (Nistani and Tatari, 2014). In a study, the layout of the caravanserais in the Isfahan region has been introduced in the spaces of the caravanserais, such as the entrance, porch, room, courtyard, the general form of the study, and the layout used in them (Vali Beig and Vahdat Pour, 2018). In a study, the caravanserais of the Isfahan region have been analyzed and evaluated from the perspective of access hierarchy, spatial circulation, full and empty space, and the geometry and proportions between spaces (Vahdatpour et al., 2019). In a research paper, the authors have examined the evolution and emergence of the architecture of courtyard caravanserais in the central regions of Iran and have studied the historical evolution of the architectural pattern of caravanserais (Kavian and Gholami, 2016). In a book, the author has defined the concept of caravanserais and its related buildings and their functions, and has also examined and introduced other similar intermediate buildings such as the Robat, Sabat, and other buildings (Pirnia and Afsar, 1971). In a detailed book, the authors have presented architectural plans of caravanserais and descriptions of their architecture, and have explained their historical period and presented the typology of caravanserais (Kiani and Klais, 1994). A research paper has defined a caravanserai and its associated buildings, introduced some caravanserai, and studied the architecture and evolution of caravanserai (Ehsani, 2002). A book has examined some Safavid caravanserai in central Iran, described their architectural features, and presented architectural plans of caravanserai (Haji Ghasemi, 2004). A researcher in his doctoral thesis has studied the typology of hot and dry caravanserai and has reached a general classification, which is the presence or absence of guard towers in the corners of the caravanserai. In the typology of caravanserai spaces, he has examined architectural features such as general shape and geometry, spatial arrangement, and access (Ayvazian, 1996). In a research paper, the typology of caravanserai has been based on the number of main and secondary courtyards and their location (Balali Oskoui et al., 2023). In an article, the authors have attempted to recover the lost spaces of

caravanserais based on a comparative study and typology (Khosravi Javid and Vali Beig, 2024). In a detailed book, the author has introduced the historical Routes of Iran from the Sassanid period to the Qajar period and studied Iranian caravanserais from the Sassanid period to the Qajar period (Siroux, 1949). In a book, the generalities of caravanserais, including history and etymology, the study of the causes of the formation of caravanserais, and the comparison of Iranian caravanserais with other caravanserais in the Middle East have been studied (Helen Brand, 2010). In research, the physical typology of caravanserais based on the spatial composition of their architectural plan (combination of room with stable) has been presented (Khosravi Javid et al., 2025). In a typological study, the Seljuk caravanserais of the Qom region were studied based on shape and form, and the samples were analyzed using a comparative method (Lotfalikhani and Danaii nia, 2017). In an article, the architecture and typology of Seljuk caravanserais in Anatolia, Turkey, were studied and the main and sub-types were presented (Darendeli & Binan, 2021). In a study, the architecture and typology of Iranian caravanserais were studied based on geographical location and geometric form (Andaroodi and Andres, 2018). In a morphological study, the Safavid caravanserais were studied based on the study of form or shape or structure, and the main types were identified and sub-types were also introduced (Shamaipour and Esmaeli Sangari, 2014). Researchers have studied the architecture and typology of the caravanserais of the Silk Road in an article. The authors of the article first set out to define the Silk Road and its tangible heritage, including caravanserais. The researchers believe that these structures not only represent historical heritage, but also have the potential to understand the impact of trade and culture. The purpose of the study states that this study aims to identify, typify, and characterize the architecture of commercial complexes located on historical routes by studying the major caravanserais of the Silk Road in depth. In order to obtain the findings and types of caravanserais architecture, the components of geometric form and shape, architectural design, the historiography of caravanserais, decorations, and the number of courtyards were studied and evaluated (Volichenko, et al., 2024). Study of Anatolian Seljuk caravanserais in Turkey - examining their architecture and studying symbols of power such as decorative symbols such as: lion and sun, dragon head and lion head symbol, lion, bird of prey (Onget, 2007).

Materials and Methods

This study is quantitative and qualitative. The data analysis approach is interpretive, historical and comparative. The data collection method is based on library studies, architectural maps and field observations. The sampling method is purposive and non-probability. In the present study, 65 caravanserais were evaluated and a total of 1 pattern was identified and explained in the Sassanid period, 4 patterns in the Seljuk period, 2 patterns in the Ilkhanid period, 5 patterns in the Safavid period and 4 patterns in the Qajar period (Table 1). The studied caravanserais cover the regions of Isfahan, Yazd, Qom, Tehran and Saveh. The sample caravanserais include a variety of

geographical, spatial and historical locations and typologies. The data was initially raw, but was re-read and categorized with interpretive, historical and comparative analyses of the architectural elements of the caravanserais, and then the patterns were explained by comparing the categories and architectural indices of the samples one by one. This study seeks to identify the physical typology of the studied caravanserais. The typology of caravanserais is based on the combination of their main architectural elements. The main elements of caravanserais are elements that are constant and exist in all caravanserais. These elements include the entrance part (portal, vestibule and hallway), porch, room, verandah in front of the room, portico, camel hut, central courtyard, guard towers and verandas on the exterior. The combination and arrangement of these elements together have led to the formation of various types in caravanserais. The software used in this research is the two-dimensional AutoCAD program. Laser meters and professional high-resolution cameras were also used in the field survey. The limitations of the present research are the lack of maps and documented information on some elements and components such as the entrance device, vestibule, stable and room of ruined and damaged caravanserais and the incorrect restorations in the remaining and lost parts of the caravanserais. The method of overcoming limitations includes field observations, documentary photography, extracting information and library documents, and comparing similar caravanserais in the same cultural area.

Result

Main architectural elements of caravanserais

The main architectural elements of caravanserais (Table 2) constitute their physical nature. Architectural elements have different patterns. These elements are designed linearly in suburban caravanserais and have created a regular access hierarchy. The arrangement of these elements together forms the spatial organization of caravanserais. Each of these elements has its own specific use and, in addition to their substantive characteristics, they have different dimensions and sizes. These spaces, in addition to each having their own spatial independence, are connected and integrated with other elements. The architectural elements of caravanserais cover a wide range, but this research emphasizes the physical elements of caravanserais architecture, which include; entrance, vestibule, porch, central courtyard, room, stable, tower. In the process of recognizing and typifying architectural elements, interpretive, historical, and comparative approaches have been used to recognize, categorize, and analyze the architectural characteristics of caravansary elements and components for one-to-one comparison of samples and explanation of patterns. The method of achieving patterns and types is to use an inductive approach, that is, to analyze information from part to whole. From part to whole, that is, all the architectural details of the caravansary are interpreted and analyzed, and finally general patterns have been obtained based on a comparative study. For example, in the study of entrance types (portals), 65 samples

were examined side by side and one by one, and their inputs were interpreted, read, and compared. As a result, general patterns resulting from the study of details with a comparative approach have been obtained (Table 1).

Patterns obtained based on the spatial combination of the main architectural elements and based on the separation of historical periods

In the present study, the spatial combination of the main architectural elements includes: the combination of the tower with the entrance part, the porch, the verandah in front of the room, the room, the courtyard, the portico, the camel house, and the verandah is the exterior view. In all the caravanserais in this area, these architectural elements are present according to the historical period of the caravanserais. The spatial combination of the architectural elements has been carried out according to the historical period of the caravanserais. Five historical periods, Sassanid, Seljuk, Ilkhanid, Safavid, and Qajar, have been identified in the caravanserais in this area. By spatially combining the main architectural elements in each historical period, patterns have been obtained, which are discussed in the following sections.

Sassanid Caravanserai

A Sassanid caravanserai was identified in this area. The DeirGachin caravanserai is assigned to the Sassanid period and, according to previous researchers, was transformed during the Safavid period. The Deir Gachin caravanserai is one of the most complete Iranian caravanserais. This caravanserai has elements such as the entrance, the tower, the corridor, four porches, rooms, verandahs in front of the rooms, the camel house, the central courtyard, the exclusive royal residence, the bathhouse, the water reservoir, and the mosque. According to the title of this research, the main elements in the Deirgachin caravanserai are the tower, the entrance, the courtyard, the interior verandah, the room, the camel house and the porch (Figure 1 and Table 1).

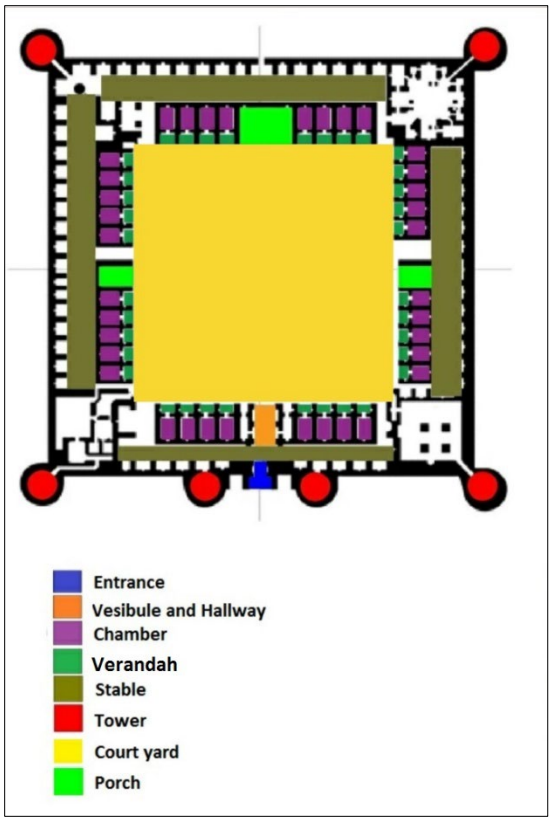

Figure 1. Location of the main elements in the map of one sample (Deir Gachin) Caravanserai (Authors, 2025).

Seljuk Caravanserai

In this area, 12 Seljuk caravanserais have been selected. In most Seljuk caravanserai, the elements of the tower, the entrance, the corridor or vestibule, the room, the courtyard, the verandah, the camel house and sometimes the porch and the inner verandah are seen. Elements such as: the entrance part, the room, the porch, the courtyard, the camel house are seen in all the caravanserais in this area, but the elements of the portico and the verandah are visible in some caravanserais. In the caravanserais of this area, there is no verandah on the exterior. The main shape of the caravanserai of this area is square and trapezoid (Figure 2 and Table 1).

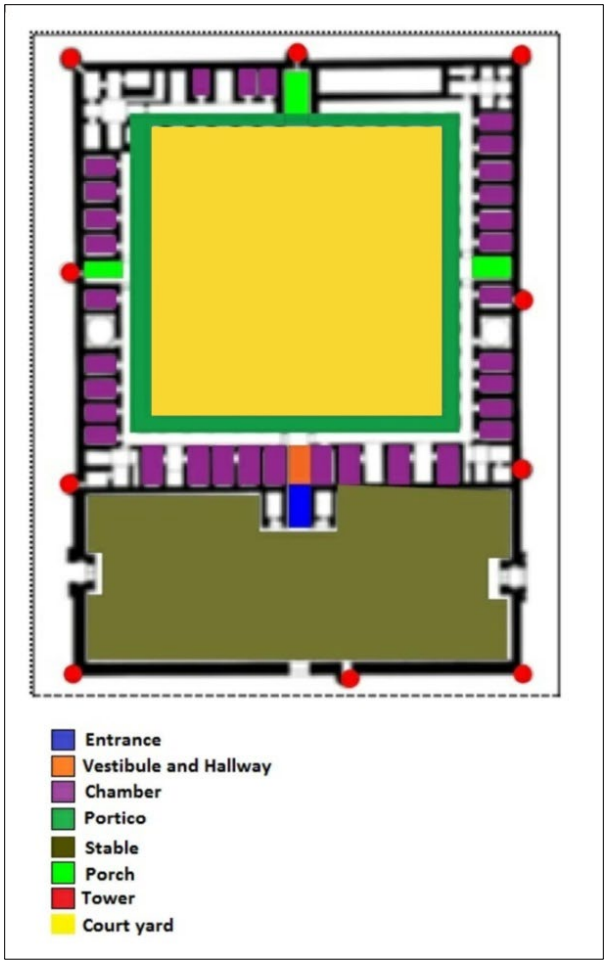

Figure 2. Location of the main elements in the map of one sample (Deir Kaj) Caravanserai (Authors, 2025).

Ilkhanid Caravanserai

In this area four Ilkhanid caravanserais have been selected in this area, two architectural patterns were explained based on the combination of architectural elements. In these caravanserais, there are elements of tower, entrance part, corridor, porch, room, verandah, camel house and courtyard. In the caravanserai of this area, there is no verandah on the exterior. The main shape of these caravanserais is octagonal and square. There is no portico in the caravanserais of this area (Figure 3 and Table 1).

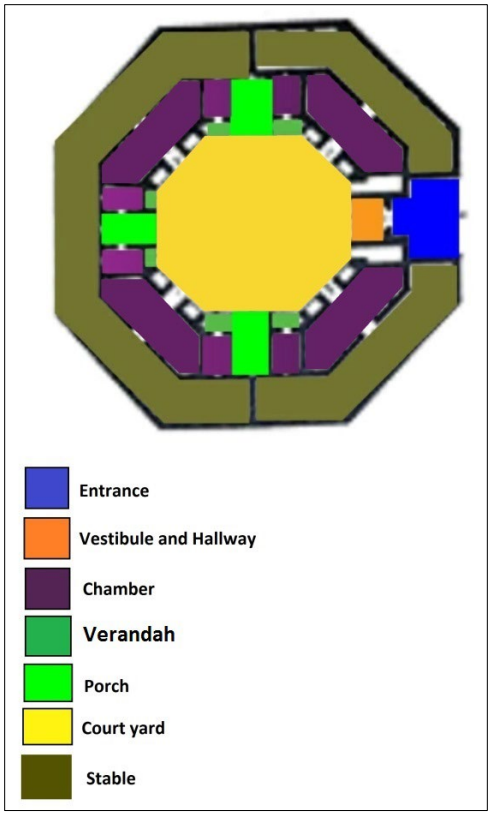

Figure 3. Location of the main elements in the map of one sample (Chahar Abad) Caravanserai (Source: Authors, 2025)

Safavid Caravanserai

In the caravanserai of this area 35 Safavid caravanserais have been selected in this area, architectural elements such as towers, entrance part (portal, corridor, vestibule), porches, rooms, verandahs in front of the rooms, courtyards and camel houses can be seen. In the caravanserais of this area, there are no porticos inside courtyard and also verandahs in front of the room in some of the caravanserais of this area. In the caravanserais of this period, towers can be seen in some of the caravanserais. The main shape of these caravanserais is circular and square. Five patterns were identified in the caravanserais of this area (Figure 4 and Table 1).

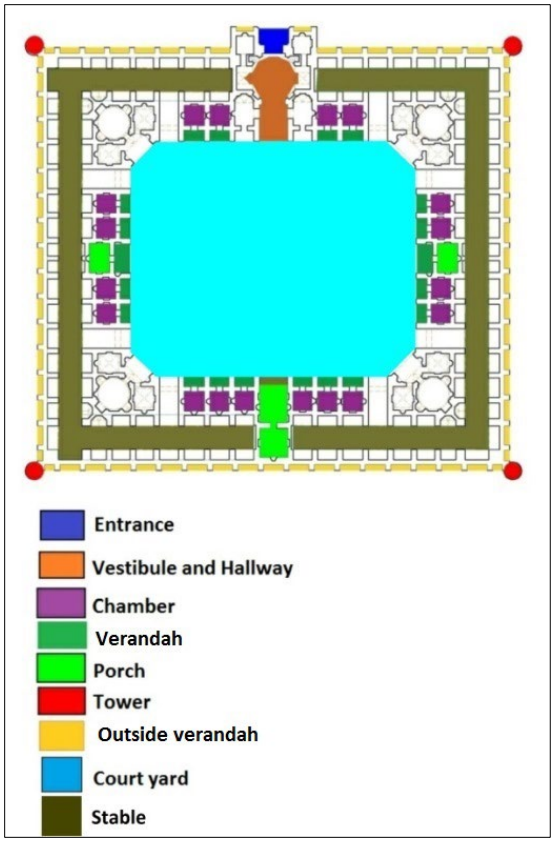

Figure 4. Location of the main elements in the map of one sample (Gaz) Caravanserai (Source: Authors, 2025)

Qajar Caravanserai

In this regions, 13 Qajar caravanserais have been selected in this area, the main architectural elements are: the tower, the entrance, the corridor and vestibule, the verandahs, the rooms, the courtyard and the camel house. There is no portico in the caravanserais of this area. In some caravanserais of this area, there is no verandah on the exterior. In some caravanserais there is also no tower. Some caravanserais of this period also do not have verandah in the outside of caravanserai. In the caravanserais of this period, 4 patterns were identified (Figure 5 and Table 1).

In the Sassanid caravanserais, one pattern was identified, in the Seljuk caravanserais, 4 patterns were identified, in the Ilkhanid caravanserais, 2 patterns were identified, in the Safavid caravanserais, 5 patterns were identified, and in the Qajar caravanserais, 4 patterns were identified. In total, 16 patterns were seen in 60 caravanserais in this area. The Timurid caravanserai was not identified in this area.

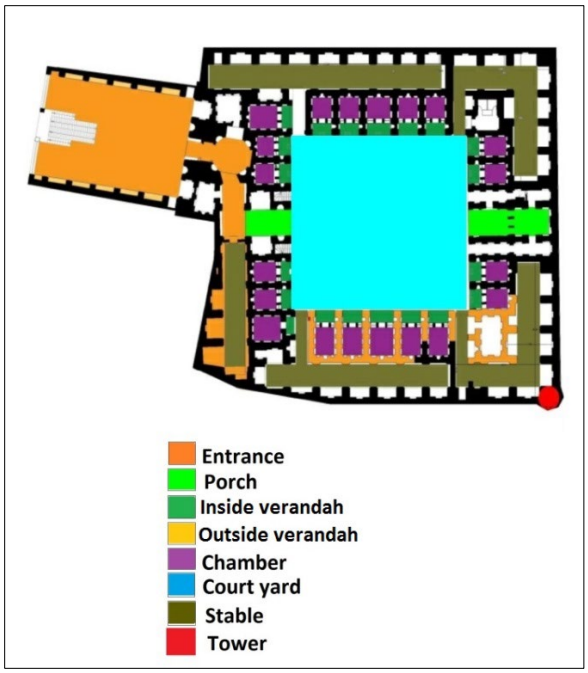

Figure 5. Location of the main elements in the map of one sample (Haj Kamal) Caravanserai (Source: Authors, 2025).

Analysis of Result

(Table 1), An interpretative and comparative approach was used to analyze the findings. The results show that the pattern of architectural elements of caravanserais is a function of climatic conditions, common architectural styles, cultural and social aspects, spatial geography, historical periods, physical and functional aspects, and the creativity and innovation of architects, and these architectural elements have undergone a gradual evolution to optimize the spaces. The findings show that, considering the evolution of caravanserais in the historical period and the evolving trend of caravanserais, the main architectural elements of caravanserais as their main structure have also undergone a gradual evolution. For example, in caravanserais of the early Islamic and Seljuk centuries, the rooms usually did not have verandah in front of them and had portico instead of verandah. The geometric shape of the rooms was also often rectangular. In Seljuk caravanserais, there were often towers, these towers had structural and defensive properties. In Seljuk caravanserais, the entrance part usually included portal and hallway, and the vestibule element is less visible in the maps of this period. In Ilkhanid caravanserais, the portico element is gradually eliminated and the verandah is placed in front of the room. The caravanserais of this period had entrance and hallway. In Ilkhanid caravanserais, the camel house element finds a specific location. In Safavid caravanserais, architectural elements become more complete. In this period, the caravanserais have a more complete entrance and included portal, vestibule, and

hallway. The rooms also often have verandah in front of them. The tower element is also seen in most caravanserais of this period, and the verandah is also seen in the exterior of the caravanserais. In this period, the camel house and access to it have also changed. In Qajar caravanserais, the caravanserais usually have tower, entrance part including (portal, vestibule and hallway), room, verandah in front of room, camel house and also verandah in the exterior. In the caravanserais of this period, the evolution of the Safavid caravanserais continues and no major changes occur in the architectural structure of the caravanserais of this period.

The findings of the research are: in the Sassanid caravanserais, one pattern was identified - in the Seljuk caravanserais, four patterns - in the Ilkhanid Caravanserais, two patterns - in the Safavid caravanserais, five patterns - in the Qajar caravanserais, four patterns were identified. In the present study, one pattern was identified in the Sassanid period and 1 Caravanserais from that pattern. In the Seljuk period, 5 caravanserais were identified in the first pattern, 1 caravanserai in the second pattern, 3 caravanserais in the third pattern, and 3 caravanserais in the fourth pattern. In the Ilkhanid period, 1 caravanserai was identified from the first pattern and 3 caravanserais were identified in the second pattern. In the Safavid period, 5 Caravanserais were identified in the first pattern, 17 caravanserais were identified in the second pattern, 3 caravanserais were identified in the third pattern, 8 caravanserais were identified in the fourth pattern, and 2 caravanserais were identified in the fifth pattern. In the Qajar caravanserais, 3 caravanserais were identified in the first pattern, 4 caravanserais were identified in the second pattern, 3 caravanserais were identified in the third pattern, and 3 caravanserais were identified in the fourth pattern. Sassanid caravanserai has only one pattern. In the Seljuk period, the first pattern has the highest dispersion of the number of caravanserais. This pattern has the following spatial composition: entrance - porch - room - portico - camel house - courtyard - tower. In the Ilkhanid period, the highest dispersion is related to the second pattern. This pattern is the spatial composition: entrance-porch-room- verandah in front of the room-courtyard-camel house-tower. In the Safavid period, the highest dispersion of the number of caravanserais was in the second pattern. This pattern has the following spatial composition: entrance - porch - room - verandah in front of the room - courtyard - camel house - tower - outer verandah. In the Qajar period, the most widespread pattern is the second pattern. This pattern is the spatial composition: entrance-room-interior verandah -exterior verandah -courtyard-stable.

Table 1. Patterns of caravanserais in each historical period (Source: Authors, 2025).

Period	Patterns	Number of caravansaries	Name of caravanseraies
Sassanid	Deirgachin caravanserai has the tower, porch, entrance, courtyard, porch, room, camel house, porch and verandah	1	Deirgachin caravanserai
Seljuk	First pattern: Spatial composition of the entrance organization with corridor and porch and portico and room and camel house and tower	5	Kaj, Haji Abad, Dehchi Morche Khorat, Koh Namak and Ali abad Caravanserais
	Second pattern: Spatial composition of the entrance organization with corridor and porch and portico and room and camel house	1	Chah Siah Kohneh Caravanserai
	Third pattern: Spatial composition of the entrance organization with corridor and porch and room and camel house and tower	4	Sangi Parand, Robat Turk, Robat Sultan and Robat Sangi Natanz Caravanserais
	Fourth pattern: Spatial composition of the entrance organization with corridor and porch and portico and room	1	Tarlab Caravanserai
Ilkhanid	First pattern: Spatial composition of the entrance with interior verandah and room and porch and camel house	1	Chahar Abad Caravanserai
	Second pattern: Spatial composition of the entrance with porch and interior verandah and camel house and tower- room	3	Dombi, Stone Castle and Chahar Borg Caravanserais
Safavid	First Pattern: Spatial composition of the entrance with porch and room and interior verandah and camel house and tower	5	Agha Kamal Payin, Bahjat Abad, Maranjab, Vandadeh and Amin Abad Caravanserais
	Second Pattern: Spatial composition of the entrance with exterior verandah and room and porch and camel house and interior verandah and tower	17	Gaz, Agha Kama, Chah Qadeh, Deh Rabat, Zavareh, Soh,Ghahrud, Gebrabad, Madar Shah, Morche Khort, Natanz, Sadrabad, Masjid Abad, Bagh Sheikh, Dodehak, Kuhpayeh and Belaabad Caravanserais
	Third Pattern: Spatial composition of the entrance with room and interior verandah and porch and camel house	3	Aveh, Zizeh and Kenargerd Caravanserais.

	Fourth Pattern: Spatial composition of the entrance with room and porch and camel house and exterior verandah and interior verandah	8	Khoshkroud, Sardahan, Sheikh Ali Khan, Moteh, Pole Delak, Kenargerd, San San, Sheikh Ali Khan and Mahyar Caravanserais
	Fifth Pattern: Spatial composition of the entrance with porch and camel house and tower and exterior verandah and interior verandah	2	Vardeh and Pasangan Caravanserais
Qajar	First pattern: Spatial composition of the entrance with room and porch and interior verandah and Camel house	3	Deh Nar, Reza Abad and Alborz Caravanserais
	Second pattern: Spatial composition of the entrance with tower and exterior verandah and room and porch and camel house and interior verandah	4	HajKamal , Ali Abad, Qale Shoor and Atabaki Caravanserais
	Third pattern: Spatial composition of the simple entrance and room and porch and camel house and tower	3	Bagher Abad, Asgar Abad and Delak Caravanserais
	Fourth pattern: Spatial composition of the entrance with exterior verandah and porch and room and camel house and interior verandah	3	Khatun Abad, Hoze Sultan and Neistanak Caravanserais

Discussion

The spatial combination of the main elements of caravansary architecture forms their overall shape. Physical and metaphysical factors such as climatic, cultural, social, political, religious, technical, and structural factors are influential in the formation of different types of caravansary architecture. The existence of cultural and social routes such as the Silk Road, Atbat, and pilgrimage routes has an impact on the formation of similar types. In addition to the main physical elements, some caravansary have other elements such as a special royal residence, a bathhouse, a mosque, a bazaar, a water tank, and a water pond. Geographically, they have been on the main and secondary highways, and the high traffic on the route has been one of the main factors in the formation of simple, intermediate, and complex or combined caravansary. For example, the caravansary in the Isfahan region offered more facilities due to Isfahan being the capital during the Seljuk and Safavid periods. And in addition to the main elements, there were also secondary elements. Many royal caravanserais have been formed in this region. These caravanserais were designed for the elite, such as the Jolegir, Madar Shah Morchekhord, Sheikh Ali Khan, Neistanak, Mahyar, Robat Sultan, and Robat Turk caravanserais. All of the above factors have caused some caravanserais to have more and more complete facilities and some to be simpler. The architectural elements of Iranian caravanserais have similarities and differences. These differences and commonalities have led to the formation of a diverse architectural and

physical typology. Architectural elements have undergone changes and evolution following the needs of the caravanserais. This transformation in the architectural form of the caravanserais has been subject to conditions and components such as climate, culture, common practices, local construction methods, the skill of architects, and the existence of an efficient military. Despite the similarity of the architectural elements of caravanserais, they have differences, which has caused that there are no caravanserais that are completely similar to each other. In addition to the main spaces and elements of caravanserais, this research examined secondary components such as the prayer house, the exclusive royal residence, the pond, and the platform in the middle of the courtyard, which are not considered to be the main ones and may or may not exist in every caravanserai. The main architectural elements of caravanserais include; the entrance, the porch, the central courtyard, the rooms, the portico, the verandah in front of the room, the camel huts, and the guard towers, which are present in almost all caravanserais, depending on the historical period.

This research is based on the review of architectural elements. The results show that the evolution of these elements has been gradual and significant changes have been made in them in each historical period. Given the importance and necessity of protecting and reviewing the architectural features of caravanserais, it is necessary to identify their physical nature so that a step can be taken towards their preservation. The analysis and evaluations obtained showed that one or more caravanserais could have had a common architect and founder. By examining the architectural plans of the caravanserais, it can be said that there are caravanserais that were built in a historical period close to each other and on the same historical route, and their architectural features are very similar to each other. For example, the similarity of the architectural features of the octagonal caravanserais of Amin Abad, Khan Khoreh and Deh Bid on the one hand and the similarity of the caravanserais of Chah Qadeh and Gaz on the other hand, which were all built in a historical period close to each other and even on the same historical highway, is evidence of this claim. Recognizing these common features can be a guide in recovering the lost spaces of the caravanserais and restoring them. In the present study, physical features such as geometric proportions, the general form of the plan, and the spatial organization of the caravanserais were examined and evaluated. These physical features are visible in the combination of the main architectural elements of the caravanserais. In general, it can be said that the architecture of Iranian caravanserais is orderly and codified, follows specific principles and methods, and is subject to its previous and current common traditions and methods. Given the breadth of the statistical population studied in terms of architecture, climate, spatial geography, historical periods, their current status, and selected samples, these results and findings can be generalized to other caravanserais in the identified statistical population. By comparing the caravanserais, their differences and similarities are revealed.

Conclusion

In response to the first research question, it should be stated that physical and metaphysical components such as: climatic, cultural, social, economic, religious, technical, and structural factors have caused various types to form in the overall shape and architectural elements of caravanserais. For example, the climate of the region causes the formation of covered caravanserais or the presence of only a verandah in the caravanserais and the absence of rooms is due to the climate of the region. The caravanserais of Wardeh and Pasangan have no rooms and have a verandah. This type of design has emerged due to the hot climate of the region. The formation of the upper room above the entrance in some caravanserais is due to the economic, cultural and political importance of that historical route and the caravanserais. Caravanserais that had strategic locations and were in important geographical locations usually offered more facilities. The existence of spaces such as: mosque, bathhouse, coffee house and market next to the caravanserais is due to the influence of economic, political and cultural components on the design of the caravanserais. Among the influential cultural factors, we can mention the use of two courtyards, a public courtyard and a private courtyard, the separation of private and public space by designing a dedicated space for the royal residence. The use of indigenous materials and architectural elements such as: stone and brick and brickwork decorations, plastering and tiling caused.

In response to the second research question, it should be said that research findings show that caravanserais have common and different features. A comparative study of their architectural elements and typology will determine which of these elements are common in caravanserais and are related to the spatial or functional structure of the building, and which of the physical elements of the building have changes compared to the other. Recovering common elements and understanding different elements can provide solutions for future restorers to provide more appropriate restoration solutions for caravanserais that have lost parts or damaged parts. One of the uses of physical typology is to provide solutions for recovering lost parts and restoring caravanserais. By studying the patterns, the differences and similarities between caravanserais will be determined. As a result, caravanserais that are more similar to each other and share a common social, geographical, and historical path and physical and architectural features can recover lost parts and help them in future restorations, and will have the ability to be protected in the same way.

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

Data Availability Statement

Data available on request from the authors.

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Ethical considerations

The study was approved by the Ethics Committee of the Islamic Azad University, Shi.C. The authors avoided data fabrication, falsification, plagiarism, and misconduct.

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Conflict of interest

The authors declare no conflict of interest.

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Impact of Colour Sequencing on Print Quality in Process Colour Printing

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ABSTRACT

Colour printing is the process whereby illustrative materials are reproduced in colour on printed pages. This research has been conducted in order to compartmentalize and possibly aggregate the various sequences which printers use in producing their works; this is because a survey of most Nigerian print houses shows that these printers use different schemes in their production processes. The four colour process is used to produce a complete range of colours; the materials to be reproduced are separated into three basic colours plus black which is used for density and image contrast; these colours are Cyan, Magenta and Yellow, plus black which is regarded as the key colour. CMYK refers to the primary colours of pigment: Cyan, Magenta, Yellow and Black. These are the colours used in the printing press in "Four-colour process printing". The objective of this study is to find out which of these sequencing produces the best print, their pros and cons and the best possible ways to navigate these various schemes. In this paper, the writer takes a look into what printers and machine minders thinks is the proper sequence of printing these colours and the processes from pre-press to finishing. The method used in this research is mixed, with survey, descriptive and literature review and so at the end it was concluded that various printers have their respective ways of arranging colours to suit their expertise and that irrespective of the sequencing type used, the dexterity and astuteness of machine minders matters a lot.

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Introduction

This paper is academic in outlook but professional in content, therefore the writer dwelt on the practicality and techniques of process colour printing as it relates to paperwork and other media. Printing in the words of Peddie (1914) is an old professional practice that started in the ancient times especially in the Chinese dynasties whereas, printing, according to Dennis and Jenkins (1990) is a process for reproduction of texts and images and other illustrations using a master form or template from one medium to another. Printing is actually an art and science of transferring an impression from one medium onto another. Baldwin and Roberts (2006) avers that the business of printing is as old as the press and printing machine itself; the history of printing dates back to the introduction of the printing machine by Johannes Gutenberg in the year 1440 in Mainz, Germany and by the year 1450, the printing machine was perfected and ready for commercial use.

The earliest known form of printing as applied to paper as observed by Knobbler (1980) was the woodblock that was practiced in China around 220AD and this process was used for cloth printing; from this period, later innovations in printing technology as noted by Philip (2012) included the movable type invented by Bi Sheng at about 1040 AD, thereafter the printing press was invented by the German, Johannes Gutenberg at about 1450. This latest development in printing technology played a pivotal role in the development of the Renaissance and from here, printing spread to other parts of the world.

Every printer and clients of printers desires to see a cutting-edge finished printed material; this desire does not just come by happen stance; there are certain principles to be considered when planning a finished print job. This paper will start by looking at the various stages a particular print job undergoes before a final product is achieved. Depending on the machine minder or operator, different printers chose their preferred colour sequence. In the words of Burch and Gamble (1983), to some, the preferred print order for CMYK printing is as follows:

1.Yellow

2.Magenta

3.Cyan

4.Black

Burch and Gamble (1983) stressed that the above sequence is preferred if printing with a white under base; otherwise, there would be no need to flash and juggle between colours. Generally, the four-colour process uses Cyan, Magenta, Yellow and Black inks. When applied in successive layers, these four ink colours create a full process colour image. This four-colour process is the most widely used method for printing full colour images.

Irrespective of the method of printing, be it serigraphy, or digital printing, this sequence stands out in achieving the desired full colour print work. In this essay, the writer dwelt on the full colour process printing; process colour reproduction according to Kapplan (2000) can be created by producing an optical illusion for the observer and so by printing three or four colours over each other; supporting this assertion, Lester (1995) noted that the viewer sees what appears to be a continuous tone colour print and in actual fact whereas what is seen are three or four colours which have been printed over each other in order of preference.

Figure 1, clearly illustrates how a combination of certain colours can produce other colours. In practical terms, magenta, cyan and yellow are used to produce process colour prints while black is often used in combination with these three colours to add more details to the print.

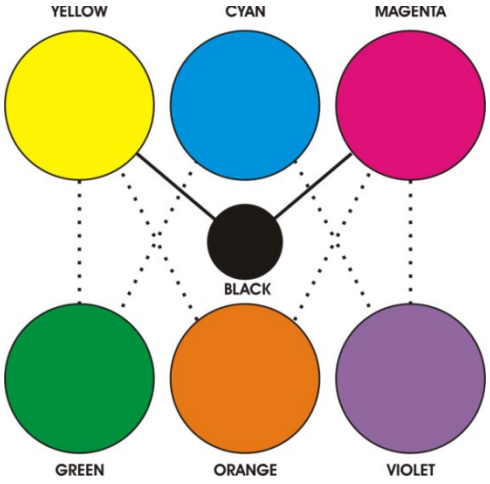

Figure 1. Possibility of producing other colours from three colours (Source: F. Osaigbovo, 2024)

Hyatt-Major (2012) is of the opinion that process colour printing is much more complicated than black-and-white halftone print; more often than not, he stressed that it requires equipment and materials usually not found in school studios or small graphic arts laboratories; therefore new printers are usually encouraged to attempt to make colour separations and should not become discouraged if the quality of the results does not meet the standards of commercial prints. Manufacturers offer several excellent publications which will permit one to study the colour separation procedure in much more detail.

Objects, according to Sturken and Cartwright (2001) most often appear to have colour because the human eye is sensitive to various wavelengths of light. It is believed to have the three primary light colours of Blue, Green and Red. When white light strikes an object, the object is capable of absorbing all of the light, reflect certain wavelengths and also absorb other wavelengths; if all the white is absorbed, the object appears black whereas when all of the wavelengths are reflected, the object appears to be white. In the same vein, those objects that absorb some of the light waves but

reflect others appear to have the colour of the combined wavelengths which are reflected. Giving credence to the assertion of Sturken and Cartwright (2001), Stephen and Balance (2001) submitted that when light passes through an object such as coloured glass windowpane, the same principle applies, meaning that certain rays of white light are permitted to pass through, but are not absorbed. The rays that do not pass through are absorbed by the material. A clear windowpane permits all of the white light to pass through while a yellow windowpane allows only yellow rays to pass through, absorbing all the rays of other colours. Blue, Green and Red are known as additive primary colours whereas when light from all the three are combined, they amount to white.

At this point, it is important to state that printing in whichever format is a subset of the wider subject of Graphics which has to do with communication of ideas to the society and is in line with the submission of Abu-Ridah (2020) that Graphic art eliminates exaggerated technical performances as he analyzes the important factors that influences artist's thinking in modern and contemporary art.

Statement of the Problem

The traditional CMYK (Cyan, Magenta, Yellow, and Black) colour sequence has been the standard in process printing for decades but its suitability for modern printing applications and substances still remain debatable. As printing technology continues to evolve and new materials, software and inks are developed, it is essential to re-assess the optimal colour sequencing strategy to achieve accurate colour reproduction, minimize ink usage and maximize print quality. This research aims to explore the impact of different colour sequencing approaches on process print outcomes and to identify potential opportunities for improvement.

Materials and Methods

This research identified the most commonly used colour sequencing methods in process colour printing; it analyzed the advantages and disadvantages of each sequencing method and results of experimental testing thereby highlighting the impact of different sequencing methods on print quality.

A mixed-method of investigation was employed in this research which included survey, interview with printers and machine minders to gather information on their sequencing practices and rationales, literature review of existing research on colour sequencing in process colour printing and direct observation and descriptive methods. Six print houses were randomly sampled; they included the University of Benin Printing Press (Benin City), Ma'azelli Print shop (Asaba), Mindex Press (Benin City), Feni 'O' Prints (Lagos), Clear Impressions Limited (Kano) and Planet Press, (Lagos) all in Nigeria. In these six print houses, their methods of printing and their machines were studied and this includes the Black-Cyan-Magenta-Yellow for Clear

Impressions Limited, and Planet Press, Cyan-yellow-Magenta-Black for Ma'azelli, Feni 'O' and Mindex Press, Yellow-Cyan-Magenta-Black for University of Benin Press.

The process of this research started from Kano, Northern Nigeria where Clear Impressions Limited is situated; this process includes direct observation and one-on-one interview with the machine minders. Adebayo (2021) of Clear Impressions Limited was studied; after a careful observation of his style and process, this writer asked what informed his sequence of colour print and his simple answer was that printing "Black" first gives a ready registration guide to follow in the case of printing the rest colours which are not as strong as "Black" and that in the event of inadvertent wrong registration; the mistakes might not prove as obvious and vivid. This was exactly the view of Mr. Johnson of Planet Press, Lagos.

In the case of Imafidon (2023) who manages the University of Benin Press, his idea of printing light colours first stems from the fact that "Black" which is the strongest colour, when printed last covers all wrong registration which may have occurred in previous colours. In the case of these two print houses Clear Impressions and Planet press employs digital colour separation system to obtain their transparencies used in lithographic plate making.

Colour Separation

In process colour print, colour separation is of paramount importance; colour separations are made from colour prints or transparencies of various colours which often come out black on the films. Light is reflected from colour prints as shown in Figure 2.

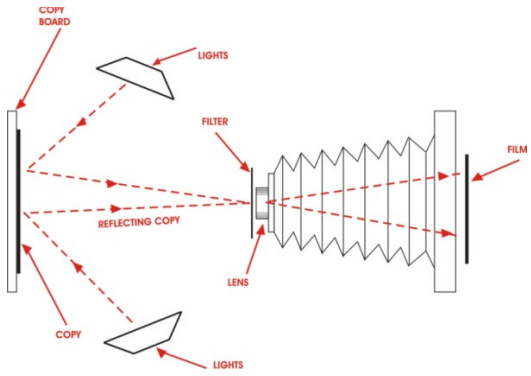

Figure 2. Light Directed at the Copy and reflected towards the film (Diagram: F. Osaigbovo).

Light is transmitted through the transparencies; however, the light source used to make colour separations must be almost the same as true white light. The process used in making colour separations is called the subtractive method whereby the separation negatives are produced by the use of filters which are the same as the additive primary colours of Red, Blue and Green. Here, the illustration of filters works just the same way as the window glasses described earlier. When the red filter is placed in front of the camera, it gives room to the red rays to pass through the lens

while preventing the blue and green rays from entering the camera. The separation negatives which are produced by the colour separation process are known as printers; there is a cyan, magenta and yellow printer for a three-colour process printing whereas four-colour process printing uses cyan, magenta, yellow and black printers.

The cyan printer (colour separation negative) is made by placing a red filter between the copy and the film; this will produce a negative that absorbs all of the red light from the copy meaning that where the copy has red colour, the corresponding part of the copy will be black on the negative whereas the part of the copy that has green and blue will remain clear on the negative thereby when the negative is printed, it should be printed in cyan. If a green filter is used, the magenta printer is produced; the green filter permits only green rays of light to get to the film therefore areas of the copy which has green in them passes through the filter while the red and blue rays are absorbed by the filter, so when this negative is developed, the black areas will correspond to the green areas of the copy and if a printing plate is made from this negative, everything will print except the green areas of the copy. This process has subtracted the green from the copy therefore the plate would print all areas which correspond to the red and blue areas of the copy. Finally, the yellow printer is made by using blue filter. The negative records the entire yellow colour on the copy whereas the red and blue colours do not enter the film so when the film for the yellow printer is developed, the areas of the copy that has green and red will not affect the film and these areas will appear clear.

Theoretically, these three printers described should be able to reproduce the same image as the copy but due to the fact that the inks used to print the separation may not be accurate, the gray and black areas may appear brownish, that is why most printers use a fourth printer which is the black to produce image which most precisely approximates the copy. Goldstein (1980) avers that there are several methods that can be used to make the black printer; one such method used by most professionals is the three filter method. The method requires that a piece of film which is the same type used in making the other three printers receive three separate exposures; one each, through each of the filters; These exposures may vary from 30 to 100 per cent of time used to produce the printer but must correspond to the proportion of colour on the copy, for instance, if a copy has red as the dominant colour, the exposures through the green and blue filters will be longer than the exposure through the red filter because the printer produced by using the red filter will not print any red colour. Since the black printer is intended to add details and contrast, the major portion of the original is red; the black should have a predominant impact on the printers that produce the red in the print.

Process colour printing starts with an original piece of copy which is the composite as shown on the bottom part of Figure 3. The copy can be transparency, painting, photograph or even drawing. Colour prints are reflection copy which means that light strikes the copy and bounces

back to the film whereas transparencies are transmission copies meaning that light passes through the copy. The light from the copy passes through the filters before reaching the film. This process of filtering produces the three or four different negatives is known as printers; the negatives are screened to produce halftone negatives which are required to produce the original.

The illustration above seems more like the manual or analog type of colour separation unlike the next stage of discussion which is the digital or automated colour separation system.

Figure 3. Progressive separation of colours Photograph (Source: F. Osaigbovo, 2024).

Result

One may ask what the outcome of the findings in this research was; like the writer opined earlier, that it is best to stick to the formula that works well or that best suits one's purpose. A critical look at the prints from these six print houses shows little or no noticeable differences as regards output in terms of sharpness, registration and accuracy apart from the fact that the machines used in the printing of these jobs also contribute to the quality or otherwise of the final output. With the foregoing, the writer concluded that whatever sequences that best suits ones purpose should be adhered to and perfected for better finality.

Discussion

A lot of printers and machine minders have come up with different colour sequencing types whereas most of these persons say they print according to the nature of the task which they undertake in the sense that if lighter colours are printed first, the machine may not need to be cleaned before a stronger colour is laid over it. The normal sequence of printing is as arranged in C-M-Y-K; that is cyan plate is to be printed first, followed by magenta, yellow and then black.

This discussion will finally zero down in two print houses namely Clear Impressions Limited and Planet press; reason is that these two print houses are the most modern and sophisticated of

the six advanced for this investigation. Johnson (2023) reiterated that in most cases, his machine minders starts from the lightest colour which is yellow and progress toward a stronger colour which is black; in which case, cyan and magenta comes before black, meaning that their formula is Y-C-M-K. Although the normal sequence which is also scientifically verified is the C-M-Y-K, the writer finds out that the machine minders at Clear Impressions Limited prints the black plate first. Asked why they print black which is supposed to be the last first, Omoluabi (2021) answered that it was easier for him to print black first so as to use the impression register the rest colours; after printing black, they follow it with magenta, cyan and lastly yellow making their sequence K-M-C-Y; whereas Johnson submitted that printing black last will enable it cover some errors that would have arisen from wrong registration.

There are some other sequence methods like K-Y-M-C which is the reverse of the C-M-Y-K; this sequence is commonly used in screen printing and flexographic printing whereas, in some specialized spot colour printing, sequence like R-Y-B (Red-Yellow-Blue) and also, sequence like R-G-B-C-M-Y-K (Red-Green-Blue-Cyan-Magenta-Yellow-Black) which is a combination of all schemes are used in some high-end digital printers. Also, the hexachrome combination Cyan-Magenta-Yellow-Black-Orange-Violet is used for expanded colour gamut.

These sequences may vary depending on the specific printing process, ink properties and desired colour output and so in most cases, printers chose the sequence that best suits their needs considering factors like colour accuracy, print quality and cost. Like was mentioned, different printers choose their preferred sequence for various reasons including the following:

a) C-M-Y-K: This is the most commonly used sequence and widely used in offset and digital printing and it's compatible with most printing machines. Cyan and Magenta inks provides good light-fastness.

b) C-M-Y-B: In this case, reversing black with blue may improve ink density and colour consistency and so some digital printers use this sequence to optimize their specific ink sets.

c) C-M-Y-K-O-G: Adding orange and green to the four proves colours would expand the colour gamut and improve colour accuracy, this sequence is used in most high-end digital printing like packaging and commercial printing.

d) K-Y-M-C: Starting with black creates a solid base before adding other colours; this is mostly used in screen printing and flexography where ink order affects dot gain.

e) R-Y-B: This sequence is used in spit colour printing where specific colours are required; Red, Yellow and Blue inks are often used for bright and vibrant colours.

f) RGBCMYK: Additive RGB and subtractive CMYK are combined for expanded colour gamut.

In all these, printers considers factors like ink properties (light-fastness and density), print process limitations (dot gain, ink spread), desired colour output (colour accuracy and vibrancy), equipment and technology capabilities, cost and ink usage considerations when choosing colour sequence because they aim to achieve the best possible print quality, colour accuracy and consistency for specific needs; and also, it is important to note that each sequence also has its own limitations and potential drawbacks depending on the specific printing application and requirements therefore, printers must carefully consider these factors when choosing a colour sequence to ensure the best possible print quality and colour accuracy for their specific needs. Over and above all these postulations, these sequences can also be applicable to other media like polyester fibers and fabrics as substitutes for natural fiber and cotton especially in sublimation printing. Nazari, Davodi Roknabadi and Darvishi (2019) postulates that sublimation printing is a method of converting images to printable images by which the device receives designs from computer files and printed in a transparent manner.

Much as there are advantages inherent in these various sequences, it is also important to note that there are also some disadvantages for instance Daly (2002) posited that some of the disadvantages could include but not limited to the following:

a) C-M-Y-K: Although it is the recommended sequence, this scheme has limited colour gamut and potential for colour inconsistency in the sense that if there are spot colours in the file to be printed, CMYK combination cannot give the appropriate colour.

b) C-M-Y-B: This combination might not be compatible with all colour printing equipment and result in limited colour accuracy.

c) C-M-Y-K-O-G: This scheme requires additional inks which in turn increase cost and may not be suitable for all printing applications.

d) K-Y-M-C: This scheme might lead to increase dot gain and might result in limited colour consistency.

e) Y-M-C-K: This scheme may lead to limited colour accuracy and may not be compatible with all equipment.

These disadvantages underscore the trade-offs most printers face when choosing a colour sequencing scheme; each scheme has its strengths and weaknesses and so printers must consider their specific needs and equipment when selecting a scheme.

Conclusion

Colour sequencing in process colour printing plays a crucial role in achieving high-quality prints with accurate colour reproduction. By understanding the principles of colour separation, screening and registration, printers can optimize their colour sequencing to minimize errors and

ensure consistent results. This writer feels that if each colour plates are properly registered and printed, no matter what sequence is employed, the final product will just as well be perfect, but digitally, the sequence remains CMYK. This is evident in some printing machines like the Direct Imaging machine, the large format printing machine and DeskJet and inkjet printers.

Author Contributions

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Mediating Knowledge: Power in the Digital Era[1]

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ABSTRACT

Contemporary institutions of power increasingly operate through subtle, technology-mediated mechanisms. Drawing on Michel Foucault's conception of the reciprocal relationship between knowledge and power, this study examines the role of digital objects as epistemic instruments within such power structures. Following Don Ihde's framework, technologies are understood as non-neutral mediators that shape and sustain "structures of meaning."

This study addresses two central questions: To what extent do tools and technologies shape human understanding of existence? And how do digital objects, as material mediators, function within mechanisms of power to produce, regulate, and perpetuate meaning?

Employing a phenomenological methodology, this research explores lived experiences, focusing on how digital platforms, smartphones, augmented reality, artificial intelligence, and search engines embed users within pervasive networks of influence. Findings indicate that digital technologies simultaneously generate knowledge, structure meaning, and subtly guide voluntary compliance with algorithmic norms. This underscores the continuous interplay between knowledge production and surveillance in the digital era.

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Introduction

Institutions of power have existed alongside human societies since their inception, functioning primarily through mechanisms of surveillance and control. Modernity, however, introduced a decisive transformation: power ceased to be exercised solely through visibility and increasingly operated through invisibility. Michel Foucault situates the vitality of power in its constitutive relation with knowledge. This knowledge/power nexus produces forms of domination that are diffuse, decentralized, and embedded within everyday practices. As disciplinary regimes give way to bio political and techno scientific modes of governance, power becomes progressively entwined with technological mediations of knowledge.

In the philosophy of technology, Don Ihde conceptualizes artifacts and technologies as epistemic instruments—tools that actively shape human understanding of the world. While articulated in different terms, Ihde's claim resonates with Foucault's assertion regarding the productivity of knowledge/power. This conceptual convergence forms the foundation for the present inquiry. One of the most significant consequences of contemporary techno science is the ubiquity of digital objects in daily life. Their epistemic function extends beyond narrowly "digital" concerns: they mediate perception, shape ontological horizons, and structure patterns of cognition and behavior. Digital artifacts are therefore not neutral; they actively participate in the constitution of subjectivity.

This paper analyzes institutions of power through a Foucauldian lens while integrating Ihde's account of the epistemic role of technology. By adopting a phenomenological approach to digital artifacts situated within the knowledge/power nexus, this study offers a reciprocal understanding of institutional power and technological mediation in the digital age. The central question explored is how digital technologies, as epistemic instruments, function in the service of power.

Literature Review

The epistemic configurations of the digital age have been examined from a variety of perspectives. Mackenzie and Bhatt (2021) investigate what they term the "epistemology of deception" in the post-digital condition. Their study explores how digital platforms and algorithmic infrastructures intervene in human perceptual and cognitive systems to manipulate beliefs. They argue that post-digital deception extends beyond individual misperception, manifesting within broader formations of algorithmic governance, including the emergence of states and the mobilization of social movements.

Turner (2022) approaches digital epistemology through the lens of augmented reality. He identifies three epistemic pathologies of the digital environment—digital distraction, digital deception, and digital divergence—before conducting a phenomenological analysis of how augmented reality both intensifies and reconfigures these conditions. In his account, augmented

reality exemplifies techno scientific mediation, reshaping the constitution of knowledge and experience.

Schwarzenegger (2020) examines digital epistemology from the perspective of media practices. Drawing on forty-nine qualitative interviews, he analyzes how users engage with media, seek information, and position themselves vis-à-vis algorithms, robots, alternative media, and filtering mechanisms. His study introduces three conceptual frames—selective critique, pragmatic trust, and competence trust—through which digital subjects negotiate epistemic authority within technologically mediated environments.

Risse (2021), in *The Fourth Generation of Human Rights: Epistemic Rights in the Digital World*, addresses the normative dimensions of digital epistemology. He contrasts China's extensive data collection and algorithmic scoring practices with the relative inertia of Western democracies, arguing that epistemic rights have not kept pace with the techno political realities of algorithmic governance. Risse further contends that the Universal Declaration of Human Rights, drafted in an analog era, requires reinterpretation to retain normative relevance in a digitally saturated world.

Despite these important contributions, digital epistemology remains an emergent field with many unexplored dimensions. This study advances the debate by focusing on digital objects as epistemic instruments. Far from neutral or passive, such artifacts actively participate in shaping digital subjectivity and may simultaneously consolidate institutional power within contemporary techno scientific regimes.

Theoretical Framework

The conceptual foundation of this study rests on Michel Foucault's theorization of power, particularly his analysis of institutions and the reciprocal dynamics of the knowledge–power nexus. In the Foucauldian framework, power is not centralized but dispersed, fluid, and constitutively linked with epistemic practices.

To address the epistemic role of digital objects, this study also draws on Don Ihde's philosophy of technology, which emphasizes the epistemic productivity of technological mediation. For Ihde, technologies are not neutral instruments; they function as active mediators that shape the horizons of human perception, interpretation, and understanding. This theoretical alignment positions digital artifacts as epistemic instruments that simultaneously contribute to the constitution of knowledge and reinforce configurations of power.

Research Methodology

This study employs a phenomenological approach. Phenomenology begins from the premise that objects do not exist as independent entities in an external world but manifest meaningfully only through human consciousness. Its primary aim is to describe lived experience as it unfolds

within the lifeworld of social actors. From this perspective, experiences are not merely subjective impressions; they constitute the very structures through which phenomena acquire meaning.

Phenomenology thus analyzes phenomena as they are embodied, interpreted, and mediated in human existence. Applied to digital objects, this methodology allows for a detailed investigation of how such artifacts, as epistemic mediators, shape the constitution of meaning, subjectivity, and social reality in the digital age.

Power

Michel Foucault conceives of power as a fluid and ubiquitous force embedded within social life, one that regulates, classifies, and shapes individuals. Power, he argues, operates inextricably through knowledge, forming what is commonly referred to as the knowledge–power nexus. In modern societies, power is not concentrated in sovereign centers but diffused across institutions that scrutinize, normalize, and discipline human identities. In this sense, power is capillary and local, continuously imposing itself in everyday life, and it is neither fully destructible nor escapable (Callinicos, 2006).

For Foucault, modern mechanisms of power are more entrenched, less perceptible, and more insidious than those of premodern regimes. Under disciplinary systems, individuals internalize surveillance and coercion, often accepting domination under the seemingly attractive banners of "truth" or "freedom." Citizens learn to treat surveillance, categorization, and normalization as ordinary, reshaping their behavior and subjectivity according to disciplinary objectives (Hindess, 2001).

The modern penal system exemplifies this transformation. It consists of countless sites where power circulates through what Foucault terms the *microphysics of power*—the subtle intersections of subjects, scientific–social discourses, and political arrangements that mutually reinforce one another. The "individual," he argues, is itself an effect of disciplinary technologies of power (ibid., 134-135). As Foucault strikingly observes: *"Our society is not one of spectacle, but of surveillance. Under the surface of images, bodies are trapped in continuous networks of observation"* (Foucault, 2017: 27).

In this framework, knowledge is both productive of and produced by power. There can be no relations of power without corresponding fields of knowledge, and no knowledge exists outside the context of power relations (Fouladvand, 1997). The expansion of knowledge has enabled institutions to achieve surveillance without visibility, facilitating the collection and classification of physiological, behavioral, and identity-based data to regulate, normalize, and govern populations (Wells, 2013). Consequently, citizens are subtly manipulated: values, norms, and beliefs are inscribed into their dispositions in ways that appear self-generated.

Foucault emphasizes that disciplinary power enforces visibility selectively: it renders itself largely invisible while imposing compulsory visibility on its subjects. The "disciplined

individual" emerges through continuous observation, becoming compliant precisely because they are perpetually seen (Foucault, 2017: 230). In the digital age, this condition has intensified through algorithmic surveillance and pervasive data collection. While digital technologies appear to grant unprecedented freedoms, a Foucauldian perspective reveals a paradox: these same technologies simultaneously enclose individuals within what may be termed a digital carceral society (Zeimaran, 2017: 156).

Foucault's panopticon metaphor captures this logic of invisible surveillance: an abstract, omnipresent gaze that observes without itself being seen. Contemporary digital panopticism amplifies this principle: algorithmic infrastructures illuminate, record, and categorize virtually all forms of activity, leaving nothing outside their scope (Foucault, 2017: 218). Whereas visibility in premodern eras belonged to sovereign rulers, modernity redistributed it to ordinary individuals, while rendering the governing bodies increasingly invisible (Zeimaran, 2017: 151).

This study contends that the encirclement of bodies by disciplinary and algorithmic power—through surveillance, normalization, and behavioral regulation—constitutes a form of expanded prison. The proliferation of digital artifacts and the ubiquity of the internet appear, at first glance, to grant new freedoms: the ability to produce and disseminate information, images, and opinions at will. Yet this ostensible liberation conceals a reverse process: digital technologies also function as epistemic instruments of control. Through a phenomenological analysis of tools and technologies, the present study argues that digital artifacts shape human understanding, regulate thought, and configure subjectivity. Institutions of power in the digital age operate with such pervasiveness that they have become effectively invisible.

Technology as a Mediator of Human Knowledge and Perception

Technologies exert profound effects on human perception and knowledge, shaping not only our understanding of the world but also our behaviors. While not all human knowledge derives from tools and technologies, they are far from neutral; rather, they actively structure human engagement with reality and, in this sense, function as epistemic agents. Don Ihde conceptualizes technologies as mediators of human experience, arguing that they are transformative rather than passive objects of use: *"There is no neutral technology; or, positively stated, all technologies are non-neutral"* (Ihde, 1993b: 34).

Although technologies have not always possessed the complexity observed in contemporary society, they have consistently played a constitutive role in knowledge formation. As Foucault notes, *"The initial human condition neither informs us of the time of his birth nor of his earliest experiences. It connects humans to matters whose temporal existence does not coincide with theirs… revealing that objects began long before humans, and thus no one can attribute an origin to humans whose experience is fully shaped and limited by these objects"* (Foucault, *Words and Things*, p. 422).

Technologies are also context-sensitive: they can be employed in multiple ways, develop along divergent trajectories, and manifest differently across cultures. Ihde observes that *"technological culture is not a single entity. It is neither uniform nor has it progressed globally to the point that its critics fear or its proponents hope for"* (Ihde, 1990: 150–151).

In *Bodies of Technology* (Ihde, 2002), Ihde explores the epistemological implications of technological artifacts. He conceives technological innovations as objects that historically integrate human and mechanical agency, generating knowledge in the process. According to Ihde, *"the devices [I use], machines, or particular technologies themselves provide paradigmatic metaphors for knowledge"* (Ihde, 2002: 69). He terms these human–technology interactions as epistemic engines, raising fundamental questions: How is perception constituted? How do we acquire understanding of our environment? How is this perception disseminated?

This perspective highlights the reciprocal interplay between humans and technology, which generates knowledge and shapes ontology in mutually constitutive ways. In this context, technologies function analogously to lenses, shaping human perception and understanding of reality.

Digital technologies, beyond providing tools and artifacts, introduce a distinct epistemic orientation. Galloway (2014) emphasizes that digitality is primarily a mode of thought rather than a mere assemblage of machines, networks, or databases. He argues that digitality *"evokes a relationship—a genuine marvel—between sets of things that, in principle, should have nothing to say to each other"* (Galloway, 2014: 63). Contemporary digital networks of media and communication systems have reconfigured how data are perceived, transmitted, and accumulated, thereby transforming epistemic practices and knowledge infrastructures.

Alan Liu (2014) further argues that digital capabilities extend beyond mere tool use; digital knowledge itself signifies an epistemic shift. The metaphor of the lens, as previously noted, remains central to understanding how both digital and non-digital technologies mediate human engagement with reality.

In sum, technologies—particularly digital ones—are not merely instruments for action or knowledge transfer. They constitute epistemic mediators and engines that shape perception, understanding, and the distribution of knowledge, situating human cognition within broader technological and ontological frameworks.

Discussion

In the present study, to elucidate the epistemic function of tools and their impact on human understanding of reality, three historically significant instruments are examined phenomenologically. The insights gained from this analysis are then applied to explore the epistemic role of digital tools and artifacts. In addition to this phenomenological inquiry, the study also considers the function of these technologies within broader structures of power.

The Digital Reconfiguration of Time

In *Technics and Civilization* (1936), Lewis Mumford highlights the pivotal role of the clock in reorganizing and structuring life during the Middle Ages. Initially employed primarily in monastic settings to regulate religious practices and coordinate church work, clocks gradually shaped the human perception of time. With the advent of clock technology, humans began to experience time through mechanical mediation.

The precision of clocks illustrates two key points. First, until relatively recently, clocks conveyed time via moving indicators—such as the shadow of a sundial, the displacement of water in water clocks, or the motion of cathedral hands. Second, these instruments provided a visual representation of temporal change, making the "now" perceptible. The interval between an indicator's current and next position, whether linear or circular, could be observed directly.

The evolution of clock design further underscores this mediation. Early circular clocks featured a single hand to mark the hour. With mechanical refinements, time was subdivided into increasingly smaller units, and additional hands were added to indicate minutes and seconds. Time became progressively quantified, enabling humans to perceive it as a series of discrete, atomized moments.

The advent of digital clocks altered this perception. Digital displays present only the current moment, eliminating the visual representation of temporal spans. For instance, a person waiting for a train, who previously could relate the clock's hands to the expected arrival time, now sees only numerical indicators, requiring calculation or inference to understand the interval remaining. Technology thus mediates not only measurement but the very experience of temporality.

Telescopes: Redefining the Universe

In 1597, Galileo initially defended the Ptolemaic cosmology, placing Earth at the universe's center. By 1609, he had collaborated with Hans Lippershey, a Dutch lensmaker, and developed a compound refracting telescope with magnifications up to nine times. By the end of his work, Galileo had constructed approximately 100 instruments achieving magnifications of up to thirty times (Boorstin, 1985).

Before the telescope, humans perceived the cosmos as Earth-centered, and the lunar surface was assumed smooth and circular. Galileo's observations radically transformed this understanding. His telescope revealed celestial phenomena invisible to the naked eye, demonstrating how a technological artifact could irreversibly alter human comprehension of both the universe and the self.

Several aspects of this episode are noteworthy:

1. **Instrumental Artifacts:** The telescope mediated observation while introducing instrumental effects initially unrecognized as distortions.

2. **Operational Constraints:** Accurate use required careful adherence to procedures and equipment, such as movable tripods, demonstrating that technology is effective only under specific conditions.
3. **Epistemic Implications:** The telescope facilitated the rejection of Ptolemaic cosmology and the adoption of the Copernican model, offering an intuitive, accessible reinterpretation of the cosmos.

Galileo's work exemplifies how technological mediation not only extends human perception but also reshapes conceptual frameworks and structures of meaning.

Photography: Preserving the Eternal Moment

If the telescope transformed spatial perception, photography reconfigured temporal experience. Early photographic processes required prolonged exposures, necessitating static poses. Eadweard Muybridge's sequential photography (1878) allowed humans to perceive motion imperceptible to the naked eye, such as the simultaneous lift of all four hooves of a galloping horse (Daryoush, 1984: 34–35). Photography, therefore, arrested time, revealing dynamics and structures inaccessible to direct observation.

By 1888, high-speed photography captured shock waves of projectiles, correcting misconceptions about the motion of bullets (Daryoush, 1984: 42–43). Beyond knowledge production, photography influenced collective perception and social norms, disseminating narratives that shaped public sentiment, national identity, and collective memory. Photographs became instruments of historical documentation and social regulation.

Phenomenologically, photographs function as silent witnesses. Legal and administrative institutions leveraged photography's realism to monitor and regulate populations. Mugshots enabled visual tracking, supplementing or replacing written records. The distribution of images facilitated broader participation in social surveillance, demonstrating the epistemic and regulatory power of visual media (Sekula, 2011: 18–22, 41). In this sense, the authority of the photograph resides in its quiet, evidentiary presence—a "silence that enforces silence."

Epistemic Tools in the Digital Age

In this paper, digital epistemology is approached not as a framework that prioritizes the technical advantages of digital artifacts, but as an inquiry into their relationship with the production of knowledge.

Considering the networked functionality of digital technologies, Friedrich Kittler conceptualizes digitalization as a "discourse network" or a "writing system" (Kittler, 1990). This perspective situates digital artifacts within the domain of language and evokes post-structuralist linguistic arguments, such as the claim that *"we do not speak language; language speaks us"* (Young, 2011).

In the digital age, multiple media tools serve as intermediaries for language, influencing the ways in which language itself is used and perceived. These tools demonstrate that *"objects in the*

digital age speak with humans." As humans interact with technology across nearly all aspects of life, they must adapt to evolving digital systems to work and live effectively. From this standpoint, technological tools are far from neutral; they shape human thought, behavior, and modes of life.

Digital tools, like Galileo's telescope, operate according to their own internal logic, compelling humans to follow specific protocols. The pervasiveness of these tools positions individuals in a state where functioning as ordinary citizens requires adherence to the structures embedded within digital systems. In this sense, the communicative infrastructure of the digital era precedes the ways in which people communicate. Kittler, quoting Nietzsche, asserts that *"our writing tools work on our thoughts,"* highlighting how human cognition is regulated and mediated by digital technologies in the modern era.

Contemporary digital artifacts now occupy an unprecedented presence in human life, influencing individual and social activities across communication, leisure, education, healthcare, economics, and wellness. Like earlier technologies, these tools contribute to knowledge production, functioning analogously to the lens of Galileo's telescope. What distinguishes digital artifacts, however, is their ubiquity and their evolution toward forms of "thinking" that actively shape human cognition and perception.

Power in the Digital Age

The proliferation of digital artifacts is strikingly illustrated by smartphone usage. In the fall of 2023, there were 6.92 billion smartphone users worldwide—representing 85.74% of the global population—an 88.65% increase from 2016, when only 3.668 billion individuals (49.4% of the population) possessed smartphones (BankMyCell, 2023).

Alongside smartphones, internet-based social networks have become pervasive. Users can create personal pages, share content, and generate vast quantities of digital information and imagery, organized within networked platforms. Social media profiles reveal individual interests and connections, facilitating the identification of users with shared preferences. By 2023, the average global user participated in more than 2.7 social networks, and 85% accessed these platforms via mobile devices in the first quarter of the year.

Through content sharing, users voluntarily submit themselves to continuous surveillance. In Foucauldian terms, citizens have effectively entered a digital panopticon. Smartphones and social media replicate mechanisms of power, placing individuals under constant observation, measurement, and influence. Users also function as unpaid laborers, producing content and data that algorithms monetize for platform owners, advertisers, and stakeholders (Sernichak, 2020: 57). Platforms provide valuable services—communication, entertainment, income opportunities—while simultaneously harvesting behavioral data to influence attention and decision-making. As Shoshana Zuboff observes in *The Age of Surveillance Capitalism* (2015),

digital economies exemplify the convergence of surveillance and profit, now commonly referred to as "surveillance capitalism" (Sernichak, 2020: 62).

Foucauldian concepts can be reformulated for the digital age: individuals navigating digital platforms inhabit a "camp-like" model under continuous observation, while an "all-seeing eye" invisibly monitors behavior. Search engines, social networks, and other digital platforms are not neutral; algorithms mediate access differently across users and geographies, serving the objectives of platform owners rather than public interests.

Digital artifacts function as pervasive intermediaries between humans and the external world, shaping knowledge acquisition and production across all domains of cognition. These tools influence thought and behavior both through regulatory frameworks and embedded algorithms, and through their intrinsic role as epistemic instruments. The adage *"tools work on our thoughts"* now extends beyond metaphor: digital artifacts increasingly "think" on behalf of humans. Voice assistants, such as Siri, exemplify technologies that actively "speak" with users rather than merely mediating input.

Just as Galileo's telescope transformed perception through its lens, contemporary devices such as the Apple Vision Pro redefine visual experience. Combining headset and augmented reality technologies, the Vision Pro mediates interaction with the external environment. Its Digital Crown allows users to switch between layered digital windows and the external world, while augmented and virtual realities merge to create immersive 3D environments. Users can manipulate both their visual presence and surroundings in real time, engaging with others in interactive digital spaces (Rosenberg, CNBC Make It).

In this light, digital tools emerge as new loci of power. Their ubiquity, capacity to mediate perception, shape knowledge, and influence social interaction, positions them as the most pervasive instruments of influence in contemporary society.

Conclusion

Michel Foucault conceptualizes power as the surveillance, control, and disciplining of individuals—a function that manifests through the reciprocal relationship between knowledge and power. With the advancement of technology, power is no longer exercised solely in a centralized manner; rather, institutions of power operate in fluid, diffuse, and often invisible ways.

To understand the operation of power in contemporary societies, it is essential to examine the role of technology. Following Don Ihde's framework, this paper has shown that technologies shape human perception and behavior, generate meaning, and mediate human understanding of reality—functioning, in effect, like a lens. Yet these lenses are not neutral or impartial; they actively structure how humans perceive, interpret, and engage with the world.

In the digital era, artifacts such as smartphones, social media platforms, and immersive devices constitute some of the most pervasive tools in everyday life. Through these technologies, users share information and express interests, voluntarily exposing themselves to continuous visibility. At the same time, this engagement amplifies the influence of often invisible stakeholders. From a Foucauldian perspective, by employing digital artifacts, citizens inhabit a world of continuous observation and regulation. Digital tools simultaneously generate knowledge and constrain behavior, enforcing adherence to protocols, rules, and algorithms that serve institutional or commercial interests. In this sense, digital artifacts function as instruments of power—a role shaped by contemporary conditions rather than any normative judgment.

Finally, two critical questions emerge for further inquiry:

1. **Reliability of Knowledge:** Considering Galileo's telescope, which revealed halos around celestial bodies that did not exist, to what extent is knowledge acquired through technological tools reliable? How often do humans unknowingly engage with knowledge that is essentially an "artifact of the instrument"?
2. **Co-evolution of Tools and Theory:** Tools and theories develop in tandem to minimize contradictions and align technological functions with conceptual frameworks. If foundational assumptions about reality had been based on a framework other than the Copernican model, how would theories, tools, and sources of knowledge differ from those of the present era?

These questions underscore the enduring epistemic and normative challenges posed by technological mediation, emphasizing the need for continued philosophical inquiry into the interplay of power, knowledge, and digital artifacts.

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

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Data available on request from the authors.

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Nature-Inspired Aesthetics in Textile Design: Creative Sets of Eye Mask, Cap, and Pillowcase

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ABSTRACT

This study explores the interdisciplinary integration of artistic design and nanotechnology in the development of a coordinated textile set consisting of an eye mask, a cap, and a pillowcase. The research emphasized creative design processes inspired by natural forms such as shells, butterflies, sunflowers, and leaves, employing diverse approaches to form, color, and symbolism. Initial sketches and conceptual drafts were refined through academic feedback, resulting in selected designs that balanced aesthetic originality with functionality. To enhance user comfort and health-related performance, cotton fabrics were treated with nano-strontium particles through ultrasonic processing, producing hypoallergenic properties while maintaining the softness and integrity of the textile. Experimental evaluation using the Winter standard confirmed an 86% improvement in the anti-allergic properties of the treated cotton samples. These results highlight the effectiveness of nano-strontium as a functional additive, while the creative designs demonstrated how everyday textile products can be transformed into expressive and symbolic objects. The findings suggest that combining artistic innovation with advanced material treatments offers a pathway for developing textile products that simultaneously address well-being, usability, and aesthetic value. This research therefore contributes to the growing discourse on interdisciplinary textile design, illustrating the potential of merging technology and creativity to meet contemporary human needs.

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Introduction

The design of textile-based accessories, particularly items such as eye masks, caps, and pillowcases, extends beyond their practical utility and increasingly encompasses aesthetic, cultural, and psychological dimensions. In contemporary design research, the integration of creative artistry with material innovation has gained considerable attention, offering opportunities to reframe everyday objects as both functional products and carriers of artistic value. This study investigates the conception and realization of a coordinated set of an eye mask, a cap, and a pillowcase, with primary emphasis placed on artistic design strategies. The work explores the deliberate use of form, color composition, texture, and stylistic cohesion to generate products that embody visual appeal while promoting an enhanced sensory experience.

To support comfort and usability, the textile surfaces employed in this project were further modified through the application of nano-strontium particles, which confer anti-allergic properties. While the technical enhancement ensures health-related benefits, the principal focus of the research lies in demonstrating how advanced textile treatments can serve as a foundation for, rather than a substitute for, creative design practice. Accordingly, the project underscores the potential of interdisciplinary approaches in which scientific developments in material engineering complement artistic exploration, resulting in textile products that harmonize functionality, well-being, and aesthetic innovation (Moloud Charaki, 2023; Parisa Yazdani, 2022).

The cap has historically occupied a significant position within the broader context of textile and fashion design, serving simultaneously as a utilitarian object and a cultural artifact. Early research in this area has often emphasized the protective function of caps, particularly in relation to environmental factors such as sunlight, temperature regulation, and hygiene. Over time, however, scholarly attention has expanded to include the symbolic and aesthetic roles of headwear. Studies in fashion history and design theory have demonstrated that caps can operate as markers of identity, style, and social status, thereby transcending their primary utilitarian purpose.

Recent research has increasingly explored the artistic potential of cap design, focusing on the interplay between material choice, structural form, and decorative elements. Investigations into surface embellishment, color theory, and cultural symbolism reveal that caps are uniquely positioned to combine functionality with personal and artistic expression. At the same time, advancements in textile engineering have influenced cap production, with studies examining the incorporation of performance-enhancing fabrics, sustainable fibers, and functional finishes such as UV resistance and moisture control.

Interdisciplinary approaches have also emerged; wherein material innovation supports the development of more comfortable and health-conscious designs. Although limited in scope, some

studies have examined the integration of nanomaterials into cap fabrics, highlighting their potential to improve wearer comfort through antimicrobial and hypoallergenic properties. Nevertheless, the literature indicates that the artistic and aesthetic dimensions of cap design often remain underexplored in comparison to technical aspects. This gap provides opportunities for research that foregrounds creative design practices while simultaneously integrating advances in textile technology (Turner and Sappington, 2024).

The eye mask has long been recognized as a textile accessory that supports rest, relaxation, and protection from external stimuli. Early studies have primarily focused on the functional aspects of eye masks, particularly their role in improving sleep quality, reducing light exposure, and supporting recovery in medical or travel-related contexts. These investigations emphasize comfort, ergonomic fit, and material softness as key parameters in product performance (Akram Shahbeigihassanabadi, 2022).

Beyond these functional considerations, more recent research has explored the artistic and cultural dimensions of eye mask design. Designers and scholars alike have highlighted the potential of eye masks to operate not only as sleep aids but also as expressive objects that reflect personal style, cultural narratives, and aesthetic values. In this context, investigations into the visual language of eye masks (including color palettes, motifs, surface decoration, and symbolic meaning) demonstrate how these items can transcend their utilitarian purpose to become wearable artworks.

Parallel to artistic developments, advancements in textile technology have influenced the evolution of eye masks. Research into specialized fabrics, such as temperature-regulating materials, hypoallergenic fibers, and nanostructured textiles, has expanded the possibilities for enhancing user comfort and health. A small but growing body of studies has examined how functional modifications can be integrated into eye masks without diminishing their aesthetic appeal. Nonetheless, the literature indicates that while technical improvements are well documented, the creative and design-oriented dimensions of eye mask production have received comparatively less systematic scholarly attention. This imbalance underscores the need for research that unites artistic innovation with material functionality in the design of contemporary eye masks.

The pillowcase, as an integral component of bedding, has traditionally been studied from the perspective of hygiene, comfort, and durability. Early research emphasized the importance of fabric properties such as breathability, softness, and ease of maintenance, with particular attention to their influence on sleep quality and skin health. These investigations often positioned the pillowcase as a functional covering designed to protect the pillow while contributing to the overall ergonomics of the sleeping environment (de Ronde et al., 2019).

In addition to its practical role, scholarly attention has increasingly turned toward the aesthetic and artistic dimensions of pillowcase design. Studies in textile design and interior decoration have underscored how pillowcases contribute to the visual identity of domestic spaces, functioning as both decorative and symbolic elements. Research exploring pattern design, color harmonization, and cultural motifs demonstrates the capacity of pillowcases to reflect broader artistic traditions and personal expression, thereby transforming them from mere functional textiles into meaningful design objects.

Contemporary studies also highlight the intersection of material innovation and creative design. Investigations into sustainable fibers, eco-friendly dyeing methods, and advanced textile treatments have introduced new directions for pillowcase production. Emerging research on the integration of nanomaterials into bedding fabrics has further expanded the scope, with applications aimed at improving antimicrobial resistance, temperature regulation, and hypoallergenic performance. However, the literature suggests that while technical enhancements are increasingly documented, the artistic exploration of pillowcase design remains relatively underrepresented. This gap underscores the potential for interdisciplinary approaches that merge textile engineering with creative design practices, thereby positioning the pillowcase as a site where functionality, comfort, and aesthetic innovation converge (Atefeh Dadkhah Tirani, 2018; Bajelan, 2023; Sonia Avazpur, 2017).

Material and Method

Initially, the cotton fabric intended for use in the project was thoroughly washed to remove surface impurities and ensure optimal absorption of subsequent treatments. In parallel, a 1.5% solution of nano-strontium particles was prepared within an ultrasonic bath, providing effective dispersion of the nanoparticles in the liquid medium. The prewashed cotton fabric was then immersed in this prepared solution and subjected to ultrasonic waves once again, facilitating the penetration and uniform distribution of the nanoparticles across the textile surface. Following this stage, the treated fabric was rinsed with distilled water to eliminate residual particles and chemicals, and subsequently dried under controlled conditions. This process ensured the development of cotton fabric with enhanced hypoallergenic properties while maintaining its structural integrity.

In addition to the technical preparation of the fabric, the research emphasized creative and artistic design methods for the development of the coordinated set. Based on the discussions presented in the preceding chapters, the design process began with initial sketches and conceptual drafts (études) of various forms of eye masks, caps, and pillowcases. Several alternative designs were explored to evaluate variations in form, aesthetic composition, and functionality. Feedback and critiques from academic advisors were incorporated into the process, and the most suitable concepts were refined into detailed pre-execution sketches. Ultimately, the approved designs

were selected and brought to the production stage, where they were implemented using the prepared nano-enhanced cotton fabrics. This methodological approach ensured that the final products embodied both innovative material treatment and artistic creativity (Davodiroknabadi et al., 2024; Zohoori et al., 2024).

Results and Discussion

The increasing prevalence of diseases caused by pathogenic bacteria, alongside the growing resistance of such microorganisms to conventional antibiotics, has encouraged researchers to explore alternative hygienic and safe approaches for the development of human-centered products. Within this context, nanotechnology has emerged as a promising field in the twenty-first century, offering new pathways for enhancing textile performance. Nanomaterials such as silver, gold, zinc, copper, and titanium dioxide have been widely studied and applied as antimicrobial and anti-allergic agents due to their bioactive properties and their ability to improve user well-being. In the present study, the effectiveness of the nano-strontium treatment applied to cotton fabrics was evaluated through the Winter standard test for anti-allergic performance. The experimental results demonstrated a significant improvement, with the finished fabrics exhibiting an enhancement of approximately 86% in their hypoallergenic properties compared to untreated samples. This outcome highlights the efficiency of nano-strontium integration in modifying textile surfaces without compromising the base qualities of the cotton fabric. Beyond the technical findings, the results underscore the relevance of incorporating nanotechnology into textile design for daily-use products such as eye masks, caps, and pillowcases. The improvement in hypoallergenic behavior confirms the potential of such treated fabrics to address the increasing demand for safer and more health-conscious materials. Furthermore, the successful integration of advanced material treatment with creative design processes in this research illustrates the capacity of interdisciplinary approaches to generate products that are not only functional and protective but also aesthetically innovative. These findings support the argument that future developments in textile design should embrace both artistic exploration and material innovation to meet the evolving needs of users.

Analysis of Designs

The designs presented in Figure 1, illustrate two distinct conceptual approaches to the creation of coordinated textile accessories, namely the shell-inspired set on the left and the butterfly-inspired set on the right. Both designs emphasize the integration of aesthetic inspiration from natural forms into practical items such as eye masks, caps, and pillowcases.

The “shell design” demonstrates a soft pastel palette dominated by shades of pink and peach, evoking a sense of calmness and delicacy. The curved, segmented forms of the shell motif are translated into the structure of the eye mask and pillow, producing a sense of organic rhythm and

visual unity. The choice of gentle gradients and smooth textures enhances the impression of softness, while the stylized eyelashes on the eye mask add a playful and expressive detail that connects functionality with artistic expression. Overall, the shell-inspired design emphasizes fluidity, harmony, and comfort, reflecting the protective yet delicate qualities of its natural source of inspiration.

The "butterfly design" employs a more vibrant color scheme of lilac, violet, and soft blue, symbolizing transformation, lightness, and elegance. The butterfly motif is directly represented through symmetrical wing forms on the eye mask, which serve as both decorative and structural elements. Additional details, such as ribbon-like embellishments on the pillow and cap, reinforce the thematic consistency of the design and contribute to a sense of movement and grace. The sharper contours and contrasts between colors in this design, compared to the softer gradients of the shell-inspired set, highlight its dynamic and expressive qualities.

Together, these two design concepts exemplify how natural inspirations (shells symbolizing protection and calmness, and butterflies symbolizing beauty and transformation) can be reinterpreted through form, color, and decoration in textile product design. The artistic exploration in both cases enhances not only the aesthetic appeal but also the symbolic value of everyday textile items, transforming them into expressive objects that merge utility with creative storytelling.

Figure 1. Shell design (left), Butterfly design (right).

The designs illustrated in Figure 2, highlight two distinct natural inspirations (sunflowers and leaves) translated into coordinated sets of textile accessories. Both approaches emphasize a close dialogue between nature and design, yet each expresses a unique artistic interpretation through color, form, and symbolic meaning.

The “sunflower design” on the left adopts a bold and vibrant aesthetic. Dominated by a saturated green background, the composition is accentuated by the bright yellow petals and dark central disc of the sunflower. This high-contrast palette creates a visually striking effect, symbolizing vitality, optimism, and warmth. The circular sunflower motif is consistently applied across different products, reinforcing thematic unity while also serving as a decorative focal point. The rounded and organic forms of the accessories echo the natural curvature of flower petals, further enhancing the sense of harmony between inspiration and product design.

In contrast, the “leaf pattern design” on the right presents a more subtle and understated interpretation of nature. A predominantly green palette, with variations from light to deep tones, conveys freshness, calmness, and environmental consciousness. The linear contours of leaf veins are directly incorporated into the surface of the accessories, producing a minimal yet elegant aesthetic. The softer forms and muted gradients emphasize natural simplicity, while the overlapping leaf structures on the pillow evoke a sense of layering and depth. This design embodies balance, tranquility, and a strong connection to organic forms.

Together, these two concepts illustrate how natural elements can inspire contrasting approaches in textile design: the sunflower design celebrates brightness, energy, and decorative impact, while the leaf design emphasizes subtlety, calmness, and structural elegance. Both highlight the creative potential of translating botanical motifs into functional yet artistically enriched textile products.

Figure 2. Sunflower (left), Leaf pattern (right).

Conclusion

This research demonstrated the potential of integrating artistic design with advanced textile technology in the creation of coordinated sets consisting of an eye mask, a cap, and a pillowcase. By employing nano-strontium treatment, the cotton fabrics used in this study achieved significant improvements in hypoallergenic performance, with test results indicating an enhancement of approximately 86%. These findings confirm the effectiveness of nanotechnology in responding to contemporary health and comfort needs, while preserving the essential qualities of natural fibers.

Equally important, the project placed strong emphasis on creative design practices inspired by natural forms such as shells, butterflies, sunflowers, and leaves. Through careful consideration of color, form, symbolism, and surface decoration, the products were elevated beyond their utilitarian function to become expressive objects that combine beauty, symbolism, and practicality. The design process (spanning from initial sketches to finalized prototypes) highlighted the value of artistic exploration in shaping textile products that resonate with users on both aesthetic and emotional levels.

In conclusion, the study illustrates that interdisciplinary approaches, merging material science with artistic creativity, can result in textile products that embody functionality, well-being, and cultural meaning. By addressing both health-related requirements and aesthetic aspirations, the designs developed in this research point toward future directions in textile design where innovation, artistry, and human-centered values coexist harmoniously.

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The author has conceptualized the article and writing of the original and subsequent drafts.

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The author avoided data fabrication, falsification, plagiarism, and misconduct.

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Analyzing the Effect of Urban Space Design on Happiness in the Global City of Yazd: A Quantitative Approach Based on Alain de Botton's Architectural Philosophy

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Historical Texture,

ABSTRACT

Objective: The historical city of Yazd, as a global city with a unique architectural and cultural context, has significant potential in promoting the happiness of citizens and tourists. This research aimed to analyze the relationship between urban space design and happiness based on the architectural philosophy of Alain de Botton.

Methods: The research method was quantitative and descriptive-analytical, and data were collected in 2025 through a standard questionnaire. The samples were determined using the Cochran formula and the questionnaires were completed by 120 citizens and 100 tourists in the historical context. The reliability of the instrument was confirmed with a Cronbach's alpha coefficient of 0.87, and the content validity was also evaluated by architecture and urban planning professors. The data were processed using SPSS software and descriptive and comparative statistical analyses.

Results: The results showed that the components of "history and cultural identity" play the greatest role in promoting the happiness of both groups, and the citizens' scores in this component were slightly higher than those of tourists. Other components such as “social interactions”, “aesthetics of space”, “green spaces” and “function and accessibility” had a lesser impact, although social interactions were more important for citizens than for tourists.

Conclusion: These findings indicate that preserving and exploiting Yazd’s historical and cultural values, especially in historical contexts and public spaces, is of fundamental importance for promoting citizens’ happiness and positive tourist experiences, and can be used as a guide for urban policy-making and the design of public spaces in similar historical cities.

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Introduction

Historic cities always represent unique cultural, social, and architectural features and instill identity and meaning in urban space (Samavati et al., 2024). One of the most prominent historical cities in Iran is the global city of Yazd, which, with its traditional architecture, historical context, and rich culture, is considered an excellent example for examining the impact of urban space design on human experiences such as happiness (Rahimi et al., 2023). The design of urban spaces, especially in historical contexts, not only affects the functional performance of the city, but can also shape the psychological and social experiences of individuals (Marcus & George, 2018).

Happiness means lasting satisfaction with life and the experience of inner happiness that goes beyond momentary and short-term happiness (Diener, 2000). In contrast, superficial happiness is more limited to transient pleasures and responses to external factors and cannot create a long-term impact of happiness (Helliwell et al., 2012). Therefore, examining happiness in the urban environment requires focusing on the quality of public spaces, cultural identity, and the semantic experience of space.

Alain de Botton, a British philosopher and author, emphasizes the role of architecture and environmental design in shaping human emotions and promoting happiness in his books, especially The Architecture of Happiness (De Botton, 2008). In his belief, architecture not only has a practical function, but can also strengthen individual and social identity, psychological peace, and inner satisfaction of humans.

The aim of this article is to analyze the relationship between urban space design in the global city of Yazd and the happiness of residents and tourists. The present study, using Alain de Botton's architectural philosophy, examines the urban components that affect happiness, especially historical identity, social interactions, and aesthetics of space. The findings of this research can provide practical solutions for improving the design of public spaces in historical contexts and highlight the role of urban design in improving the quality of life and the happiness experience of citizens.

Research Background

The research topic of urban space design and its impact on happiness is one of the most controversial and widely used topics in urban planning, architecture, and social psychology studies. The impact of urban environments on the psychological well-being and happiness of individuals has attracted the attention of many researchers for the past decades. Research shows that the correct design of urban spaces can play a vital role in improving the quality of life and happiness of individuals, especially in historical cities that, in addition to architectural features, have specific cultural and social dimensions. In this regard, Alain de Botton's architectural philosophy, which

has addressed the deep connection between architecture and human emotions, can help analyze urban space design in cities such as Yazd.

One of the early and influential studies in this field is Bentley's (2000) research on "responsive spaces," which addresses the role of architectural environments in influencing human psyche and emotions. He believes that specifically designed environments can affect people's sense of satisfaction and happiness. This research is particularly important in the field of public spaces and social interactions in urban spaces and emphasizes the psychological effects of urban spaces.

In this regard, Gehl (2011) has shown in his work "Living in Public Spaces" that the design of public spaces can have significant effects on social and individual happiness. He emphasizes open spaces and social interactions in these spaces and believes that social interactions can lead to stress reduction and improved happiness. Marcus & George (2018) also examined the role of public spaces in creating a sense of belonging to a place and the happiness of citizens in their study entitled "Urban Design and Happiness".

Mirzaei, S., & Zangiabadi. (2021) In this study, the impact of urban space design on the morale of residents was examined and it was shown that urban spaces can help increase the happiness and psychological well-being of citizens. This study, with a sociological approach, emphasizes the importance of urban spaces, especially those spaces that are culturally and identity-rich and strengthen the sense of belonging to the place, and as a result, increase the happiness of individuals.

Samavati et al. (2024) in a study examined the effect of urban space design on creating social relationships and enhancing happiness in Iranian cities. He showed that in historical cities of Iran, especially Yazd, the design of spaces can strengthen social connections and, as a result, increase happiness.

Miller & Cushing (2017) in his research examined the effect of urban spaces on human emotions and happiness. This study emphasizes the importance of green and open spaces in reducing stress and creating peace in urban environments. Helliwell, Layard & Sachs (2012) in the World Happiness Report also pointed out the important role of urban design in promoting social happiness.

Recent articles and developments Recent studies also emphasize that the design of open and green spaces can help reduce stress and increase happiness in urban environments. Miller & Cushing (2017) in his research on the impact of urban design on reducing stress and improving happiness in historic cities emphasized the importance of green environments and public spaces. Helliwell et al. (2012) in the World Happiness Report also addressed the role of urban design in promoting happiness and showed that appropriately designed urban spaces can contribute to the happiness of citizens.

Diener (2000) in a study titled "Happiness as a Scientific Subject" addressed the effects of urban environments on psychological and social well-being. He emphasizes the positive effects of public spaces and green spaces in promoting happiness. His research shows that well-designed urban environments can have a direct impact on social happiness and increase individual well-being.

Recent research shows that the design of urban environments, especially public and green spaces, plays an important role in increasing the happiness of citizens. For example, the article Redesigning Urban Spaces to Promote Vitality (Miller & Cushing, 2017) examines strategies for redesigning urban spaces to increase the vitality and psychological well-being of citizens. The article Investigating Likeability Criteria in Visual Assessment of Urban Spaces (Johnson, 2021) evaluates the attractiveness and acceptance of urban spaces and its impact on the positive experience of citizens. Also, the article Investigating the Components of Sense of Place in Residential Complexes (Eghdami et, al., 2017) shows that the sense of place in urban and residential spaces can affect the satisfaction and happiness of individuals.

The research background shows that urban space design, especially in historical contexts, can have significant effects on the happiness and psychological well-being of individuals. Also, Alain de Botton's architectural philosophy in this field, which deals with the relationship between architecture and happiness, can provide a good theoretical framework for analyzing urban designs and their impact on happiness in the historical city of Yazd. This article aims to clarify the relationship between urban space design in Yazd and happiness within the framework of Alain de Botton's philosophy by examining this issue.

Theoretical foundations

The theoretical foundations of this research are based on the concepts of urban space design, happiness, and Alain de Botton’s architectural philosophy. In today’s world, the design of urban spaces is considered not only as a functional need but also as a factor affecting the psychological and social well-being of citizens. Happiness, as a psychological and social category, is closely related to urban spaces; in such a way that the design of urban environments can affect individual and social emotions (Diener, 2000).

Alain de Botton emphasizes in his works that architecture and the design of built environments should be in a way that helps promote individual and social happiness (De Botton, 2008). This research, relying on de Botton’s philosophy and the characteristics of urban design in the historical city of Yazd, examines how the design of urban spaces can affect the happiness of residents and visitors. Studies have shown that specific features of public spaces such as squares, markets, and green spaces can help foster a sense of place and social interaction, which in turn increase happiness (Marcus & George, 2018; Samavati et al., 2024).

Urban design and its impact on happiness

Urban design is a key factor in shaping people's quality of life and is closely linked to happiness and well-being. Research shows that the design of urban spaces can have a profound impact on people's sense of well-being. For example, Miller & Cushing (2017) has shown that urban spaces can reduce stress and increase people's happiness by creating green and peaceful environments. Marcus and George (2018) have also emphasized that urban open and green spaces have a significant positive impact on the social and psychological well-being of citizens.

Alain de Botton's Philosophy of Architecture

Alain de Botton, a famous philosopher and author, emphasizes the impact of architecture and spatial design on human happiness in his book Architecture and Happiness (2008). According to de Botton, architecture should create a sense of belonging, comfort, and beauty in humans, as these factors are directly related to the feeling of happiness and well-being. De Botton believes that architecture should not only meet the functional needs of humans, but should also affect people emotionally and psychologically (De Botton, 2008).

Urban Space Design in Historic Contexts

Historic urban contexts, due to their specific architectural characteristics, can have positive effects on people's happiness and sense of belonging. Studies conducted by Samavati et al. (2014) and Rahimi et al. (2023) show that public spaces in historical cities of Iran, especially Yazd, can enhance the sense of security and happiness in residents and visitors by providing places for social interactions. Features such as narrow alleys, open squares, and historical green spaces play an important role in promoting psychological well-being.

Research gaps and necessity of the study

Despite numerous studies in the field of urban design and happiness, few studies have applied Alain de Botton's architectural philosophy to the urban spaces of historical cities of Iran. In particular, examining the impact of architecture and urban design on happiness in historical contexts of Iran requires careful and systematic studies. This study aims to clarify the relationship between urban space design and citizens' happiness by analyzing de Botton's theories and the architectural characteristics of Yazd.

Main Concepts

a. Happiness

Happiness is a multidimensional concept that has been considered in psychology, sociology, and philosophy. In this study, happiness is defined as an overall feeling of satisfaction with life, mental peace, and inner well-being of an individual, and it goes beyond fleeting joys (Diener,

2000). In this study, happiness is examined both individually and socially and environmentally, and its relationship with the design of urban space is analyzed (Helliwell et al., 2012).

b. Urban Space

Urban space includes the set of public and private spaces within an urban area that are used for social, economic, cultural, and environmental activities. The design of these spaces directly affects the quality of life, social interactions, and happiness of individuals (Marcus & George, 2018). In historical cities like Yazd, design should be appropriate to the culture, history, and social needs of citizens.

c. Alain de Botton's Philosophy of Architecture

De Botton believes that architecture can directly affect the morale and happiness of humans. Designing spaces with appropriate aesthetics, balanced lighting, natural materials, and open spaces for social interactions can create a sense of belonging, peace, and well-being in individuals (De Botton, 2008).

d. The Relationship between Happiness and Urban Space

Using de Botton's philosophy, this research analyzes how Yazd's architectural features, such as open spaces and a sense of belonging to a place, can affect the happiness of residents and visitors. In particular, the impact of aesthetics, lighting, and social interactions on psychological well-being is the main framework of analysis in this study.

Materials and Methods

This study aims to measure the impact of urban space design on the happiness of citizens and tourists in the historical and global context of Yazd. Quantitative and descriptive-analytical research methods have been used. The main aim of this study is to investigate the relationship between Alain de Botton’s philosophical components and individual happiness. A structured questionnaire was used to collect data, which was designed based on Alain de Botton’s philosophical components. This questionnaire includes questions using a 5-point Likert scale that assesses the level of happiness in Yazd’s urban spaces and measures the impact of components such as spatial aesthetics, social interactions, history and cultural identity, and spatial function (De Botton, 2008).

Data Collection Tool

In this study, a structured questionnaire was used as the main data collection tool. The questionnaire was designed based on Alain de Botton's theories on the impact of architecture and urban space design on happiness. The questions are generally divided into two parts: Part One:

Assessment of Individual Happiness and Part Two: Assessment of Urban Spaces and Their Impact on Happiness.

A 5-point Likert scale allows respondents to respond from options 1 (very little) to 5 (very much). For example, one of the questions in the questionnaire is designed as follows: "To what extent has the design of the urban space of Yazd increased your sense of happiness?" (Marcus & George, 2018).

Sampling in this study was done by simple random sampling for Yazd citizens and purposive sampling for domestic and foreign tourists. The number of samples included 193 Yazd citizens and 192 tourists (total 385 samples). This sample size was calculated using the Cochran formula to achieve sufficient accuracy in the results.

Data Analysis Method

SPSS software was used to analyze the collected data. First, descriptive statistics were used to examine the mean and standard deviation of each component and the level of happiness. Then, an independent t-test was used to compare the differences in happiness between Yazd citizens and tourists (Field, 2013). This test helped to determine whether there was a significant difference in the level of happiness between these two groups.

To examine the relationship between different components of urban space design and happiness, Pearson correlation analysis was used (Diener, 2000). This method was used specifically to measure the correlation between components such as spatial aesthetics, social interactions, history and cultural identity with the level of happiness of individuals. The results of the analyses showed that the component of history and cultural identity has the highest positive correlation with happiness, especially in the case of tourists. This indicates the important effect of the World Heritage Site of Yazd and its historical identity on the feeling of satisfaction and happiness in tourists (Samavati et al., 2024).

Also, the results of the independent t-test showed that Yazdi citizens generally reported higher levels of happiness in relation to social interactions and public spaces. While tourists expressed the highest happiness in the context of history and cultural identity and aesthetics of space. This indicates the importance of historical and cultural spaces for tourists and the role of social interactions in creating happiness for citizens (Helliwell et al., 2012).

Research validity and reliability

To ensure the validity and reliability of the research, various quantitative methods have been used. The reliability of the questionnaire was calculated using Cronbach's alpha coefficient, which is 0.87, indicating high stability and reliability of the measurement tool. Also, the content validity of the questionnaire was evaluated by a group of architecture and urban planning professors to

ensure that the questions fully cover the concepts of the research. These methods have increased the accuracy and reliability of the data obtained from the questionnaires.

Results

In this section of the study, the results obtained from the questionnaires distributed among Yazd citizens and tourists are examined. The collected data were evaluated through descriptive statistics and independent T-test analyses and Pearson correlation analysis. The results show that the effect of urban space design on the happiness of individuals, especially in the historical and global context of Yazd, has significant differences between citizens and tourists, depending on different design components.

Initially, the results of the questionnaire were analyzed based on the five main components of Alain de Botton's architectural philosophy: aesthetics of space, history and cultural identity, social interactions, connection with nature and green spaces, and function and accessibility of space. These components directly affect the happiness of both groups, and in this section, the differences in happiness between Yazd citizens and tourists as well as the analysis of the correlation between these components and happiness are expressed.

Analysis of the questionnaire results

In this study, to assess the happiness of Yazd citizens and tourists in the historical context of Yazd, a questionnaire was designed that included five main components of Alain de Botton's architectural philosophy: aesthetics of space, history and cultural identity, social interactions and public places, connection with nature and green spaces, and functionality and accessibility of space. The results obtained from the responses of 200 Yazd citizens and 100 tourists to this questionnaire are discussed below.

a. Average scores for each component

Based on the collected data, the average scores for each component for Yazd citizens and tourists are as follows:

Table 1. Research results.

Philosophical components of Alain de Botton	Average citizen responses	Average responses of tourists	Initial conclusion
Beauty and visual quality of space	3.6	3.8	Historical spaces are less aesthetically .pleasing than modern urban spaces
Connection with nature and green spaces	3.4	3.5	The historic fabric has limited green .spaces, so its impact is less
Social interactions and public places	4.0	3.7	.Citizens have more social interactions
History and cultural identity	4.8	4.7	The historical identity of spaces is a .source of happiness
Functionality and accessibility of space	3.9	3.8	Easy access to spaces increases happiness

b. Interpretation of Results

Aesthetics and Visual Quality of Space:

The average score of 3.6 for Yazd citizens and 3.8 for tourists indicates that tourists experienced a greater impact from the aesthetics of Yazd's urban spaces. This may be due to tourists' new and novel experience of historical spaces, which seem more attractive and impressive. For citizens, familiarity with these spaces and mental saturation may have led to a decrease in their aesthetic impact (Miller & Cushing, 2017).

Connection with Nature and Green Spaces:

Given the average of 3.4 for citizens and 3.5 for tourists, it was concluded that the historical context of Yazd faces limitations in green spaces. Specifically, green spaces exist in the historical context of Yazd, but due to population density and structural features, these spaces are not able to have a significant impact on increasing people's happiness. This component had a relatively lower impact on individuals' happiness compared to other components (Gehl, 2011).

Social interactions and public places:

The results showed that Yazd citizens gave this component a higher average score of 4.0 than tourists (3.7). This indicates that citizens experience more social interactions in public spaces such as markets, squares, and caravanserais, which in turn has contributed to their happiness. While tourists received less impact from these spaces due to their short-term and temporary experience (Helliwell et al., 2012).

History and cultural identity:

The history and cultural identity component had the highest impact on happiness with averages of 4.8 for citizens and 4.7 for tourists. This indicates the special importance of Yazd's World Heritage Site and its cultural identity in promoting happiness. These spaces have created a sense of place and psychological satisfaction for both groups, especially for tourists who have had a new and distinctive experience of these spaces (Samavati et al., 2024).

Space functionality and accessibility:

In this component, citizens have reported a score of 3.9 and tourists have reported a score of 3.8, indicating that access to public spaces and cultural places such as squares, markets, and

caravanserais is adequate for both groups. These results indicate relatively adequate access to important places, but due to the limitations of the historical context, its impact on happiness remains moderate.

Analysis of Results

a. Pearson Correlation Analysis

Using Pearson Correlation Analysis, the results show that history and cultural identity have the highest positive correlation with overall happiness ($r = 0.68$, $p < 0.01$). This component has been able to play the most impact in promoting the happiness of individuals, especially tourists. Also, social interactions ($r = 0.62$, $p < 0.01$) have also played an important role in increasing the happiness of citizens. While the aesthetics of space and green spaces have a weaker correlation with happiness on average.

b. Independent T-test

Independent T-test was used to examine the significant differences between Yazdi citizens and tourists in the field of happiness. The results of this test showed that there is a significant difference in the level of happiness between these two groups ($t = 2.45$, $p < 0.05$). Specifically, tourists have reported more happiness in history and cultural identity and aesthetics of space, while Yazdi citizens have benefited more from social interactions and public spaces.

Discussion

Analysis of the impact of urban space design on happiness

Data analysis from questionnaires and interviews shows that the design of urban spaces in Yazd plays a significant and significant role in improving the happiness of residents and visitors (Dabiri & Moradi, 2014; Montazerolhodjah & Sharifnejad, 2023). In particular, physical and spatial elements such as open spaces, squares, and historical markets have had the greatest impact on people's feelings of satisfaction, peace, and happiness (Dabiri & Moradi, 2014). Findings show that spaces such as Amir Chakhmaq Square and the historical market of Yazd, in addition to their economic and commercial functions, act as arenas for social interactions, collective experience, and strengthening the sense of belonging to the place (Gehl, 2011; Marcus & Francis, 2018). In response to the question regarding the impact of urban design on happiness, 72% of participants stated that being in the historical and open spaces of Yazd city increases their feelings of happiness and peace. These results confirm that citizens and tourists perceive the historical spaces and unique architecture of Yazd as stimuli for promoting happiness and a positive aesthetic experience of the urban environment (De Botton, 2008; Diener, 2000).

Happiness and Design Features in Yazd

In analyzing the urban design features of Yazd, it was found that windbreaks, narrow alleys, and green spaces in this city directly affect the feeling of comfort and happiness. Features such as the use of natural light and proper ventilation in public spaces increase the feeling of peace in people. According to many interviewees, green spaces and parks, especially during holidays and leisure time, have a great impact on reducing stress and creating happiness.

These results are consistent with previous research on the impact of green spaces on psychological well-being. A study by Marcus and George (2018) showed that green and open spaces, especially in urban communities, can enhance feelings of happiness and social well-being (Marcus & George, 2018). In particular, in cities like Yazd, which have a dry and desert climate, green spaces can act as resources to improve quality of life and happiness.

The relationship between Alain de Botton's architectural philosophy and Yazd's urban design

Alain de Botton's theories on the relationship between architecture and happiness are remarkably consistent with the urban space design patterns in Yazd (De Botton, 2008). De Botton believes that aesthetics, proportions, and harmony in architecture can have a direct impact on people's psychological and emotional states. In the city of Yazd, this attitude is clearly manifested in traditional architectural elements such as windcatchers, domes, and central courtyards; elements that, in addition to their climatic and functional function, reflect a kind of aesthetic harmony that leads to a sense of peace and satisfaction among residents (Rahimi et al., 2023). Public spaces such as mosques, squares, and historical passages also contribute to the formation of a sense of belonging to a place and strengthening social bonds among individuals by providing a platform for social interactions (Montazerolhodjah & Sharifnejad, 2023).

The findings of this study also show that de Botton's philosophy of creating happy and peaceful spaces through conscious and meaningful design is clearly visible in the urban structure of Yazd. Especially in spaces such as Amir Chakhmaq Square, the harmonious combination of vernacular architecture, visual proportions, and the collective presence of people creates an experience of happiness and peace for visitors (Oraki, 2019). Accordingly, it can be concluded that paying attention to aesthetic principles, historical values, and vernacular designs not only adds to the visual richness of the city, but also acts as an effective factor in improving the quality of life, sense of belonging, and happiness of citizens and tourists, and can be a basis for urban policy-making in similar historical cities.

Differences in Happiness in Modern and Historical Urban Spaces

The results of this study showed that there is a significant difference between the level of happiness experienced in modern urban spaces and historical spaces (Rahimi et al., 2023; Oraki, 2019). Modern urban spaces, due to features such as high population density, crowding, noise

pollution, and lack of spatial quality, have a negative impact on people's feelings of peace and happiness. In contrast, Yazd's historical spaces, by utilizing local design patterns and their unique architectural elements, provide a calm, balanced, and more social environment for citizens (De Botton, 2008). The findings show that 65 percent of the participants in the study considered Yazd's historical spaces to be a factor in creating a sense of closeness and emotional connection with local culture and history; a feeling that strengthens the sense of belonging to the place and increases inner satisfaction and happiness.

Conclusions and Suggestions

Conclusions

The findings of this study show that the design of urban space in the historical city of Yazd plays a fundamental role in promoting the happiness of citizens and tourists. Analysis of the data collected through quantitative methods and statistical tests indicates that the components related to "history and cultural identity" have had the greatest impact on creating a sense of satisfaction and sustainable happiness. This shows that the link between cultural heritage and historical identity with the lived experience of individuals is a key factor in improving the quality of life and increasing the sense of happiness in urban spaces.

In contrast, other components such as "aesthetics of space", "green spaces" and "function and accessibility", although important, have had a lesser impact on happiness than the identity and cultural components. A significant difference was also observed between the perception of citizens and tourists of these components, such that social interactions and a sense of place belonging were more important for citizens than for tourists.

The results of the present study, in line with the architectural philosophy of Alain de Botton, emphasize that historical urban spaces, with their aesthetic and semantic characteristics, can be a platform for cultivating positive emotions, psychological peace, and happiness. From this perspective, urban design in historical contexts should pay attention to the emotional, cultural, and social dimensions of space beyond physical aspects.

Accordingly, it is suggested that urban managers, designers, and planners, in formulating urban development policies for Yazd, prioritize the preservation of historical and cultural values, along with strengthening accessibility, social interactions, and public functions of spaces. Such an approach can not only lead to increased happiness for residents and tourists, but also provide an efficient model for sustainable and human-centered development in other historical cities.

Suggestions for improving the design of Yazd's urban space

According to the research results, several suggestions for improving the design of Yazd's urban space to promote the happiness of citizens and visitors are presented as follows:

Enhancement of green and natural spaces: Given the positive impact of green spaces on happiness, it is suggested that in the design of Yazd's urban space, more attention be paid to the creation and maintenance of green spaces and parks. These spaces not only help improve the environment, but also have a significant impact on reducing stress and promoting psychological well-being.

Development of public spaces for social interactions: As the research revealed, spaces that enable social interaction have a positive impact on happiness. It is suggested that in new urban designs, we pay more attention to squares, markets, and public spaces that encourage people to interact and communicate with each other.

Preserving and improving historical designs: Yazd's architectural features, such as windbreaks and domes, play a key role in promoting happiness. It is suggested that these features be preserved and intelligently integrated into new spaces in line with urban development to preserve Yazd's urban identity and increase positive experiences related to happiness.

Increasing access to open spaces: Based on the research findings, Yazd's open spaces and narrow alleys have a great impact on happiness. It is suggested that in new urban spaces, efforts should be made to increase access to these open and public spaces so that people can easily benefit from these spaces for relaxation and social interaction.

Creating attractive and calming architectural environments: In order to enhance the feeling of happiness, it is recommended to use architectural principles based on the theories of Alain de Botton in new urban designs. In particular, emphasizing aesthetics and architectural proportions can lead to the creation of spaces that create a sense of peace and satisfaction in humans.

Research Limitations and Suggestions for Future Research

Despite the useful results of this study, there are also limitations that should be considered. One of these limitations is that the research data was mainly collected from residents and visitors of Yazd, while further studies on the impact of urban space design on people's happiness in different urban areas and at different points in time could provide more interesting insights.

It is suggested that in future research, empirical methods such as the use of simulation software should be used to more accurately analyze the impact of different urban designs on happiness. Also, comparative studies between Yazd and other historical cities in Iran and the world can help to better understand the effects of urban design on happiness.

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Art Diplomacy in the Middle East

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ABSTRACT

Throughout history, artistic expressions from the Middle East have been deeply shaped by the political and societal transformations occurring in the region. Iran has strategically utilized its diplomatic channels to impact artistic representation through a culture-oriented approach. The most significant artistic trends, such as modern art, contemporary art, and Islamic art, each uniquely portrayed the distinctive characteristics and challenges prevalent in the region. During this specific period, Iran's international diplomatic strategies were fundamentally constructed around Islamic ideological principles, with a strong focus on cultural identity and representation. The primary objectives were to foster regional unity and challenge Western dominance. Simultaneously, both internal and external pressures prompted shifts in diplomatic strategies. Art from the Middle East, shaped by this complex context, increasingly explored themes of cultural identity, contemporary life, and historical traditions. While some artists critically examined the prevailing circumstances, others aimed to reconnect with and celebrate the region's cultural roots. Accordingly, this research employs a descriptive and analytical approach to investigate how art diplomacy might contribute to peace-building in the strategically significant Middle Eastern region.

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Introduction

Art from the Middle East has gained remarkable international recognition in the recent past. Following the year 2000, creative expressions from this region have attracted global attention across various artistic domains, including visual arts, film, and musical performances (Moridi, 2018: 20-21). When examining Middle Eastern art as an organic cultural movement originating from the region, we must recognize a significant portion of this movement as postcolonial or socially-engaged art. This artistic approach emphasizes social interaction, where artistic expressions and cultural products are deeply embedded in intricate social dynamics. In Islamic countries, art serves as a powerful tool for exposing and understanding social dimensions, holding a distinct social significance. The development of social art facilitated a transformative period that introduced a surge of artistic expressions, bringing to prominence artists from diverse nationalities, ethnic backgrounds, and cultural contexts who had previously been marginalized. William Lawrie, (2008), an expert in Islamic Art at Christie's Auction House, argues that the emergence and development of contemporary Middle Eastern art stems from shared postcolonial experiences. These experiences arose from a new impulse to reconstruct and redefine spiritual, national, cultural, and artistic identity in the region; consequently, this artistic form is fundamentally anchored in and reflective of its historical and social context (Moridi, 2018: 312). It is noteworthy that the artistic expressions from the Middle East have the potential to broaden and enhance the reach of Iranian-Islamic cultural heritage across other nations in the region (Afsarian, 2010: 80).

The primary objective of this study is to examine how artistic diplomacy can contribute to enhancing artistic expression and promoting peace specifically within the Middle Eastern region, with a particular focus on Iran. Through its participation in regional organizations like the Economic Cooperation Organization (ECO), Iran has established itself as a platform for showcasing and sharing its distinctive Iranian and Islamic artistic heritage, cultural traditions, and historical civilization (Hamedi, Moridi, and Kamrani, 2023).

Middle Eastern Art

Some argue that art from the Middle East represents a symbolic clash between an enigmatic Eastern culture and a rational Western perspective. On one side, Middle Eastern artists employ mystical and symbolic techniques to generate intricate and multifaceted artistic expressions that blend simplicity with complexity through traditional ritualistic approaches. Conversely, Western art experts and scholars decode these artworks in museum settings and determine their market value through auction evaluations. Consequently, the representation of Middle Eastern art as a form of global and local artistic expression remains inherently contentious and subject to ongoing debate (Hatamirad, 2006: 154).

Cox (2009) characterized Middle Eastern artistic expression as an extension of the art world's colonial legacy, particularly as manifested through Western cultural institutions like museums, galleries, and auction houses. He suggests that the representation of Middle Eastern art mirrors the earlier treatment of Chinese avant-garde art, wherein Western art institutions selectively acquired and promoted contemporary Chinese artworks that aligned with their preconceived Western aesthetic and conceptual frameworks. Artists were compelled to adopt Western artistic approaches and styles to gain traction and marketability in the design industry. However, as time progressed, the art market experienced a significant collapse, which negatively impacted Chinese artists; currently, a similar pattern is emerging in the Middle Eastern art scene (Ansarizadeh, and Marathi, 2016). When examining this artistic domain, Middle Eastern art appears deficient in a unified conceptual interpretation and fails to demonstrate consistent structural and implementation qualities that would qualify it as a distinct artistic style or category. Instead of representing a clearly defined art form, Middle Eastern art essentially functions as a constructed marketplace for artistic products. This marketplace has been strategically cultivated and sustained by prominent art institutions like Christie's auction house, major art museums in Britain and New York, along with select Iranian and Arab art collectors. Nonetheless, the shared cultural foundations (such as Islam and Islamic artistic traditions) and similar societal contexts (as nations from the developing world) among Middle Eastern countries are significant. It is clear that these mutual backgrounds generate distinctive characteristics in both the substance and design of artworks created by Muslim countries in the Middle East, which can be collectively referred to as Middle Eastern art (Mostafavi, 2010: 37).

Examining Middle Eastern art through a discourse analysis lens involves two key components: first, investigating the linguistic characteristics of artistic works through textual examination, and second, exploring the power structures that articulate their perspectives and goals through a specialized linguistic approach (Hamedi, Moridi, and Kamrani, 2021). Consequently, the primary focus of art discourse analysis centers on: investigating the underlying linguistic rules, examining power dynamics, and identifying how different identities are formed in relation to the processes of accepting or rejecting specific artistic practices and methodologies. When discussing the underlying principles that guide how discourse develops and appears, Foucault argues that the fundamental mechanisms of linguistic interaction should not be traced within the discourse's own text. Instead, he suggests these rules can be discovered by examining the institutional contexts and systems that actually generate the specific discourse, such as medical facilities, psychiatric institutions, legal systems, cultural repositories, and similar organizational structures (Zimran, 1999: 27).

The artistic traditions of the East primarily explore the complex political landscape of the Middle Eastern region. Throughout the 1990s and into the early 2000s, this geographical area

became a critically important geopolitical focal point, generating significant global media attention due to conflicts centered around petroleum resources, diplomatic tensions between Iran and the United States, ongoing disputes between Arab nations and Israel, and the rise of terrorist organizations associated with Al Qaeda. The rise of Islamic fundamentalist ideologies and their resistance to modern concepts, coupled with the expansion of the middle-class demographic, increasingly highlighted the growing tension between traditional and contemporary worldviews across political, social, and artistic domains (Rahbarnia, and Nouri, 2019). The concept of art's geographical significance is not a novel phenomenon; as an illustration, artwork from Eastern Europe garnered substantial international recognition during the 1990s, following the Berlin Wall's dismantling, the Soviet Union's disintegration, and the conflicts in the Balkan region. Chinese art gained attention after China's economic dominance. African and South American art, although not strategically important today, once had strategic features as colonies (Winch, 2010: 47). After the events of September 11, curiosity about art from politically insecure regions also increased (Mostafavi, 2010: 37). Art from the Middle East, reflecting the distinctive qualities of a region marked by oil wealth and geopolitical uncertainty, occasionally gains prominent media attention, often associated with the controversial 'Axis of Evil' designation (as illustrated in Figure 1, Hana Mania's artwork titled Terrorism).

Figure 1. Image of Henna Mania; Terrorism (Source: www.wikiart.org**).**

Painter: Leila Al-Sadi

Explanation: Space, in both its literal and symbolic forms, consistently permeates my artistic work, encompassing both remembered and imagined dimensions. The origin of my photographic work stems from a profound desire to capture and preserve authentic environments, with a particular emphasis on the spaces associated with my early years (Shaygan, 2019). Eventually, I

recognized that advancing as an artist required me to physically revisit my childhood home in Morocco and visually record the world I had geographically departed from, yet remained emotionally connected to. To comprehend my current adult identity, I realized it was essential to reconnect with and examine my younger self. In order to truly grasp the complex intersections of my present life's diverse cultural landscapes, I understood that I needed to journey back to the cultural context of my childhood. This culture, and the space of my childhood within it, was defined for me by certain domestic spaces, spaces that still exist but are slowly decaying. So, I embarked on a project to photograph these physical spaces before they were lost, and in doing so, to see the role they played in shaping the metaphorical space of my childhood (Mojtahedzadeh, 2021).

A distinctive aspect of artistic expression from the Middle East is the contemporary creative output from predominantly Muslim nations. Despite the regions rich historical legacy of Islamic artistic traditions, modern Middle Eastern art cannot be simply categorized as Islamic art in the traditional sense. The primary focus of this artistic genre is to explore and represent the complexities of religious experience in contemporary times. Creative practitioners in this field deconstruct religious life through a blend of mystical and intuitive approaches, while simultaneously incorporating visual elements and decorative motifs drawn from classical Islamic artistic traditions. Consequently, these artistic works, which are frequently traded at prestigious auction venues like Christie's and acquired by cultural institutions and private collectors, offer nuanced political and critical perspectives on the everyday lived experiences of individuals in Muslim societies (Figure 2, work by Aida Al-Khadi, an Iraqi artist).

Figure 2. Artist Aida Al-Khadi; Iraqi artist (Source: Pourjavadi, 2018).

Wijdan al-Majid began adorning Baghdad's concrete surfaces with art approximately nine months ago, motivated by a desire to introduce aesthetic appeal and artistic expression to the

urban landscape, aiming to counteract the city's monotonous and drab appearance. Despite being traditionally experienced in creating art within refined and tranquil gallery settings, he boldly ventured into this new artistic endeavor without hesitation, particularly in a culturally rigid and male-dominated environment that is generally unwelcoming to women (Taheri, Afzal Toosi, and Nozari, 2019).

Among his most significant artworks is a depiction of Mozafar al-Nawab, known as the "poet of revolution," who endured prolonged imprisonment in Iraqi jails for his critical writings about the oppressive Baathist government and who currently remains a deeply respected figure among many Iraqis. Majid has created a minimum of 16 large-scale paintings in and around Baghdad, which include portraits of influential Iraqi cultural figures such as Jawad Salim, considered the pioneer of modern art and a celebrated Iraqi sculptor, and Zaha Hadid, the internationally acclaimed Iraqi-British architect who has since passed away (Naqvi, 2023).

Unity of Expressive styles

The artistic approaches of art from the Middle East adhere to the broader principles of the global art industry and marketplace. The platforms that enable Middle Eastern artistic expression are comprised of a restricted network of exhibition spaces, cultural institutions, art specialists, and professional collection managers who acquire artworks and showcase them on the international stage. Middle Eastern art remains conceptually positioned within a framework where the Western perspective acts as the authoritative interpreter (possessing the ability to evaluate and validate artistic merit), while the Eastern perspective is perceived as a subject of study (containing layers of complexity and unexplored significance). The primary coordinators of this artistic initiative include Christie's auction house, art museums across Europe and the United States, and a diverse collection of regional art galleries. These galleries encompass establishments like Sabz Art Gallery, Majlisi, and Khat Soom located in Dubai, Seyhun, Mah and Hama in Iran, Al Sultan Gallery in Kuwait, Jani Rabiz in Beirut (Lebanon), City House in Cairo (Egypt), Ayyam in Damascus (Syria), Darat Al-Fanun in Jordan, and are complemented by events such as the Sharjah Biennial and the Abu Dhabi Art Fair, along with various art curators from throughout the Middle Eastern region (Lawrie, 2008: 24).

The realm of Middle Eastern art is not automatically a showcase of excellence for all artists, and simply being created by an artist from the Middle East does not inherently qualify a work as Middle Eastern art. To apply this label, certain specific criteria must be met, which are not universally present among all artists (Pappé, 2014). Artists from the Middle East who are associated with postmodern approaches are recognized for their distinctive stylistic and thematic elements in their artistic productions. In other words, the definition of Middle Eastern art includes those who often deal with regional issues with a critical perspective; for example, the issue of

women and the Islamic veil, the confrontation between tradition and modernism, and other themes that reproduce Eastern art in a new and modern image.

As well as the repetition of themes in Middle Eastern art, it is possible to discover a specific inferential structure. In a general classification, the subject matter of Middle Eastern art works includes:

1. Gender-related issues in Muslim societies, including disparities in rights, dress code controversies, and feminist discourse.
2. Tensions arising from the clash between traditional cultural practices and contemporary modernization efforts.
3. The romanticization and perpetuation of stereotypical representations of the East, emphasizing perceived primitive or simplistic cultural characteristics.
4. Ideological tensions between religious principles and political structures.

When considering Iran's prominent position in Middle Eastern artistic expression, we aim to explore and explain the key thematic trends and creative principles that define contemporary Iranian art (Pourjavadi, 2018).

1. Engaging with and reimagining the symbols and preconceived notions of orientalist visual representation. The primary visual archetypes in this artistic tradition depict enigmatic, submissive, and alluring women of eastern origin, either veiled in hijabs or partially unclothed, alongside oriental rulers, peasants, and enslaved individuals within contexts like royal chambers, secluded women's quarters, and traditional bathhouses. These thematic elements are frequently explored in the artistic works of notable contemporary Iranian artists such as Afshan Katabchi, Shirin Neshat, Shadi Ghadirian, and Shirana Shahbazi.

2. Establishing a deliberate and nuanced connection between the iconic symbols of Iran's traditional high culture and the elements of contemporary urban culture, including satirical representations and marginal urban expressions, while simultaneously linking traditional cultural and political symbols with their popular or more vulgar manifestations. Within this approach, Farhad Moshiri creatively pairs the traditional Iranian jug—a symbol with deep historical roots—with every day, colloquial terminology, while Fereydoun Av skillfully relates a concrete symbol like the throne to concepts of heroism, mystical wandering, and urban street wisdom (Entessar, 2009).

3. Depicting historical-cultural contradictions and social and political constraints in contemporary Iranian urban life, focusing on issues of women and youth. In this context, Samira Eskanderfar paints youth in indoor spaces and close-ups, and Dariush Qorehzad depicts young girls on the sidewalk and against the backdrop of Tehran’s graffiti walls.

4. Addressing the signs and issues of contemporary Iranian history, especially the issue of the revolution and the events that followed it, such as the works of Nikzad Nojomi, Mitra Tabrizian, Niusha Tavakolian, and Parastu Forouhar.

5. Spirituality and mystical tendencies with a focus on Rumi. Such as the works of Kamran Yousefzadeh and Shirazeh Hoshyari (Akhgar, 2010: 19).

A significant aspect that contributes to the conceptual cohesion in Middle Eastern artistic expression is the seamless integration of contemporary visual arts with traditional Islamic artistic practices. This includes innovative approaches like painting-calligraphy, which represents a distinctive form of visual representation utilizing intricate linework. Considering the profound cultural reverence for written text within Islamic traditions, artworks that successfully blend calligraphic elements with painting are widely regarded as important representations of contemporary Muslim artistic creativity.

In this regard, a critical approach to the concept of modernity and globalization has fostered local, indigenous, and dominated cultures of resistance. The emergence of discourses of local identities in the era of globalization is indicative of a contested world; the art movement is no exception to this rule. The mainstream of art is built on the paradox of global-local art. On the one hand, art is a product of a local, national, and indigenous society, and on the other, it is a product that claims to express human experiences beyond differences by using abstract and conceptual language; this duality is the essence of postmodern art. From one perspective, it should be said that the origin of the principle of the universality of art stems, above all, from the claim of universality of Western art and the demand of the focal countries to present their artistic themes and styles as the ultimate human achievement. It can also be said that it stems from the collaborative efforts of surrounding countries in this path of artistic development (Pourjavadi, 2018: 245). This concept, which merits the designation of the dominance principle, was progressively developed and refined during the nineteenth and twentieth century periods. Within the framework of this principle, artistic expressions from indigenous, Eastern, African, colonial, and developing world cultures were characterized as subordinate elements of modern art, with their visual motifs, design patterns, and abstracted aesthetic forms being strategically borrowed by artists from dominant Western nations to create an innovative artistic language.

In general, Middle Eastern art can be considered a new narrative of the confrontation between tradition and modernity in geopolitics of the cultural sphere of Islamic art. But the most important representative of modern Muslim art is also European art, which is introduced by powerful institutions of the art world (i.e. some museums, galleries and auction houses), does not represent all artistic movements in the Islamic world (Hassanvand, 2022). Rather, it is a specific and selected type of art that is consistent with the discursive positions of the institutions of power in the art world. In other words, this art, through a mechanism of rejection and approval, recognizes

a specific type of contemporary art as Middle Eastern art and allows it to enter museums and the international art market cycle. Therefore, the claim that Middle Eastern art has been able to deconstruct the polar oppositions of center-periphery, global-local, and modern-traditional art and to offer an understanding and interpretation beyond the traditional polarities of East-West, national-transnational, is not very realistic. As an illustration, the artistic creations of Shirin Neshat, who is frequently recognized as a key figure in contemporary Iranian and broader Middle Eastern artistic expression, offer a novel interpretation of how Western visual traditions have traditionally portrayed the Eastern world. In her notable 'Women of Allah' series, she employs calligraphic elements that evoke Islamic ritualistic practices, uses segregated monochromatic imagery of men and women that symbolize Iran's theocratic governance, and incorporates elegiac musical compositions that suggest a primitive cultural ritual—all of which ultimately reinforce and reframe existing Western perceptions of Eastern culture (Mostafavi, 2010: 38).

Conclusion

Across different historical periods, the role of art has fluctuated between being considered peripheral and being viewed as a fundamental aspect of cultural and societal development. To illustrate, during the European Enlightenment era, artistic expression was often overshadowed by philosophical thought, and later in the 19th century, it was similarly eclipsed by scientific pursuits. However, by the late 20th and early 21st centuries, art began to assume a more prominent position within broader social frameworks. Consequently, as art's significance and influence grew, it started to intersect and interact with diverse domains such as economic systems, political structures, and even athletic endeavors. In European countries, some philosophers like Alain Badiou have thought about the relationship between these two institutions. But in Iran, no one has explained this relationship. The relationship between these two institutions in our culture has its own characteristics, and the model of other cultures cannot be generalized to our society without reflection, because each culture explains this relationship in a different way, and since our thinkers have not been active in this field. In this context, it is inevitable for our youth to turn to other cultures in these matters. Given the current situation and the fact that culture is spreading to other institutions, including the economy, we must quickly restore the status of culture and art, and if we do not do this, we will suffer a deficiency in our cultural identity. Economic growth and enhancement of social well-being. This is because contemporary societies increasingly view 'art' as a catalyst for development. Upon closer examination, it becomes evident that the circulation and influence of culture and art are continuously expanding. Art markets and creative industries are demonstrating substantial and consistent progress. Concerning art diplomacy in the Middle East, it's important to recognize that art and politics, although having different objectives, fundamentally share a common focus and target audience: human society. Consequently, these two domains must maintain a close and

interconnected relationship. Neither art nor politics can afford to disregard the other completely. When they ignore each other, their respective energies become diverted into mutual confrontation, ultimately causing them to drift away from their core purposes. In fact, one could argue that art and politics are mutually dependent for achieving their respective goals. Both spheres are fundamentally committed—or at least aspire—to creating a more refined and compassionate social environment. Their ultimate aim is to establish a society where individuals can access both spiritual and material resources to enhance their quality of life. Therefore, all political institutions of a society need each other and each is supposed to meet some of the needs and desires of citizens. The absence or weakening of each is considered neglect or lack of attention to some of the needs of humans. As a result, the political institution, which is also responsible for managing and organizing all institutions, must be able to use and interact with other institutions, such as the "artistic institution", in specific ways.

Art and politics are interdependent and mutually influential. The political system and artistic realm should engage in continuous communication and exchange. In a context like Iran's, such a reciprocal relationship is crucial for both institutions to successfully fulfill their objectives and contribute to societal advancement.

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

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Ethical considerations

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Conflict of interest

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