

Study of the Fundamentals and Principles of Industrial Design Based on Traditional Architecture

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ABSTRACT:

Architecture, as a social phenomenon, originates in culture and influences it, and serves as a mirror of human thoughts about space, aesthetics, and culture. For this reason, the architectural style of each period is considered a reflection of its culture and art and is consistent with the changes that occur in other areas of life and art. The purpose of the present study is to examine the fundamentals and principles of industrial design grounded in traditional architecture. The research method is descriptive-analytical and uses library resources. The studies showed that today we should breathe new life into old patterns. Instead of photographing them hair by hair, by examining what is fundamentally in their creation and adapting it to new circumstances, we can sow a seed in the seemingly barren land that can sprout again. What is important in this regard is to pay attention to the context of creating new architecture; for a serious structure to improve the quality of the existing situation while preserving values. New developments in a valuable environment must also respond to the needs of the contemporary era while understanding the characteristics of the place. By examining the strengths and weaknesses of buildings built in ways that place special emphasis on the culture, customs, and traditions of the city's people, and on the potentials available in different parts of Iran, more appropriate designs can be achieved in this field.

Keywords: *Industrial design, Traditional architecture, Culture*

INTRODUCTION

Architecture, as a social phenomenon, originates in culture, shapes it, and serves as a mirror of human thoughts about space, aesthetics, and culture. For this reason, the architectural style of each period is considered a reflection of its culture and art, consistent with changes in other areas of life and art, and each new architectural style is based on the principles, methods, and traditions of the previous style. Therefore, there is a strong relationship between various architectural styles, and it seems difficult to draw a boundary between them. Turning points in the path of culture and creativity are among the most important factors in the emergence and development of different architectural schools. Every new civilization and culture begins at a point where the previous civilization and culture has reached a dead end or has faced a crisis. However, its path is a continuation and evolution of its previous and historical path, and only at certain points does it reconstruct its structure.

Each of the old cities and settlements is considered a valuable cultural treasure that reflects the historical trajectory of social life in it. Each physical space is designed to accommodate a specific activity and to respond to its users' needs and desires. Its form, in

addition to being conditioned by the aforementioned factors, is influenced by numerous others, including the characteristics of the natural environment, culture, manners, and traditions. Although we live in a land where the history of urbanization and urban development dates back several millennia BC, and numerous monuments from that era have been discovered so far, most of them have been destroyed due to the materials used and historical and climatic changes (Pirnia, 2010).

In designing a building, it is of great importance to pay attention to the culture, customs, and traditions of the city's people, as well as the potential available in that area. This leads to the creation of a unique and distinctive space that is not only welcomed by the city's residents but can also serve as a tourist attraction. In addition, it is important to pay attention to the potential available in the city. These potentials can include art, handicrafts, music, food, and natural attractions. By combining these potentials with cultural elements, a multi-purpose complex can be created that, in addition to providing diverse services, also contributes to the economic and cultural prosperity of the city. To achieve greater compatibility between the built and natural environments, the built environment must be integrated with the natural environment, and,

on the other hand, the use of modern technology is essential for sustainable architecture (Khalili, 2019). Considering the above materials, the present study uses a descriptive-analytical method to examine the foundations and principles of industrial design grounded in traditional architecture.

Theoretical foundations of Research

Industrial design

Design is the science of creating a design from a mental, imaginary, or realistic image. Design, in a specialized sense, encompasses a variety of concepts and applications; therefore, like the word art, it cannot be defined individually. In the visual arts, design is done either as an independent work or as a preliminary design for a work of art, in which case it is also called a preliminary design. Design is discussed in two general areas: one is painting, which includes personal perceptions, spontaneous feelings and free experiences of the designer from various subjects with independent expression and in various ways; and the other is design, which includes the stages of combining visual elements and space based on the principles of design, for a specific audience and has a practical aspect, such as the fields of industrial design, architectural design, and clothing design (Golabchi, 2021).

Industrial design is a branch of design that is used for both physical and digital products. Both are related to humans and their perspective. User experience focuses on human emotions and perspectives and uses them to design a product. This branch of design has specific rules that help improve human emotions during and after interaction. A person who specializes in user experience design is called a user experience designer, who must be able to imagine themselves as a user and customer of the product. Based on this ability, a user experience designer can examine the product and its parts from the perspective of the audience and the user, and address its flaws or deficiencies. It may be necessary to add or subtract some components and parts in different parts of a product. Before adding or subtracting any step, the user's behavior and interaction must be evaluated and predicted. All of these are the responsibility of the user experience designer.

Graphic Design

Graphic design is one of the branches of design that is widely used in today's world. Graphics itself is divided into several sections, each with many fans. Some of these sections include: logos, magazine and book page layouts, signs and symbols for websites and mobile or computer applications, business card design, office sets, product packaging and labels, book and magazine covers, infographics, software user interfaces, poster and announcement design (Dehghan Monshi, 2010).

Motion graphics are defined as a combination of image and movement. Motion graphics designers complete the animated graphics space by adding elements such as sound and text to the main content. This type of content is used to deliver a message to the

audience as quickly as possible. Today, this type of content is used in many fields because it is short and shows a lot of creativity. Users of all ages can view motion graphics and fully understand the creator's message. On the other hand, such content is entertaining for the audience and leaves them with a positive feeling (Ahmadi Salmani, 2019).

The Art of Architecture

Architecture is part of politics. Architecture is about imagining, designing, understanding, and building (according to the conditions). These conditions may be purely functional in nature or reflect the project's economic, political, and social conditions to varying degrees. Our expectation of architecture, as an art, is more than just responding to the functional programs of the building. The physical manifestations of architecture are compatible with human actions, and the way in which form and spaces are organized and arranged in architecture can yield results from efforts, help extract answers, and convey meanings. Environmental design theories have never been without the findings of other scientific disciplines and the foundations they provide for understanding the characteristics of the environment and how they function. This need is especially true for designers' claims about the impact of design on people's lives (Einifar, 2019).

The fact that architecture is an art is of great importance because there are various distinct views on this matter, and, to a large extent, human taste establishes them. Therefore, there is no universally accepted definition of architecture as an art, and it is not recognized as an adequate or general definition of "art". Of course, many define "architecture art" as "two-faceted". Many experts consider "architecture" a specialty encompassing two aspects of art and knowledge. In fact, they consider "architecture" to be a combination of aspects of knowledge (mathematics, physics, biology and ecology, geology, geography, geometry, drawing and technical and skilled engineering activities) and art (creativity in design and beautiful creation in execution, beautiful dimensions in an architectural structure and three-dimensional form in space, the existence of beauty and pleasure and peace, stimulating human needs, reflecting the philosophy of art and aesthetics). The fact that architecture reflects time, culture, and place lies at the core of this reality. It should be noted that political events strongly influence architecture during its most obvious periods. The artistic form of architecture is not only influenced by political upheavals, but also by the period, time, and cultural situation, and especially by the place and natural borders of neighboring countries, which are strongly involved in its content and development. For example, artistic styles in architecture, such as the Dada, Surrealism, and Expressionism genres, are the result of political collapse and events. In Islamic art, some architectural elements (foreign architecture, the design and implementation of the art of interior decoration, and

the art of music) are strictly prohibited, as is the presence of a female voice in that content. Whatever meaning of architecture as an art we reach, it is bound by the era, culture, and natural borders, and especially by the presence and dominance of our religions. If we think beyond the achievements of architecture and look at architectural works from above, or adopt an impartial view of the art of architecture and its works, we will achieve an amazing result. The result is that the beauty and pleasure aspects of architecture are much more tangible and self-evident than its knowledge and engineering aspects. Therefore, we can call architecture “art” and consider architectural works as works of art (Khalili, 2019).

There are different styles in architecture. In the Gothic architectural style, buildings are taller and pointed. In the Gothic style, churches were more popular for their tall, pointed arches. The Gothic architectural style was very attractive because it flourished and evolved from the 12th to the 16th centuries. Bends, tall pointed arches, narrow columns, spiral spires, and arched columns are the basic features of the Gothic style in architecture. We can see the Gothic style in the Cologne Cathedral in Germany, the Westminster Abbey, and the Notre Dame Cathedral.

The Renaissance style is actually a period of reform and relatively fundamental changes in architecture. The Renaissance architectural style made its architectural genre relatively modern by drawing on the principles of Greek architecture. Every Renaissance architect gave it a more beautiful form by preserving the methods of classical architecture, with the eye of its founder. The most basic features of the Renaissance style include modernized domes and modern classical columns. The Renaissance architectural style can be seen in St. Peter's Basilica, the Louvre Museum in Paris, and the churches of Florence and Milan.

The Baroque style in architecture emerged in the late 16th century. Decorative miniatures are one of the most important symbols of the Baroque style in architecture. The many dazzling decorations, paintings drawn on the ceiling that used light to create a dramatic effect, are considered the most prominent aspects of the Baroque style in architecture. St. Paul's Cathedral in London, the Palace of Versailles in France, and the Fountain of Troy in Rome are considered the highest examples of Baroque architecture.

The Neoclassical style in architecture coincided with part of the Baroque period. Like the Renaissance, Neoclassicism was aligned with Greek architecture. This parallel had a fundamental difference: Neoclassicism was the reverse of the Renaissance and, in most cases, was subject to the rules of classical architecture. The Neoclassical style in architecture features paving stones and domes with a fresher appearance. The White House in Washington, D.C., the Brandenburg Gate in Berlin, and the Hermitage Museum in St. Petersburg are examples of neoclassical architecture.

The Art Nouveau style in architecture is fundamentally different from other architectural styles and methods. This style adopted its architectural ideas from nature and plants. The Art Nouveau style was most widely used in Paris. Curved lines and the decorative use of dimensions that echo nature and plants are the most important features of the Art Nouveau style in architecture. Prominent examples of this style include: the Lavirot building in Paris, the entrance to the Paris Metro, and the Horta Museum in Brussels.

Neolithic architecture is the architecture of the Neolithic era. In southwest Asia, the Neolithic culture appeared in the Levant just after the year BC, and from there it spread east and west. There were early Neolithic cultures in Anatolia, Syria, and Iraq, and the first food-producing society emerged in southeastern Europe and in central Europe. Of course, with a few small exceptions, the origin of copper axes and spears was in the Great Lakes region. The people of the American continent remained in the Neolithic stage in technology until Europeans came into contact with them.

The architecture of postmodernism is the gradual development and evolution of modern architecture, shaped by the time and place needs of humanity in every part of the world. Postmodernism, that is, the highly advanced form of modern art and architecture, is not and will not be separate and excluded from this fact. Of course, postmodernism in architecture is not a pure concept that only takes shape in a given period and then ends, because postmodernism has a style or genre and a meaning and concept beyond style, time, and place (Shahsavari, 2018).

Iranian architecture

Architecture is one of the oldest arts in Iran. The remaining works of architecture show that Iran was one of the first centers of urban planning, dam building, and engineering. The history of this art dates back at least 5,000 years BC to the present day. Numerous examples are scattered across Syria to Northern India and the coasts of China, from the Caucasus to Zanzibar, and they are particularly diverse. So much so that an American architect, Pope, has written that Iranian buildings are diverse. From peasant huts, coffee houses, and pavilions, to the most magnificent buildings in the world. Iranian architectural works are more than anything religious and have a prayerful nature. The customs, religious ceremonies, spirit, ethics, thought, and beliefs of generations are clearly reflected in Iranian architecture. Although it has undergone significant changes over different periods, it has special characteristics that have preserved these principles. These works can be examined in different historical periods.

Building decoration, which is an integral part of architecture, is reflected in brickwork, tiling, plastering, and mirror work, along with carpet weaving, kilim weaving, calligraphy, pottery, inlay work, wood carving, Chinese knotting, and other handicraft achievements, creating a unique bond that

fills the architectural space of Iran with spiritual beauty, which itself also brings with it external beauty. Architecture, along with other Iranian arts, is an integrated, interwoven thread that has influenced one another, especially handicrafts, which, in addition to being decorative and aesthetic, also play a practical role in people's daily lives. Handicrafts, due to the lack of need for much investment and the presence of local raw materials for production, and the existence of development areas in different regions, and the creation of high added value, have occupied a large part of Iran's human and economic force, and this plays a prominent role in traditional architecture. Handicrafts and architecture have always complemented each other and have common characteristics. Iranian buildings such as mosques, minarets, houses, gardens, bridges, castles, and water cisterns. Each requires a specific type of handicraft, such as tiling, latticework, murals, and carvings. The diverse climate in Iran has led to great diversity in architecture and its decoration, and as a result, all kinds of handicrafts play a significant role in architectural decoration. Handicrafts in various fields, such as carpet weaving, kilim weaving, pottery, glassmaking, metalwork, stone carving, wood carving, mat weaving, tiling, and embroidery, are closely related to architecture, so their shapes depend on the traditional Iranian architectural space. Some architectural components and spaces are crafted in the style of handicraft products.

Traditional Iranian architecture has also played a significant role in creating various forms of handicrafts; for example, a weaver determines the size of a carpet based on the size of the room, and a potter creates the desired shape and volume based on the position of the pottery within the building space. The harmony of handicrafts with architecture extends beyond form and color to content, and the artist has sought to express his connection with nature and his spiritual view of existence. Due to their diversity and breadth across various fields, handicrafts have many applications in architectural decoration, including four parts: decoration inside the building, decoration of entrance spaces, decoration of the connecting space inside the building, and decoration of the connecting space outside the building. The exterior decorations of the building must be resistant to weather and sunlight and maintain their quality. These decorations mostly include mosaic or seven-color tiling, which, in addition to decorating the building with various patterns and colors, also serves as an insulator against snow, rain, heat, and cold. Tilework in Iranian architecture is the identity card of the building and has a specific history and a regular development process. With the beginning of the Islamic period, tile work finds a special manifestation in religious places, the altar and dome of Sheikh Lotfollah Mosque and the dome of Shah Nematullah Vali's tomb in Mahan, Kerman, the Blue Mosque of Tabriz, and the dome of the Chahar Bagh Mosque in Isfahan are clear examples of this art. Tilework is the most important

feature of the decoration of traditional Iranian architecture, a continuation of brickwork.

An important point in Iranian tilework is the color of the glaze. Iranian tiles are mostly turquoise and azure, with white, green, and gold as secondary colors, and these colors are common in traditional Iranian arts. The entrance spaces of buildings in Iranian architecture, especially residential and religious buildings, play an important role and are covered with a canopy featuring an arched arch. The decoration of this part of the building is generally tilework; in addition, there are examples of mirrorwork and brick latticework. Mirror work is a delicate art used in the interior decoration of buildings, on top of plinths, under doors, in arches, porches, nightstands, lobbies, and other areas. Muqarnas work and plastering are also considered architectural decorations. Muqarnas work, which is the continuation of brickwork, inspires a balance that seems to serve the task of transferring the roof or dome to the foundations, like the ratio of heaven to earth.

The interior decorations of a building vary depending on its type, and this diversity increases across different periods, but there are also common aspects in all of them, including creating a space where the people using the building can realize their aspirations and find peace. In the interior decoration of a building, the variety of handicrafts can be used more. In addition to being a floor covering, the carpet is one of the important components in decorating the interior space of Iranian buildings. Because it covers the floor of the building on which people sit and sleep, and sometimes it is also hung on the wall as a beautiful decoration, and sometimes double-sided carpets are used as a separating surface between two spaces. The closeness of the design and pattern of the carpet to the tile patterns expresses the closeness and coherence of Iranian arts. Other sub-styles include kilim, jajim, traditional textiles, hand-made curtains with various uses, items decorated with Khatam, wood carving and mosaic, various types of embroidery, and metal objects, all of which beautify the Iranian living space. Handicrafts in Iranian architecture do not only serve to decorate the space; each one has various uses in its own place. Decoration between the interior and exterior space includes doors and windows. The “doors” of buildings, which were made of wood in the past, were the home of the craftsmen of wood carving and metalworking. Carved and inlaid “doors” with very beautiful metal clones made the status and importance of the building clear. The designs on the doors, including the symbolic ones, are a manifestation of Iranian thought and culture in the arts. The “sun” pattern, the most important on the doors, is a sign of light, blessing, and health for the homeowner. The window, which spreads light and brightness into the interior space, is also mostly made of knotted wood. And sometimes, colored glass creates a rainbow of light in the interior space (Falahat, 2018).

Art

In the sciences of philosophy and existence, art has a very close relationship with metaphysics, existentialism, and realism. The Encyclopedia Britannica defines art as “the use of ability and imagination in creating beautiful works, environments, or experiences that can be shared with others.” Of course, there is no comprehensive agreement on what constitutes the basis of art. The nature of art and related concepts, such as beauty and creativity, are studied in a branch of philosophy called philosophy of art and aesthetics. Works of art are also studied in disciplines such as art criticism and art history (Zandieh Vakili, 2018).

Fine arts and crafts are a measure of the spiritual and spiritual development of a nation. In this world, among the thousands of tangible things that we become aware of under the influence of our five senses, there are some things that we involuntarily love more. Our soul and heart are fascinated by them, without any practical or immediate benefit to us; for example, when we stand before a painting depicting the fruit of an artisan's mental and spiritual powers, we spend hours watching it and are overwhelmed with wonder and surprise, which includes all works of art except the above. Sacred art has always had two fundamental purposes first, the beauty of the form of worship, and second, its guarding and protection. The second characteristic of sacred art is that Islam does not consider beauty desirable; rather, it contemplates beauty as perfection. What is the source of scattered motifs and the cause of scattering of the mind is denied in the realm of Islamic art; any golden decoration or luxurious clothes in worship are rejected. According to Burckhardt, religious customs are divine art. Since it is a kind of manifestation and symbolism at the level of human forms and states, seeking a way beyond all manifestations and objects of existence. In Christianity, these are prayer customs, such as the Eucharist and special Christian customs involving sacred art, namely Christian architecture and iconography, which are among the most prominent manifestations of Christian art. Considering the intrinsic meaning of Islamic worship and the art that aims to beautify it, in the Islamic world we see the benefits and artistic reflections of religious customs in a different way, namely, apart from the concept of iconography in Christian worship, which is also considered a type of art. The term industrial arts is usually used to describe that part of handicrafts that is more dependent on art than on technique.

Artwork means a work of art, or a work of art, and refers to a work that is produced or intended to have aesthetic value. In graphics, printing, and advertising, artwork is ready to be sent for printing, such as a computer file or image engraved or printed on paper and the like, which, after undergoing the pre-printing steps by lithography, enables the production of a printing medium such as film and zinc or cliché and gravure. The term is also used for assembled lithographic films or films removed from an

imagesetter and ready to be transferred or copied onto printing zinc or gravure. Other terms used for this concept in printing and graphics include final work, mechanical, copy or camera-ready, Bon à Tirer, or pasted-up.

Research Background

Roya Sadeghi conducted a study in 2019 titled “Investigating the Relationship between the Physical Design of Residential Complexes and the Sense of Place Attachment in Residents” and stated that after examining the concept of place attachment using questionnaires, SPSS, and analyzing the results, it was concluded that among the indicators of facilities and amenities, organization, quality of internal spaces, and type of access and view, the last two factors can play a role as influential factors in increasing the sense of place attachment.

Shakeri et al., in a study titled “Designing a Multipurpose Commercial Complex with an Approach to Social and Cultural Interactions” in 2019, stated that shopping centers and commercial complexes are among the most attractive parts of the city and are places that are usually busy most of the time. The formation of commercial centers in cities has always been in line with urban trends and development. In the past, commercial complexes did not exist in the form and shape we see today, and all commercial services were provided to citizens through markets. What distinguishes shopping malls, arcades, and new commercial spaces from the bazaar is the lack of non-commercial spaces and locations in these centers.

CONCLUSION

Today, one of the important issues related to small and medium-sized cities in our country is the lack of dynamism and vitality, the city's texture moving away from its original culture and customs, the existence of an identity crisis, a weak sense of belonging to the place, and the uniformity in the eyes of citizens. The lack of recreational, cultural, and welfare facilities for city residents, especially medium-sized and small cities, makes them feel depressed, and some of them go to large cities that have more facilities to spend their free time; as a result of such deficiencies and lack of attention to the needs of the residents of these cities, migration occurs and causes economic, social, and cultural stagnation, and also causes the lack of progress of these cities.

Considering that the basic pillar of any society is the culture of that society, and considering that cultural growth is very important in any society, it seems that in order to achieve this goal, it is necessary to create several centers in different cities. Therefore, the cultural characteristics of the country should be sought in society, in the center of education, and even in artistic manifestations, and the factors that have contributed to their growth should be recognized. As we see, in the distant past and to some extent close to our time, the clash of opinions, ideas, and tastes usually took place in centers such as the market,

mosque, coffee house, bathhouse, and in general in open and free spaces and even in the passages, and thus the foundation of social, economic, and political issues, each of which has had an effective role in the formation of the culture of the society, has been formed.

Language, calligraphy, clothing, handicrafts, national celebrations, and religious ceremonies constitute social customs and traditions that have formed another part of the culture of the society. Another noteworthy point is that, in our past culture, each art form had its own unique form. However, we cannot ignore the artistic value of manifestations such as local festivals accompanied by dance and music, as well as other artistic manifestations such as painting, especially architecture, and, more recently, traditional theaters (such as Ruhodzi). However, as time passed and social civilization flourished, a significant change gradually occurred in society, in such a way that new centers were dedicated to gathering spaces, and among them, halls, tea houses, restaurants, bars, and spaces for healthy entertainment were able to leave behind significant and valuable works.

In general, traditional Iranian architecture is a symbolic manifestation of the eternal and eternal world, which considers this world to be a temporary place and an intermediary to reach a higher level to achieve inner peace; Iranian architecture, which has been manifested in various forms in various buildings, has a special place in which beliefs, customs, and rituals are clearly reflected in geographical and climatic conditions, and is the result of the suffering of artists who, relying on their faith, have sacrificed their lives to elevate this art and have spared no effort in this path.

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