2024
volume 21 | issue 1

ENQ
The ARCC Journal for Architectural Research

Semiotics of Mirror-tile Artwork Decoration in Iranian-Islamic Architecture

Naeim Sepehri

Abstract

Mirror-tile geometric artwork is considered the last innovation of Iranian artists in the group of fine arts. This artform utilizes small segments of mirrored glass, for the interior decoration of buildings. Mirror-tile Artwork has economic origins and recycling roots. In the beginning, the mirrors, which had been brought to Iran from Europe, broke during transportation. Iranian artists and Muslim craftsmen found an innovative way to take advantage of these broken pieces and used them as Mirror-tiles. In traditional Iranian-Islamic art, the mirror has been the subject of aesthetics for architectural decoration and includes deep cultural concepts that have not been considered for various reasons. This research looks at semiotics from an Architectural Semiotics *linguistic* view. The article builds off the work by Eco, Barthes, and Saussurean theory and explains the use of the Mirror-tile art in Iranian-Islamic architecture by the Signs Message-Meaning and by using the Peircean Meaning Circle. The aim of this study is to introduce the genuine aspects of mirror art as an influential architectural element through the thoughts of its creators. In this research, the concepts related to semiotic ideas are dealt with descriptively first and then connected to various semiotic theories through an analysis of Mirror-tile works and Persian literature. In semiotics, meaning is a concept extracted from a system that shows other signs in the text and no sign alone has meaning. For these craftsmen, that is at the core of their creation. Among the mystics, the inner language is the language of Spirit and Truth, and the tools of that language are the symbol and indication. With the influence of the Persian mystical thoughts about the mirror, this study surveys available historical and contemporary sources and analyzes them. Semiotics allows the hidden meanings in Mirror-tile artwork to be revealed by making the connection with mystical thoughts through Persian literature.

Keywords: semiotics, Mirror-tile artwork, decoration, Iranian-Islamic architecture, symbolic.

Stable URL: https://arcc-journal.org/index.php/arccjournal/article/view/1087
DOI 10.17831/enq:arcc.v18i1.1087

Corresponding Author: Naeim Sepehri <naeim.sepehri@yahoo.com>

INTRODUCTION

The Mirror-tile's abstract nature can be better appreciated by first understanding its linguistic piece. Charles Sanders Peirce's sign theory, or semiotics, is regarded as a history of signification, representation, reference, and meaning. He discusses the importance of signs and the relationship between architecture and language, noting that *Symbol*, *Icon*, and *Index* are three categories of *Signs*. Peirce's work is notable for emphasizing the importance of interpretation.

Understanding this linguistic theory can frame the nature of the abstraction and significance of Mirror-tile decoration in Iranian-Islamic architecture. Using semiotics helps to study the collection of influential factors in the emergence of signs and organizes it as part of social life.

While many of the instances of Mirror-tile art have been lost, their significance remains. "The research on the allegorical expression of the Mirrors and the Islamic mystical thoughts of Iranians is one of the important issues in the aesthetic of the history of art in the Islamic era, especially architecture and Persian poetry, which is still remains untouched, and the field of research is open" (MullaSalehi 1998). "The lack of theoretical studies on Iranian Mirror-tile Art-works has made it difficult to conduct scientific and systematic research on it" (Poorzarrin 2014). "Mirror-tile artwork is *religious* and *traditional* art" (Torkaman and Farshchian 2017).

Mirror-tile art was used to decorate royal buildings (Figure 1) and holy shrines.

This artwork is divided into three categories: *residential*, *pilgrimage*, and *garden* (Figure 2). Mirror-tile artworks are different in these three uses and crystallize this exquisite art, mainly *mosques* and *holy places*. "Mirror-tile art has gone beyond royal palaces and holy places, and traditional methods in combination with innovations have been widely used in public places and even homes" (Fallah G, Aziznejad, and Vaezi 2016).

1. MIRROR-TILE ARTWORK

According to Saussure's (one of the most critical influences on architectural theory) Theory of the Sign; "Iranians have always considered water and the Mirror as two *Signs* of *Purity* and *Light*," and the use of mirrors as one of the architectural elements may not be unrelated to this (Riazi 1996, 12).

Thousands of years before humans knew about metals and made metal mirrors, humans used water as a mirror. The ancient Greek myth of *Narcissus* confirms this. The mirror is probably one of the first human-made tools, made with the knowledge of metal and the ability

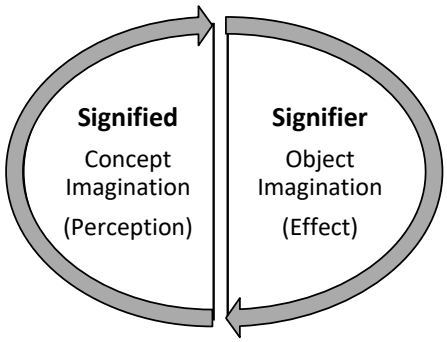

Diagram 1: Two components to Saussurean theory of the Sign; textual and intra-sign relations (Drawn. Author).

to polish it (Riazi 1996, 8). The manufacture and use of glass mirrors became common in Europe from the 13th century CE. In the middle of the 17th century CE, it spread throughout Europe, and its use increased; such mirrors were very rare and expensive (10).

The use of glass mirrors and Mirror-tile artwork as it is now observed has economic origins. Glass mirrors, which had been brought to Iran from the 16th century CE as one of the items imported from Europe, especially from Venice, frequently broke during transportation. Iranian artists found an innovative way to take advantage of these broken pieces and used them as Mirror-tiles. (Riazi 1996, 12) "Using broken mirrors as recycling creative art by Muslim artificers" (MullaSalehi 1998) because 'Being wasteful is an act that is abhorred in Islam' (Quran 17:27). The following Persian poem from the 'Kashmiri' (Persian poet of India in the 17th century CE) indicates this fact:

> Every part of my broken heart is the grass from His look
> The Mirror, after breaking, is is the collection of mirrors [Mirror-tiles].
>
> — Binesh Kashmiri (Azaimabadi 2012, 244 [Transl. Author]).

In the 19th century CE, when Mirror-tile became more popular, delicate, and accurate, thin mirrors were made in Germany and exported to Iran. The rapid evolution in all stages of human life, especially *consumerism* "not compatible with the spirit of the artificer's creation" (MullaSalehi 1998, 11), created a *gap* in the "*economy of art*" between the artisans of this area because these mirrors could easily and quickly be used in any geometric shape (Figure 3). Today, these mirrors are produced in Iran, or easily come from China without breaking in transport.

The most common design in *Mirror-tile artwork* is the design known as Girih-tile (Figure 4 and 16), which is

Figure 1: The entrance of Golestan Palace Mirror Hall, Royal Qajar Complex, Iran, Tehran. Source: https://kojaro.com/attraction/8696-خاک-گلستان-تهران.

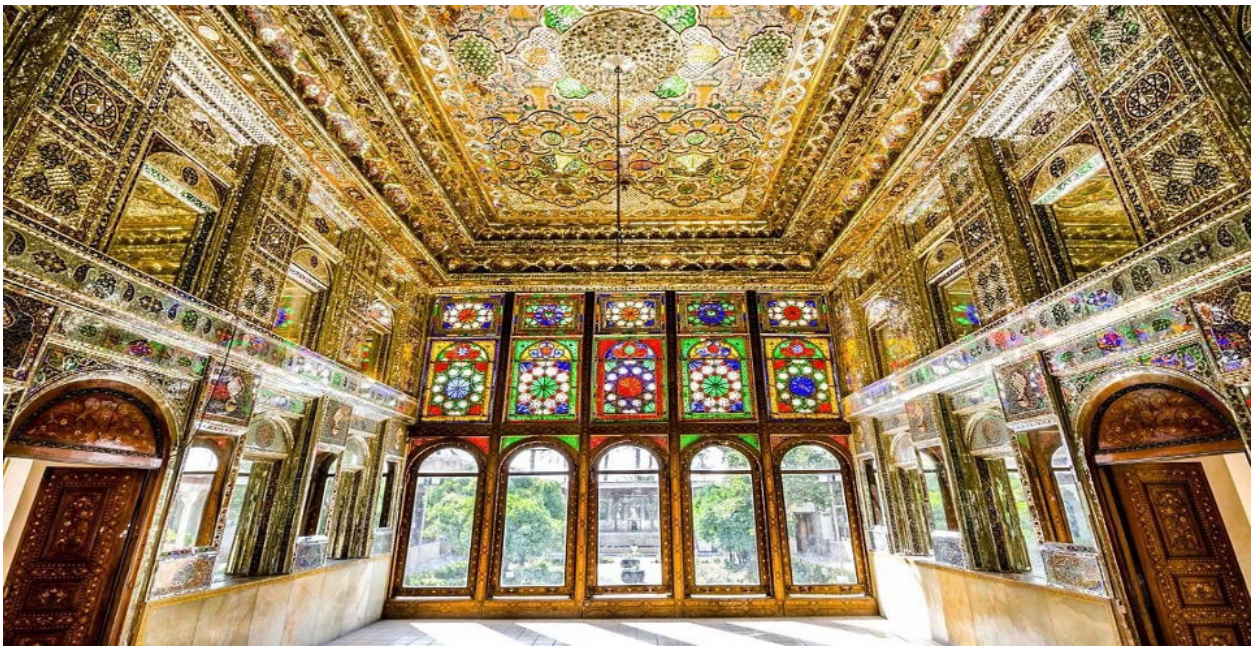

Figure 2: Qavam House Mirror Hall in the 'Narenjestan-e Ghavam' Garden, Iran, Shiraz. Source: https://mizboon.com/Blog/1398/08/zintulmuluk-house.

Figure 3: Creation of the Mirror-tiles from a full mirror plate. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

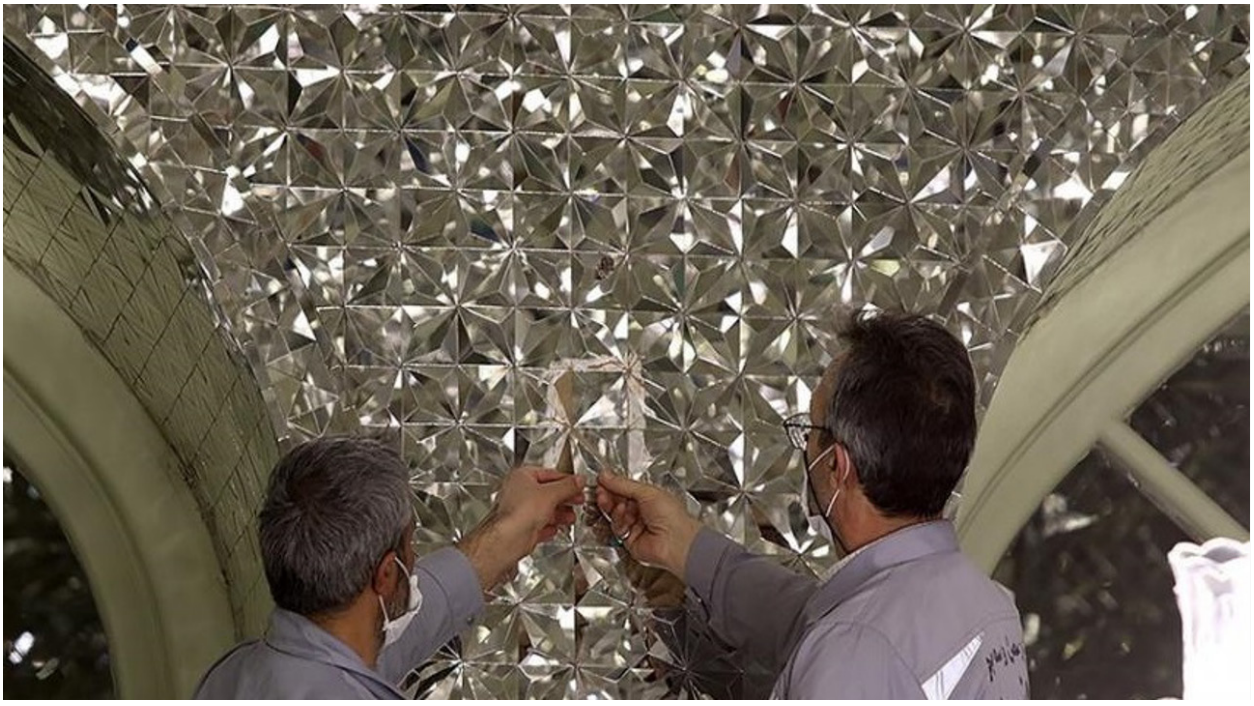

Figure 4: Mirror-tile Girih-tiles of Imam Reza Holy Shrine, Iran, Mashhad, 2021. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

Figure 5a: Strapwork Method; Construction from Circles to Lines to Stars (Teiangles) to Overlapping Lattices. Source: (Moradzadeh and Nejad Ebrahimi, 2020).

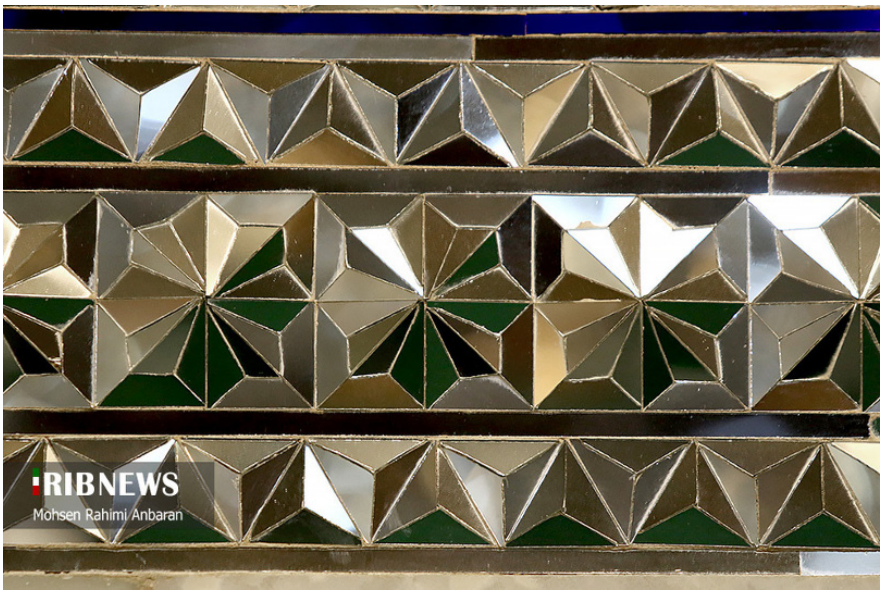

Figure 5b: Strapwork Method in Mirror-tile Artwork of Imam Reza Holy Shrine, Iran, Mashhad, 2021. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

unparalleled in terms of the variety of shapes and applications of different fields of Iranian-Islamic artworks architectural elements (Riazi 1996, 12).

1.1. The Geometry

Geometry has a long history in the Islamic culture, where it is used to create complex designs in construction and tile paths and fabric patterns. "This extremely stylized Form of art has evolved through time from simple patterns to complex geometries with a high degree of mathematical symmetry. Many of these complicated patterns may be made using the *Strapwork Method* (Figure 5a and 5b), which involves transforming circles and squares into stars and overlapping lattices to create a more complex symmetric pattern" (Tennant 2008, 297).

1.1.1. Origin and Surrounding

According to Saussure, signs refer to each other in practice, and no sign finds meaning singly, and its value and validity are due to the meaning interfaces of a concept that creates a meaningful text (Diagram 2) about other signs (Saussure 1983, 118).

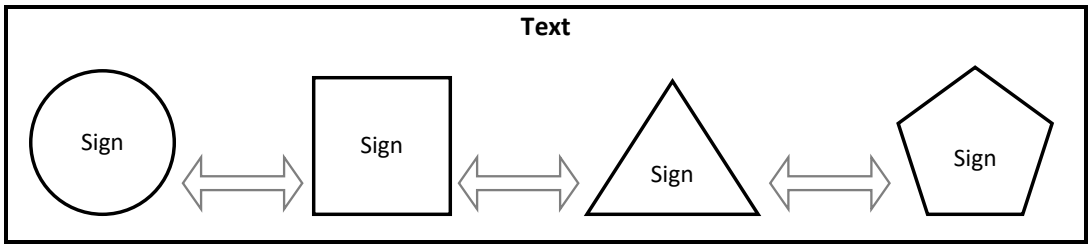

Diagram 2: Saussure's signs and intertextual relations (Drawn. Author).

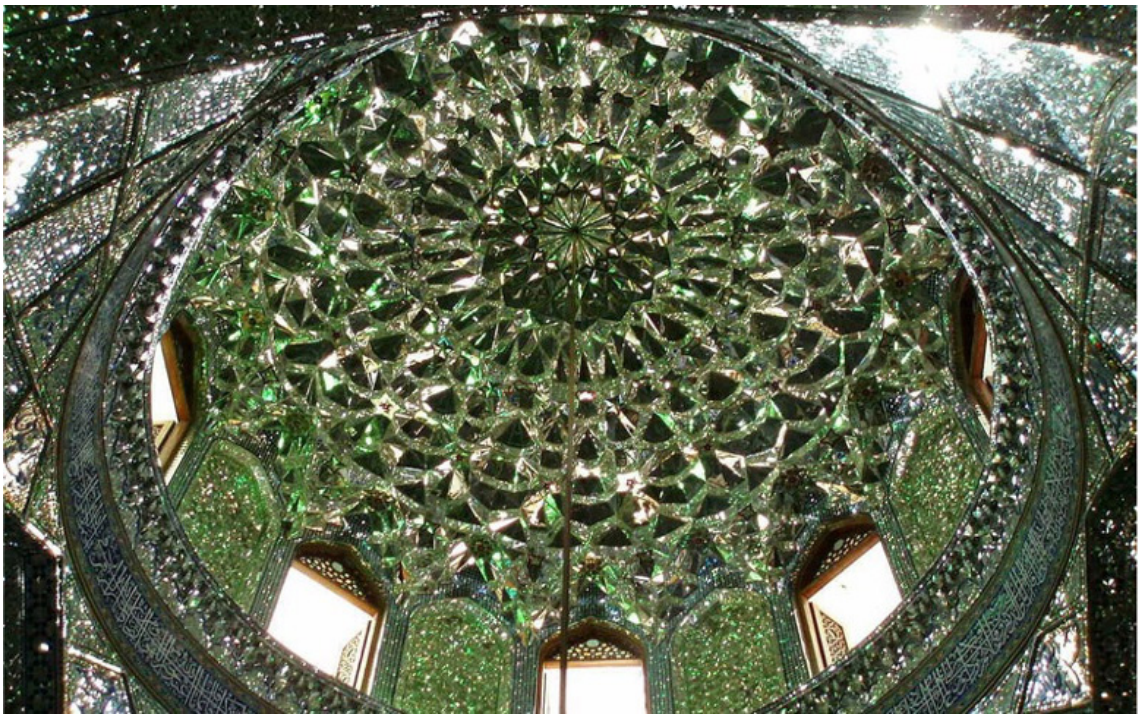

Figure 6a: Non-existence *Origin* and its *Surrounding*. Dome interior of the King of Light Shrine. Source: https://commons.wikimedia.org/wiki/File:ShahCheraghShinyDome.jpg.

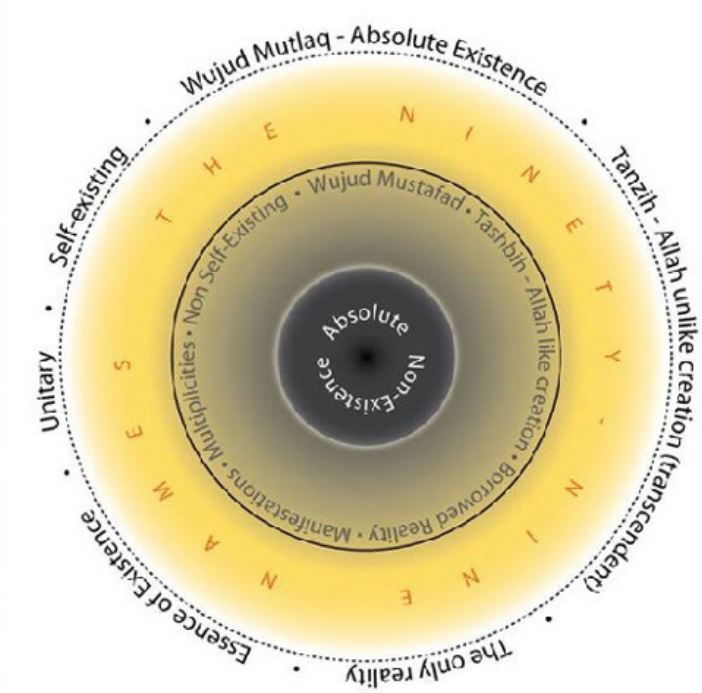

Figure 6b: Mystical expression from Ibn Arabi. Source: (Seth Miller, 2007. Ibn al-'Arabī and the Oneness of Being. https://elements.spiritalchemy.com/img/Oneness.jpg).

The origin is the incarnation of absolute non-existence (as the source of all existence) in the physical world, and its sign is the Dot. Any other existences surround it. This symbolic manifestation was also seen in holy places with Mirror-tiles (Figure 6a and 6b).

According to Heraclitus, "in the circumference of the circle beginning and end are the same" (DK22B103).

If an action, object, or idea can be defined, it must have a place of beginning or departure, in terms of its manifestation and a person's awareness of its emergence. The point symbolizes a unified center of consciousness in the mind and a focused event in a previously continuous field in the *physical world* (Critchlow 1976, 9).

The point is shown as a white *dot* representing oneness and source (Figure 7). In terms of geometry, it represents the center — the elusive controlling point of all forms. The direction is indicated if the manifestation of the point suggests a departure from its source. The spatial orientation is qualitative, and hence the first departure or line path from the point is qualitative (Figure 8). Homogeneous space is a contradiction in terms — if it is to be measured. The requirement to connect measurement to quantitative space demonstrates this: a measurement can only be made between two locations at the endpoints of a line path; thus, the direction must come first. Once a direction in space is chosen, that direction is predicated on that decision; therefore, definition cancels homogeneity. The definition of space is qualitative from the start. The line path may be thought of as the point 'externalizing' itself. However, it comprises three components — two ends and a relationship between them; a line, i.e., when a point has traveled outside and away from its initial location, represents the 'polarity of existence' (Critchlow 1976, 9).

Critchlow continues, polarity manifests itself in the connection between the center, the *passive* 'original' point, and the outer projected *active* point, which has a regional departure from the point of origin. This equation creates an arc representing our initial departure as the radius (Figure 9). The arc denotes the central point's control and the delineation of the activities outside boundaries, while the movement denotes an expansion. As the arc closes (Figure 10), another primordial 'threeness' becomes evident: a source's origin point, *the controlling element*; as a path or field of departure from this center; and the domain's boundary (Critchlow 1976, 9).

Crichlow argues, the center is always hidden from our point of Origin. It seems on the page, when investigated closely, it constitutes in itself a domain or field, the

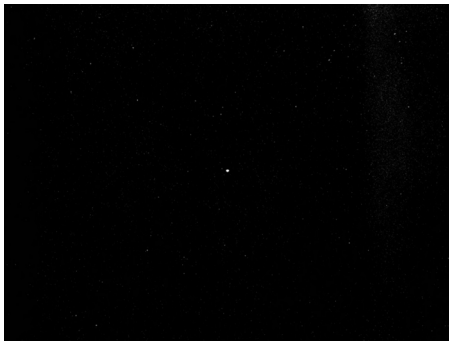

Figure 7: The *Dot* is a *Symbol* of *Unity* and *Source* (Critchlow 1976, 10).

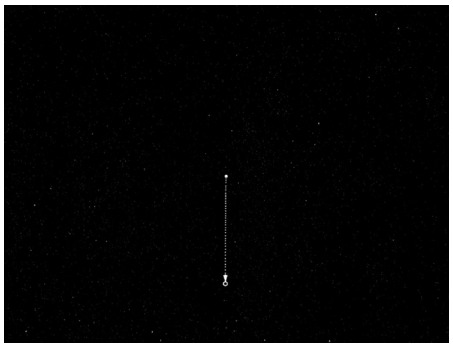

Figure 8: The first move, creating a line (Critchlow 1976, 11).

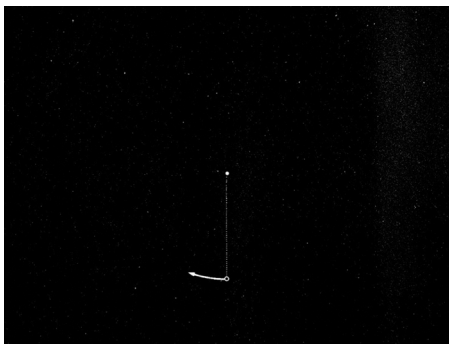

Figure 9: The second movement, the arc is creating a boundary (Critchlow 1976, 12).

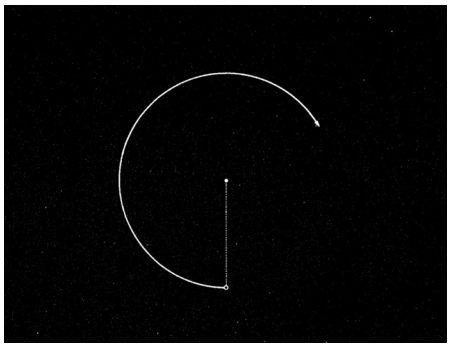

Figure 10: The closing of the circle creates a domain (Critchlow 1976, 13).

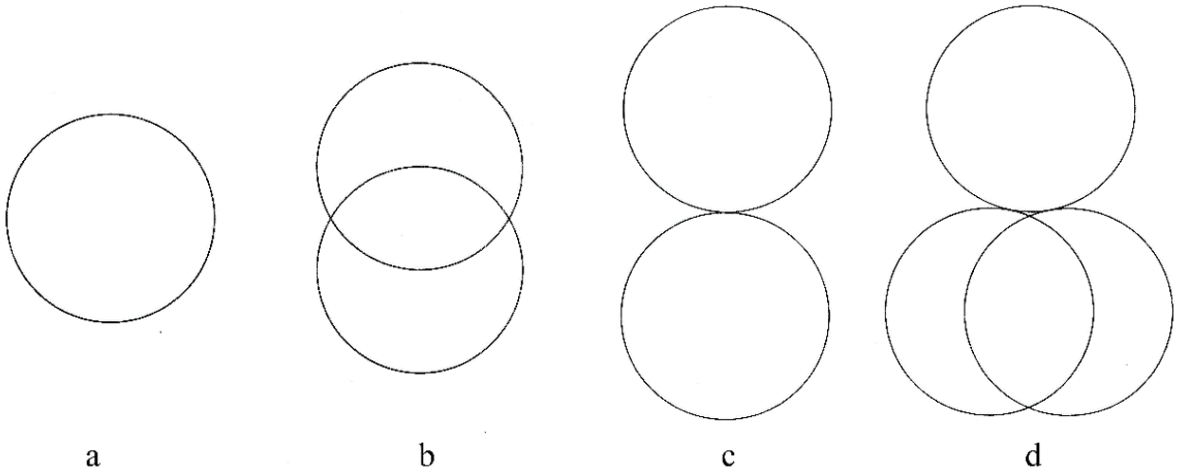

Figure 11: The Base Circle of all Geometrical Creations (Critchlow 1976; Drawn. Author).

center of which will continually elude 'placing' in the strictest physical terms. An unobserved heterogeneous core surrounds even the atomic nucleus's most basic components. To inscribe an arc, we put the still point of our compasses on the center and move the other; this is the best way to convey both *Symbol* and *Reality* (Critchlow 1976, 9).

Once the enclosing circle is completed (Figure 11a), it is possible to achieve oneness.; this represents the original point's oneness (Unity). The circle is not only the most beautiful 'parent' of all the polygons, both enclosing and underlying them, but it is also the perfect representation of justice — equality in all directions in a finite domain. The circle has long been considered a symbol of eternity, without beginning or end, *simply existing*. It travels around as a symbol within the bounds of time, or rather as a subject to that condition of existence, exactly as the active compass point returns to its original location. In essence, it forms a helix — the circle's representation in time. The circle expresses 'threeness' in itself, i.e., center, domain, periphery, and 'fourness' in a manifest context, i.e., border, domain excluded, center, domain included (Critchlow 1976, 9).

After establishing the existence of Unity between the circle and the point, the next step is to establish the existence between the circle and the point; the process of departure or externalization may also be expressed in the entire circle. A succession of significant arcs is created as leaving or 'externalizing' from the initial circle. The most important of these in our existing context is the *halfway* point (Figure 11b), the last point at which the leaving circle touches its origin's center. This position holds essential symbolic value since it represents a union of an origin and a manifestation where both centers coincide with the peripheries. The amount manifest of the departing circle precisely reflects the amount left of the original. In addition, the leaving circle has traveled away from its concealed core by the same amount that the original circle did to create itself (Critchlow 1976, 14).

1.1.2. Proportions of shapes

According to Barthes: "The first level, the literal level, is a fairly stable relationship, but the second level, the level of connotation, can have even more resonance" (Diagram 3). So Barthes imagined this, and diagrammed this idea is a *staggering sign*. Moreover, in principle, the

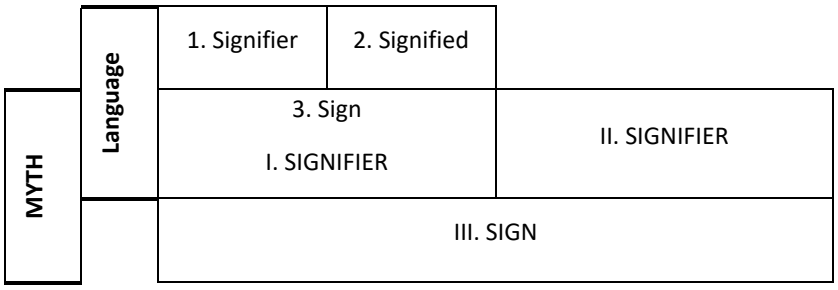

Diagram 3: The staggering of the Sign (Barthes 1957, 200; Drawn. Author).

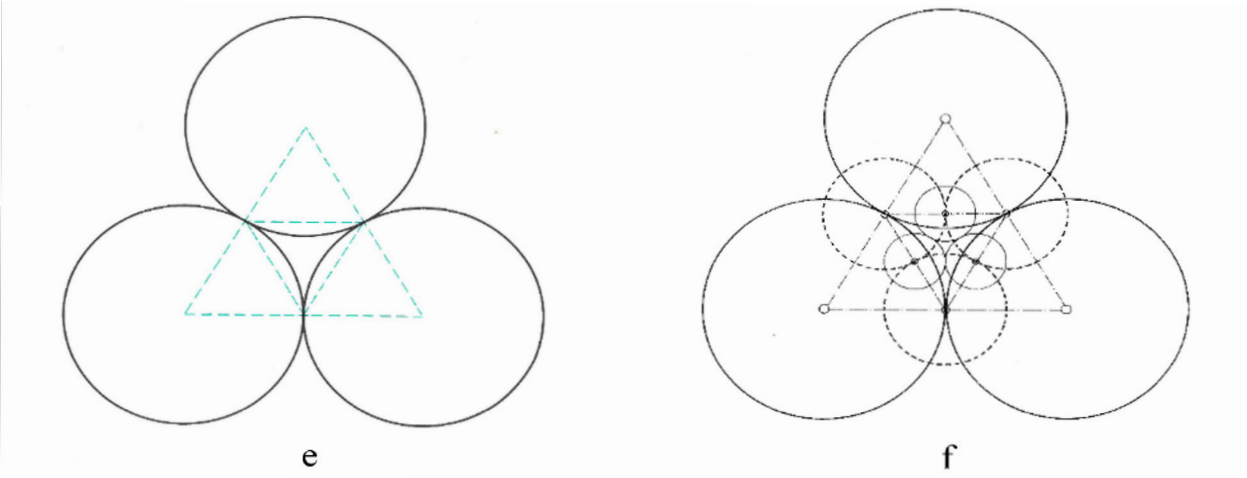

Figure 12: Triangle, the first regular and straightforward polygon in geometry (Critchlow 1976; Drawn. Author).

Sign can keep staggering and refer to more significant and more complex associations and connotations (Hays 2021, 10.5).

The completeness of the reflection of the departing circle from the original one is represented by two circles. Here (Figure 11c), the connection between the two has been reduced to the point of contact; the source of the original circle is reflected in this manner. Technically speaking, the measurement may be recognized from this point since it is 'in-between' the two main unities and therefore marks the first measurable distance, i.e., from center to center. Surprisingly, the meniscus may be seen as another representation of eternity in the shape of infinity. If the way is taken as a continuous movement, say from the top (however, as with the circle, the beginning can be anywhere), downright through the contact point, down further left around the bottom circle, and back up through the contact point again left to top, this may be seen to be related to the Form (Figure 11d). That is a *symbol* of a way equally overpassing origin and manifest reflection — the implied inseparable relationship but invisible — because the borders of each circle belong to both in this sense. In terms of the externalization of our prototype circle, we have only defined one direction. We may polarize the exteriorized circle via a lateral expansion to create a limited primordial area, by maintaining the three peripheries in touch and thus the expanding centers on an arc defined by the original circle's center. On its path to a condition of equilibrium and maximum expansion, the expansion between these polarizations of the lower circle will travel through a sequence of essential arcs (Critchlow 1976, 15).

When the maximum lower expansion is achieved, all three circles come to rest with their outermost points barely touching, forming the 'central polygon,' the *triangle*. The directions between the centers are three, as are the points of contact. However, the relationships between centers and points of contact are nine, and these bound four triangles having the primary radius as their sides (Figure 12e). Therefore, the triangle is the initial polygon, the simplest shape to which all other polygons may be reduced, and the minimum representation of an area. It is also a metaphor for consciousness's most basic need. i.e., *Knower*, the *Known* and act of *Knowing*, as well as a rudimentary explanation of physical requirements: ingestion, absorption, and excretion. (Critchlow 1976, 16).

When performed in a constant relationship to each other, the three circles express the equilateral triangle by the connections between their cores, their outermost boundaries, and their contact points. Suppose we take the contact points as new centers of domains and draw circles (Figure 12f) with half the radius of the three bigger circles, we end up with an inverted version of the initial pattern of circles. This process can be repeated, with other circles with a radius half that of the second group, to produce a pattern conforming precisely to the original large group; it also exemplifies the concept of proportionate growth or decrease in an arithmetical series. In each instance, the triangle doubles in size or shrinks by half. The connection between the center of one of the bigger circles and the center of the next smaller circle opposite it, on the other hand, is three, about the radius of the larger circle when measured as unit edge length. As a result, a harmonic series will appear in the sequence (Critchlow 1976, 16).

1.1.3. Circle Divisions

Symbols can exhaust verbal explanation, but Symbols are in no way exhausted by a spoken explanation: a verbal explanation does not exhaust symbols in any manner; even if they merge, there is still a distinction

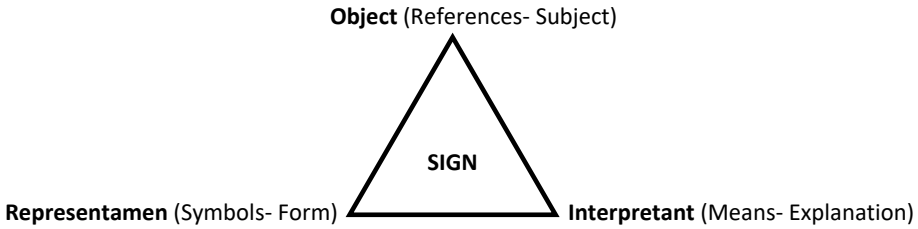

Diagram 4: Peirce's *Process of Semiosis* in a Semiosis Circle (Drawn. Author).

of reference between the topic and the explanation. A pattern, like a number, is a vehicle for archetypes and one of the essential prerequisites of existence. When arrangements arise from and return to simplicity and unity, they show certain underlying connections that become hierarchical (Critchlow 1976, 24).

Pierce considers each Sign to have three aspects: *Representation*, *Interpretation*, and *Subject* matter. He called the interaction between these three aspects "Process of Semiosis," a Semiotic System (Diagram 4).

We have seen that the triangle is the first distinct region to be defined and that the hexagon is the third 'unity' and second form. We may now see that the square appears as a result of our basic pattern. Hexagon and triangle are complementary and dual, the one that coexists with the other. The square is self-dualling and self-reflecting when squares emerge from a *Square Matrix*'s center (Critchlow 1976, 24).

The *square* of earth or materialism, the *triangle* of human awareness, and the hexagon or *circle* of heaven are represented (*symbolize*) by these three *fundamental forms* (Picture 13), (Critchlow 1976, 24).

1.1.4. Triangles

According to Plato, solids are three-dimensional figures, and they are constructed out of plane figures, that is, two-dimensional figures. Also, every plane figure is a triangle, at least if it has straight sides, a simplifying assumption that Timaeus employs in constructing his model. So if the *Demiurge* is going to construct the perfect solids, they must be constructed out of the perfect triangles (Sauvé Meyer 2021).

The triangle is the initial polygon, the simplest figure to which all other polygons may be reduced, and it is also the minor statement of an area. The triangle is also the basic physical shape for creating and filling up Girih-tiles in Mirror-tiles.

We contemplate the category, think about it, analyze it, use it, and acquire experience with it in the Peircean Meaning Circle (Diagram 5) so that we can begin to identify patterns, laws, *habits* (refer to Peirce's Concept of Habit), or new connections and interconnections with it.

In addition to the square (a perfectly symmetrical two-dimensional figure) and the hexagon, the triangle (Figure 14) is the only figure which can fill up space around a point without leaving space. The tip of the triangle is the active zone: its point below symbolizes an active shape towards the ground and a passive form towards the heavens. Conversely its point upward symbolizes an active form towards the heavens and a docile form towards the earth. "Triangle is fundamental to many geometrical figures and is a primary source for generating three (Fire: tetrahedron, Air: octahedron, and Water: icosahedron) of the *five platonic solids*" (Ardalan and Bakhtiar 2015, 52; Bootwala 1985, 11).

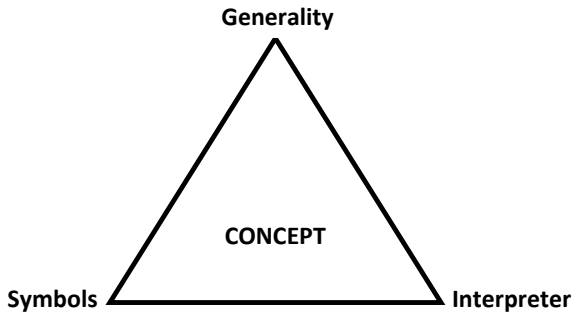

Diagram 5: Peirce's Mindset Application to Categorization in the Meaning Circle (Drawn. Author).

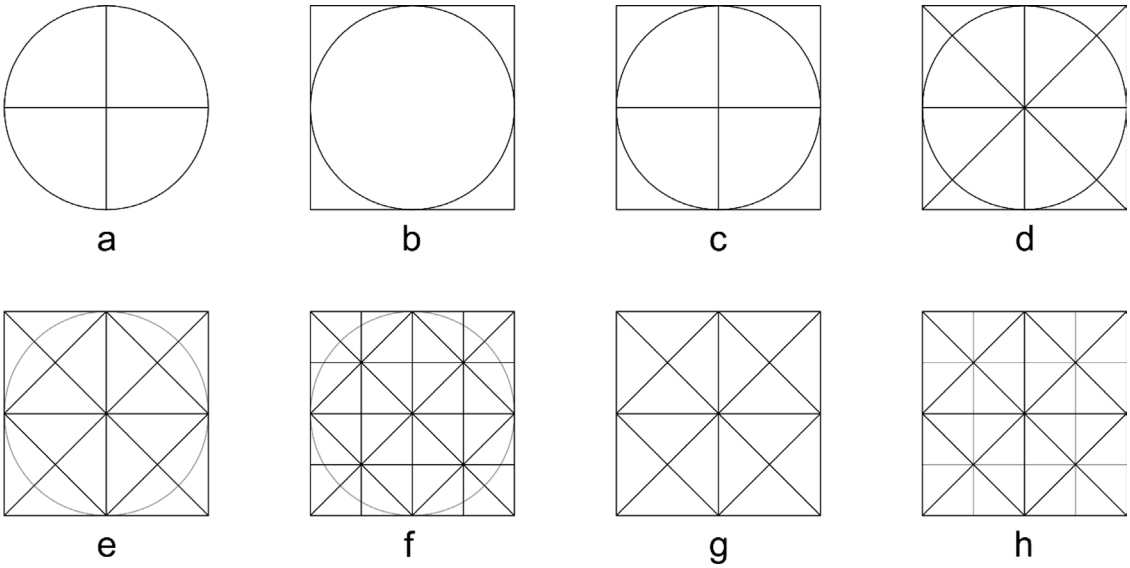

Figure 13: Subdivision of the square and the circle is used to generate a proportional system. (*a*) This diagram was the first point at which all mathematical speculation began, namely the circle and the cross. (*b*) In this Critchlow produced his first geometric construction by drawing two vertical and two horizontal lines outside the circle. (*c*) The same diagram with the addition of the vertical cross dividing the square into four smaller squares. (*d*) The square is divided into four big triangles when the diagonal cross is inserted, then the square is divided into eight triangles when the vertical cross is reintroduced. (*e*) The quadratic area is split into 16 tiny triangles by entering the half-size square from tip to tip of the vertical cross. (*f*) The diagram provided us with several accurate divisions of the circle's circumference. (*g*) Previous experience is applied to dividing the square into triangles in the order 2, 4. 8. 16. (*h*) This shows the division into 32, and so on (Bootwala 1985; Drawn. Author).

Figure 14: Triangle Girih-tiles in Mirror-tile Artwork of Imam Reza Holy Shrine, Iran, Mashhad, 2021. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

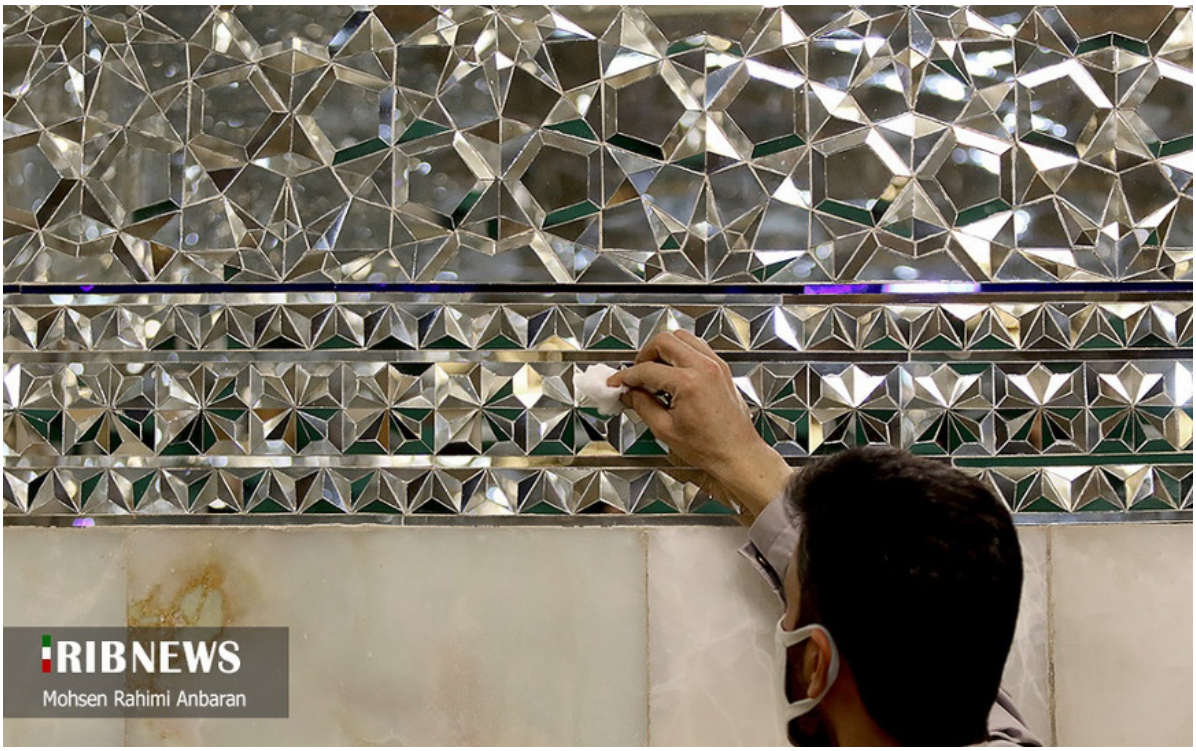

Figure 15: Pentagon and Irregular Polygons Girih tiles in Mirror-tile Artwork of Imam Reza Holy Shrine, Iran, Mashhad, 2021. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

1.1.5. Irregular Polygons

The five platonic solids in Girih tiles are two regular polygons (twelve regular polygons: dodecahedron; as the shape of the universe as a whole [Timaeus 55c]) – decagon and *pentagon* and three *irregular polygons* (Figure 15). These figures have the same length on all sides and all of their angles are multiples of 36◦. Most uses of Girih tiles in Islamic architecture are periodic. They have a basic unit pattern which is repeated in the same orientation within the tiling plane. To construct the five basic Girih tiles, two regular and three irregular polygons are necessary (Diagram 6). However, the craftsmen's skills are needed to employ translation, reflection, and rotation (Borisova 2011).

Each successive layer (in the *Peircean* Meaning Circle) is best dealt with via this categorization study as domains are investigated to deeper depths or new insights increase the branches of the knowledge graph (Diagram 6).

Girih (Figure 16) is a geometric pattern made up of an integrated mix of different geometric patterns that are coordinated and complemented in a particular framework (Ardalan and Bakhtiar 2015, 70). With no beginning and no end, countless designs are a *Sign* of multiplicity in unity and *everlasting* creation (Madkour 2008).

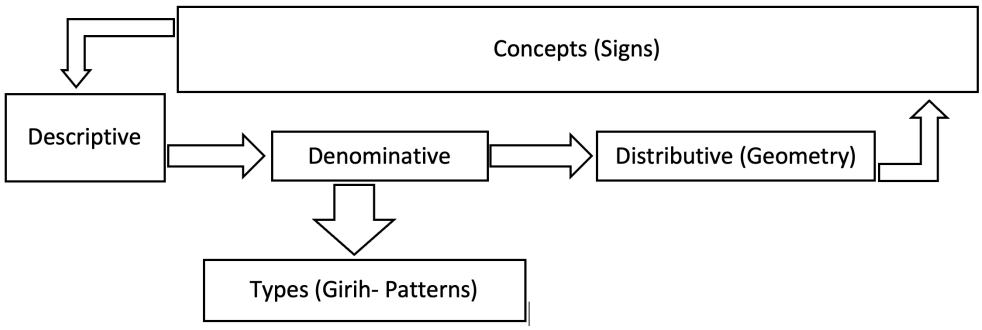

Diagram 6: The geometric *categorization* process as *staggering of the sign* development (Drawn. Author).

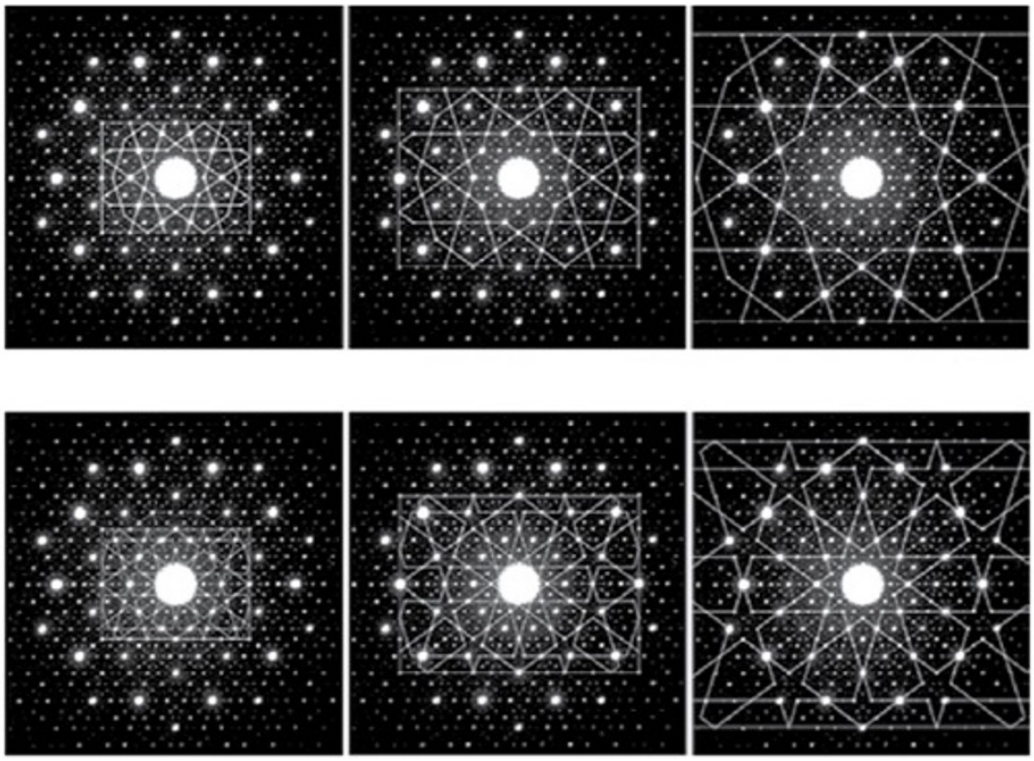

Figure 16: *Girih*'s geometric similarity with the Silicon Crystal structure. Source: (Mohamadianmansoor and Faramarzi 2012).

Figure 17: Geometric shapes and Mirror-tiles of interior surfaces. Imam Reza Holy Shrine, Iran, Mashhad, 2021. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

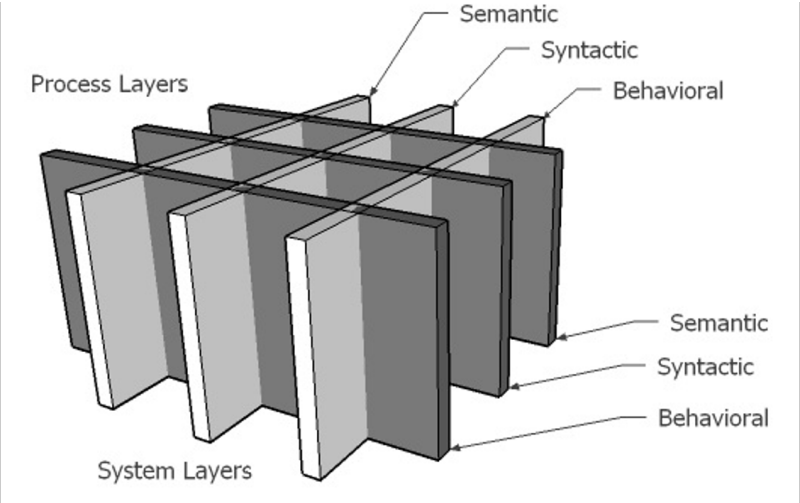

Diagram 7: System Process Layers of the Text Forming (Drawn. Author).

Mirror-tiles perform "by creating regular and more geometric shapes and decorative designs from small and large pieces of mirrors on the interior surfaces of the building" (Figure 17), and create a bright, pleasant, and dreamy space which results in the continuous reflection of light in countless pieces of mirrors (Kiani 1997, 239). The architect has produced a fantastic order by combining these minor parts with small mirrors and various geometric forms. The repeated reflections of light in the mirror pieces create a bright and sparkling environment in this artwork (Gardner 2015, 600).

1.2. The Role of Light

Information is revealed by light. One of the most important physical needs is the need for light (Motalebi 2019). "Humans are like mosquitoes. Wherever there is light, the influx, without knowing why. Whether we like it or not, we are moving towards enlightenment. Light attracts us" (*Morris Lapidus*: Evans 1981). While we navigate space, rays of light change with our passage, and as we change, so do the hidden planes of the environment.

As the amount of light decreases or increases, so does the amount of information we receive from the environment. When we move in a place and the environment has light, we can perceive the environment based on the intensity of those light rays.

Semiotician and novelist Umberto Eco provides a useful framework for the meaning of light. He identifies two types of semiotics:

- Semiotics is based on the *communication* process.
- Semiotics is based on the *signification* process.

Different *system process* for transmitting and receiving messages according to Eco:

- Semantic: A collection of meaningful communication messages.
- Syntactic: The external (forming) components and internal components of the communication process to convey the Message.
- Behavioral: A set of behavioral and different reactions from the audience.

1.2.1. Source of Light

Eco devised a classification in which he distinguishes between *Natural* and *Artificial* signs because the area of semiotics encompasses such a wide range of signs (Eco 1979).

Artificial signs:

- Signs produced with the intent of signifying.
- Signs produced with the intent of performing a function.

Natural signs:

- Signs associated with natural objects or events.
- Signs that a human agent unintentionally produces.

Semiotically, light in Islam is Absolute Light, which is God, leading believers away from darkness and loss. Therefore, the reflection of the light by the mirrors in both different facing directions and in various patterns makes a beautiful environment and reminds the viewer of God, of unity and oneness. Within the places decorated by mirror work, the geometric patterns of

Figure 18: Brilliance and Glitter architectural space. Shah Cheragh [King of the Light] Mirror Mosque and Holy Shrine, Iran, Shiraz. Source: https://holyplaces.tumblr.com/post/98741340856.

the mirrors, in addition to the presence of light and its interaction by the mirror parts, create a mystical atmosphere, which is affected by Quran (Taghavi 2015). Moreover, in Persian literature, the mirror addresses honesty, purity, truth, and light, which artists have also used in Islamic Architecture. Mirror-tile artwork is purely Islamic art, including Islamic geometric patterns. It can be considered traditional and religious art (Figure 18).

1.2.2. Ambient Light

Ambient light refers to any form of light and can include *natural* ambient sunlight or *artificial* ambient light (Figure 19).

In radial light, the light source is specific and has radiation, and we can see the radiation source (such as a lamp or candle). The quality of the radiant light source is significant. Ambient light is indirect light from radiated light that reflects on the ambient surfaces. In the ambient light, the surface reflecting in the environment is very significant at its level and should be considered in any observation of the place (Motalebi 2019).

1.3. Cognitive Spiritual Expressions

Within Islam's spiritual universe, there is a dimension called *Abrahamic Pythagoreanism*, or a way of seeing numbers and figures as keys to the structure of the cosmos and as symbols of the archetypal world. According to Abrahamic monotheisms, a universe is seen as God's Creation. It is this possibility within the intellectual universe of Islam, and not any external influences, that enabled Islam to develop a philosophy of mathematics akin to the Pythagorean-Platonic tradition of antiquity but in a sacred universe free of the nationalism and rationalism which finally stifled and destroyed the esoteric dimensions of Greek intellectuality (Critchlow 1976, 6). Some verses in Quran express that God created the universe based on an exact geometry. For this very reason, the Muslim wise men have used geometry in philosophical and theosophical texts to express the concepts of the universe (Bolkhari 2013).

These signs are not sent by humans but emerge from a *natural* source. These indicators must be decodable

Figure 19: Natural sunlight and Artificial Ambient Light. Imam Reza Holy Shrine, Iran, Mashhad, 2021. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

through the understanding of the individuals who encounter them in order for them to have meaning. Nature is frequently referred to as "a universe of signs" (Eco 1988, 16).

The view that geometry has a ritual origin is a part of a broader view that civilization itself had a ritual origin. Nature displays a profound preference for certain specific ratios to design her life-forms. These are geometric relationships that are transcendent and originated from Sacred Geometry. Therefore, the history of utilization of Sacred Geometry by man goes back to many centuries. In the traditional world, geometry was inseparable from the other sciences of the Pythagorean Quadrivium, namely arithmetic (numbers), music, and astronomy (Hejazi 2009).

The material used by the Muslim craftsman was ordinary and humble, and his tools were straightforward (Figure 20); His work, however, was unique in that it shared human dignity as a 'representation of God on earth' (Burkhart 2007, 79). Decorating or transforming a surface into a texture of colors or fluctuations in light and shadows (Figure 21) prevents the viewer's mind from focusing on the particular form that says 'I' (Awani 1996, 103).

Islamic art is a method of elevating matter via geometric and floral motifs (Critchlow 1976, 6). Western academics have only recently acknowledged Islamic art as one of the most effective kinds of sacred art, rather than simply abstract art in the contemporary sense. Thanks to the efforts of a limited number of authorities, foremost among them T. Burckhardt and F. Schuon, Islamic art is gradually coming to be understood for what it is, namely, a means of relating multiplicity to unity using mathematical forms which are seen, not as mental constructs, but as reflections of heavenly archetypes in the universe as well as in human's minds and souls (Critchlow 1976, 6).

Islamic art is thought-provoking from an artistic point of view. In other words, it foregrounds the spiritual tendency towards the interior and its confrontation with the divine presence. It can be unequivocally acknowledged that Islamic art, in its salient instances, deals directly with the sacred and the mark of the individual artist is absent; the artist disappears in his

Figure 20: Creating Mirror-tile Art by a Muslim Craftsman with elementary tools. Source: https://shabestan.ir/mobile/detail/news/734059.

Figure 21: Mirror-tile Art in Imam Reza Holy Shrine complex, Iran, Mashhad. Source: (Bolkhari 2013) doi: 10.5923.j.arts.20130301.01.

Figure 22: Unity in Plurality & Diversity [Girih] in the Mirror-tile art. Shah Abdul-Azim Shrine, Iran, Ray. Source: https://khabaronline.ir/news/607421.

work or in a tradition that guarantees the truth of the work (Burckhardt 2007, 143).

As discussed in the review of Critchlow, geometric shapes tend towards meanings of centrality. Through the use of melodic lines, unique shapes are created, and multiple patterns are obtained. Because surfaces produce infinite patterns, they combine space and time into infinite repetitive patterns (Ardalan and Bakhtiar 2015, 73). The intricate geometric patterns of many geometric stars whose radii are merged into subtle, infinite interconnected patterns are mysterious symbols of human intuition to the degree that one sees unity in plurality and plurality in unity (Awani 1996, 103). Today, nothing is more valuable than the eternal truth of the message given by tradition. A message is relevant today because it has always been relevant. It is a message belonging to time while it has been, and is, and will be, from eternity to eternity.

The problem of tradition is established principles, its heavenly origin, and applying these principles in different moments of time and place (Ardalan and Bakhtiar 2015, 15). For the first time, Ibn-Arabi organized the theory of the *Unity of Existence* coherently and systematically (Madkour 2008). Madkour did not devote an independent chapter to discussing art; the keyword for studying his views on art is the word *creation*. He considers the world as the creation of God and the divine art and says that "It is through art (Creation) that God has appeared in the world" (Hekmat 2006, 73). Also, he believes that 'Truth' has appeared in the realm of existence with art. Therefore, the appearance of truth is artistic in unlimited imagination; this art has an inner meeting and appearance of truth. When we come to human art, we see that human artistic creativity is like divine artistic creativity. We can inquire about the similarity between the art of God and the art of humans in different ways. Sacred art is preceded by a desire to appear and the same is true of human art: that is, human, like God, wants to be known, and it is this desire to be known that steers him to create an artwork (97). Human art, in any case, indicates that the artist has reached a point where he has to give birth to art so that he cannot carry alone what he has achieved and wants to share it with others (99).

For the Muslim artist, the most critical issue is how unity appears in plurality, and plurality refers to unity, which means monotheism. This principle, which is related to an existential system, is for the artist, Mystic, and Sufi. The purpose of the Muslim Mystic or Sufi is also to justify how the world came into being. The world was developed, which is a diagram of plurality, from true unity, from the position of the one, which is pure unity. Achieving unity from plurality and expressing unity in multiplicity is a fundamental issue in wisdom and mysticism; the purpose of the Mystic in the wisdom is to reach true 'unity in plurality.' That is also seen in art (Figure 22). Art is a path of wisdom and a kind of mysticism, and it differs in the way of expression and the materials it uses (Awani 1996, 341).

As Plato said, "God is always doing geometry" (Critchlow 1999, 9). Sacred geometry is a sacred language and ancient science. It is believed that the world is built on it (Nasr 1980, 149). Islamic spirituality had no choice but to create sacred art that reflected its revealed form

and essence. The Islamic revelation's central doctrine of unity, combined with the nomadic spirituality that Islam adopted, resulted in an aniconic art in which the spiritual world was reflected in the sensible world through geometry and rhythm. This was expressed through arabesques and calligraphy that directly reflect the worlds above, and ultimately the supernal sun of divine unity (Critchlow 1976, 6). The geometric patterns of Islamic art inherently reveal effective cosmological laws throughout the universe. The first task of these motifs is to guide the viewer's mind from the material and worldly appearance to its esoteric and spiritual underlying truth; from the form to the Sense (9). These geometric shapes are based on circles, which are an image of perfection and, because they are evenly divided, give rise to regular polygons that over time form regular, well-patterned stars (El-Said and Parman 1997, 11). The existence of countless designs in Islamic art that have been formed in connection with Pythagorean mathematics indicates that the principles contained in Islamic art are integrated ultimately delicately and meticulously with sacred geometry and [sophia perennis] eternal wisdom (Critchlow 1999, 10).

1.4. Allegories Manifestations

According to Barthes, "the resonance, the slipperiness, the arbitrariness between the signifier and signified, that a signified or a sign; if the Sign is a unit, the unit of signifier and signified, that Sign can become another signifier. In other words, the very arbitrariness is also a kind of robustness that makes a signified or a sign also function as a signifier" (Hays 2021, 10.5). Alternatively, Roland Barthes called this a "connotative level" (Barthes 1957).

No one is sending these signs on purpose. They are created by a human, but not intentionally or consciously. This category also contains psychological symptoms, behavior, disposition, race, class, and geographical origin indexes, among other things (Eco 1988).

Traditional engineers and architects have incorporated *theosophical* and *philosophical* ideas into their designs. Mathematics and Geometry have *philosophical* and *religious* aspects in Islamic culture and structural and scientific applications. There are vast and unique proportions of wisdom, geometry, and architecture in Islamic civilization, especially in the Mirror-tiles. Geometry clarifies and interprets wisdom and philosophical ambiguities in Islamic culture. This serves a fundamental role for the interpretative possibilities as geometric information and wisdom are transformed into architecture. Geometry is a link between Architecture and Philosophy. Due to the high similarity of *Seyed Heidar Amoli*'s interpretation of Candle and Mirror (Figure 23) analogy with the artworks

Figure 23: Candles and mirrors are illustrated in Amoli's book. Source: (Bolkhari 2013) doi: 10.5923.j.arts.20130301.01.

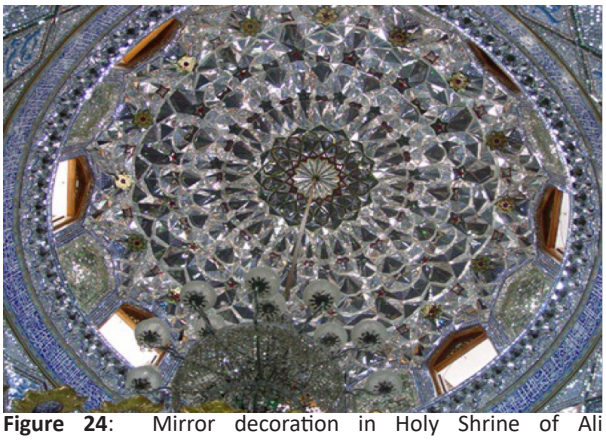

Figure 24: Mirror decoration in Holy Shrine of Ali ibn-e Hamze, Shiraz, Iran. Source: (Bolkhari 2013) doi: 10.5923.j.arts.20130301.01.

of mirrors in Islamic architecture (Bolkhari 2013), he deems the observance of multiplicity in unity and unity in multiplicity impossible: "unless by expression of an example on mirror and candle in a way that a candle is placed in the center, surrounded by a variety of mirrors so that the image of the candle is reflected in each mirror depending on its shape. That is exactly the proportion of *bound* existence and *absolute* existence" (7).

Bolkhari argues Muslim philosophers and theologians used numerical and geometrical metaphors to clarify complicated theoretical concepts. Using the unique effect of light and metaphorical roles of the mirror and geometrical shapes (Figure 24), Seyed Heidar Amoli

provided a tremendous and helpful analysis of unity of being (Bolkhari 2013, 8).

Mirror-tile decorated places, especially holy places, are transparent, eye-catching, lively, and graceful (Figure 25). "The decoration of mirrors, the extent, expansion, transparency, radiance, and mobility that it gives to space, its continuity and expansion to infinity, and to the extent that it cannot be imagined, we feel beyond the unknown, which is one of the divine glory images, albeit allegorically and symbolically and abstractly" (MullaSalehi 1998).

Light is inherently indivisible; the nature of light does not change due to the decomposition of light into colors and is not reduced by the gradual transfer of light in the darkness. In the same way, nothingness does not exist by itself except through its contrast to existence (Awani 1996, 169). It should not be assumed that the word 'light' refers only to sensory matters. Something that has particular photons and its quantity and quality is discussed in physics, but this is only one of the clearest examples of this word. Light refers to both the physical and the metaphysical light, and it is possible that sensory light radiates from unseen light (Al-Ghazali 1985, 41). This light is the absolute Light of God. In Islam, light is introduced as a symbol of guiding humanity from darkness. The reflection of light from fractured mirrors and composed of various designs can remind the viewer of the divinity of unity and oneness.

Light in the Islamic architecture of Iran is not always used as a complete illumination of the architectural built space. The use of Mirror-tile art becomes more prominent as takes on the aspect of mysticism and sanctity, or helps define other qualities of space such as color and texture (Figure 26). Among the symbols of unity, the most profound and most obvious symbol is light, which the Muslim artist knows well how to absorb, transmit, and radiate in a thousand different ways. Light is a single thing, and it multiplies only through the intervention of darkness, which has no truth of its own (Burckhardt 2007, 114).

The allegorical relation of the mirror and existence, the mirror and the soul, and the mirror and the spiritual world go back to ancient times. In the Bronze Age, there is more substantial evidence full of deep and cryptic meanings concerning the allegorical relationship of *Water* and *Mirror* or any object whose smooth and transparent surfaces can reflect the image, role, and face. In the spiritual world, goodness, beauty, inner purity is appearance and observable. (MullaSalehi 1998). Imam Al-Ghazali (a Persian polymath) considers this meaning of the light and says, "Light is neither obvious nor revealer, in the case of blind people, so in addition to light, the nature of the seer is also a pillar of perception, and if we look carefully, Light is not the cause of perception, but the place of perception, so the power of sight in the name of the light, is the worthier than the visible object" (Al-Ghazali 1985, 41).

These allegories manifest as geometric patterns based on the 'One' (Hu) and its appearance in a world full of shapes and patterns. The traditional human understands these forms as the character of numbers, as various aspects of the Creator. This concept is numerically based on symmetry and conformity in the dimensions, shape, and relative position of the components of a whole. In this way, the concept is connected to universal processes characterized by infinite expansion into infinite directions and infinite divisibility. Geometric patterns (*Girih*) as spatial concepts require space-filling patterns: patterns or motifs that grow side by side. These patterns provide a set of infinite number pack forms (Ardalan and Bakhtiar 2015, 70). The intricate geometric patterns of many geometric stars whose radii are merged into subtle, infinite interconnected patterns are a mystery symbol of human intuition to the degree in which one sees unity in plurality and plurality in unity (Awani 1996, 103).

In Critchlow's reading of geometry, ultimate reality is the source of all being, consciousness, and life and is both absolute and infinite. It communicates to humanity via unveiled forms that expand out towards the boundless, although confined and constrained on the outside. Sacred traditions emerge from revelations of this word, or *logos*, which, although externally distinct, are internally linked into a center that transcends all forms. They are, nevertheless, the link that connects the peripheral to the core, the relative to the absolute, the finite to the infinite, and the plurality to the unity (Critchlow 1976, 6).

For the traditional architect, geometric patterns are like forms of plurality in unity. Repetitive patterns symbolize the thought of infinity and timelessness. The beauty and harmony seen in geometric patterns reflect a higher and deeper geometric order, the cosmic laws (Figure 27). The spiritual human seeks to discover geometric patterns to understand and reach the Creator (Hejazi 2009). The world's creation starts from a single entity and descends in multiple states of existence (Ardalan and Bakhtiar 2015, 55).

2. SEMIOTICS AND SYMBOLS

It is difficult to understand contemporary art without being surrounded by aesthetic elements. Semiotics can be called a regular and systematic study of all the factors influencing the emergence and interpretation of symptoms (Zamiran 2003, 7). Art, in its broadest definition, is concerned with the expression of beauty.

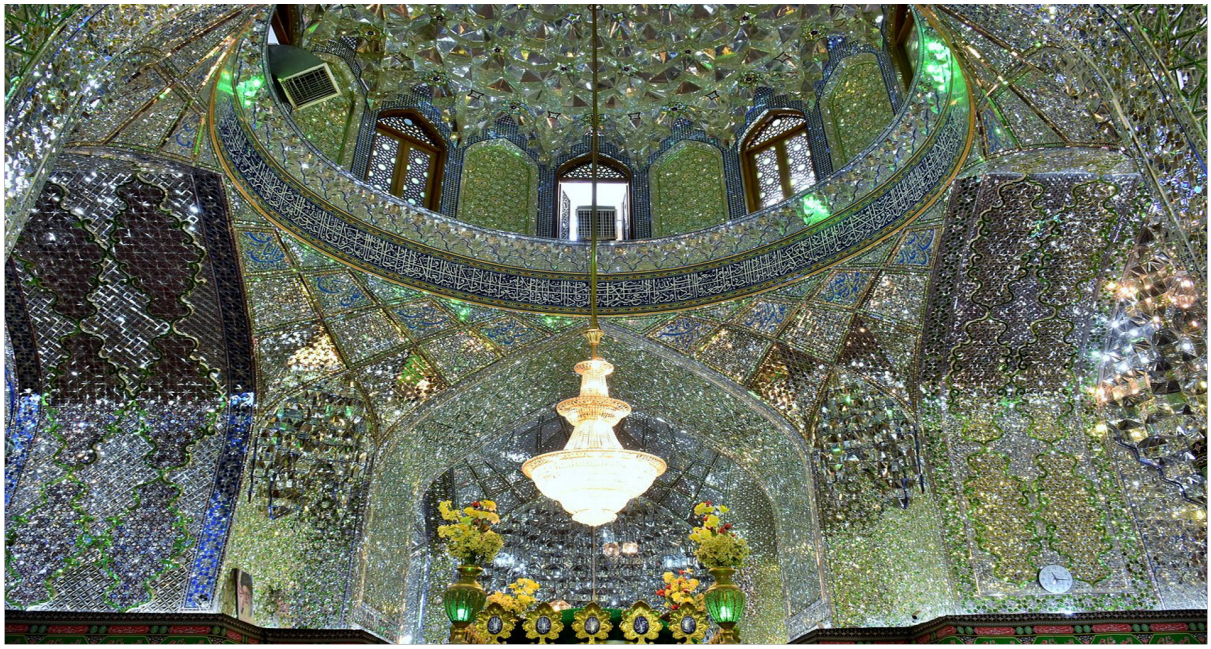

Figure 25: Mirror-tile geometric decoration of Ali ibn Haze Holy Shrine, Iran, Shiraz. Source: https://tripadvisor.ca/Reviews-Ali_Ibn_Hamzeh_Holly_Shrine-Shiraz.

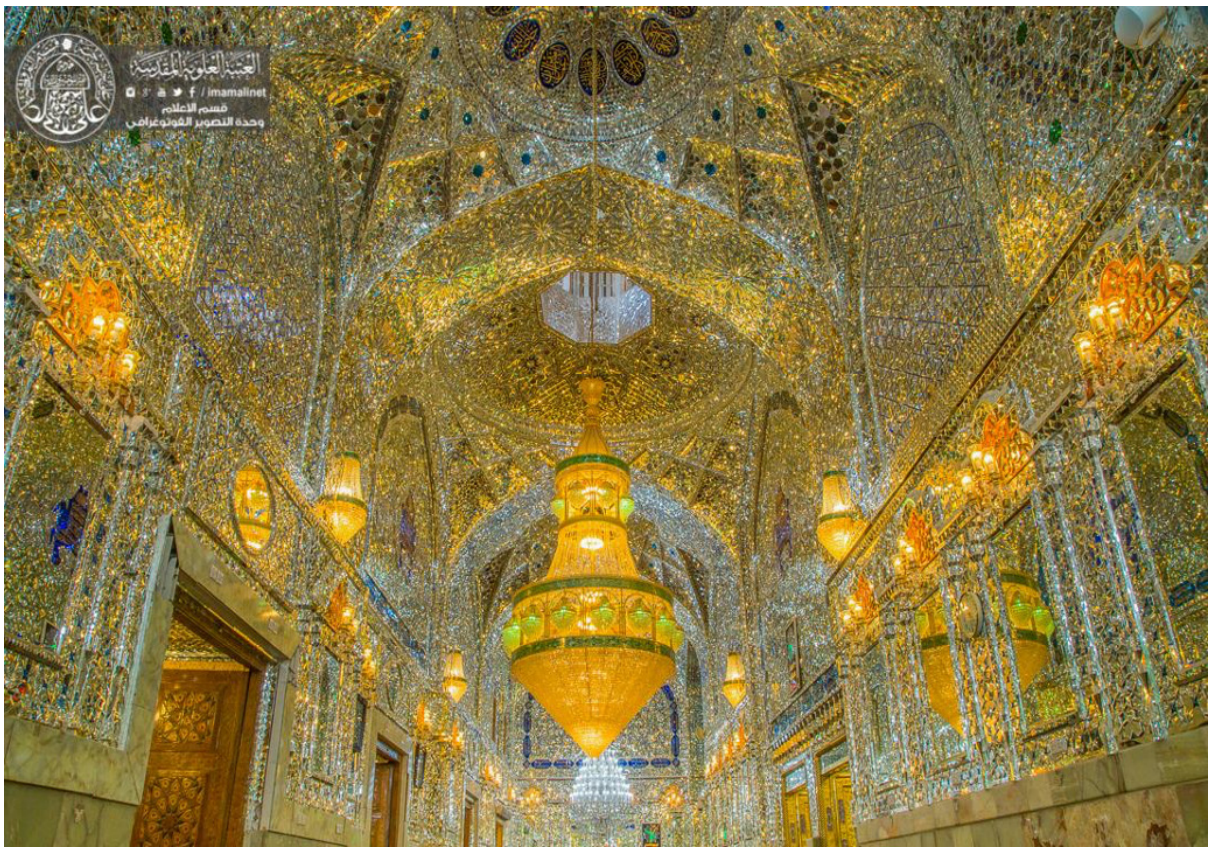

Figure 26: Mirror-tile Decoration in Holy Shrine of Imam Ali, Iraq, Najaf. Source: https://imamali.net/?id=6188 (The Official Website of Imam Ali Holy Shrine - 2016).

Figure 27: Mirror-tile Artwork of Imam Reza Holy Shrine, Iran, Mashhad, 2021. Source: RIBNews, Mohsen Rahimi Anbaran, www.tabnak.ir.

Let us consider beauty to be a universal and objective truth and, like Plato, believe that "beauty is the value of truth." Art becomes an expression of truth, and truth cannot be absolutely and inherently limited to any extent. Restrict it and make it without distortion, define it in the form of words, concepts, imaginations, and images, so as the only and inevitable solution to express and refer to it, the expression 'symbolic' should be chosen, and the 'mysterious' should be used (Critchlow 1999, 9).

Every social text, such as art and architecture, carries a message or set of messages conveyed to the audience through in-text relationships. All content is a network of symbols. These signs alone do not have a specific meaning and show their significance only in the context of the text-like network. As a result, to know, interpret, and make sense of the text, it is necessary to have coherent knowledge that recognizes the microelements of the text network and the internal relations of the text. To interpret the meaning of the text is called semiotics. This knowledge deals with practically anything called a sign (Dabbagh and Mokhtabad 2015).

Semiotics can be considered as the understanding and receiving of the world's phenomena, which is obtained through reading the signs and creates meaning and production based on the semantic relations for social phenomena. Semiotics seeks meaning through the discovery of deeper layers of content. This knowledge reads the whole content or phenomenon and includes all readings resulting from the decoding of phenomena (Dabbagh and Mokhtabad 2015).

In a world where all its phenomena have symbolic significance manifested by interpretation, the human is forced to interpret and achieve the hidden inner truth of things. Wisdom is a tool that can perform interpretation and, in traditional expression, is understood as enlightenment with revelation (Ardalan and Bakhtiar 2015, 35). From *The Brethren of Purity* or *The Brethren of Sincerity* (Ikhwan Al-Safa) point of view, the mystics are the creators of art and mystery; art is born of wisdom; in other words, art is nothing without wisdom (Bolkhari 2018, 135).

Sheikh Mahmoud Shabestari has approximated the appearance of God (Hu) in the world by comparing looking to the mind in the Mirror (Hekmat 2006, 151).

In Islam, decorative arts transform rigid material to honor it through a harmonious order, lack of visual

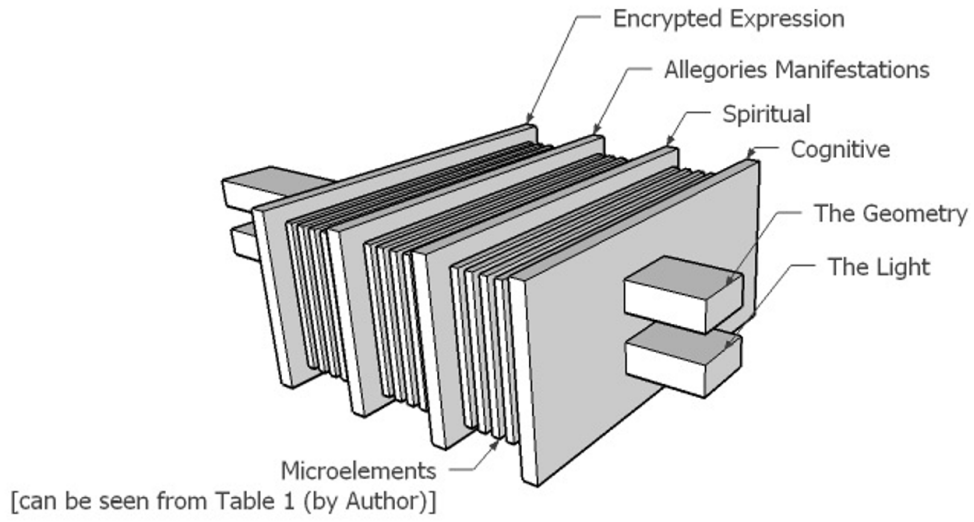

Diagram 8: The network context of related topics manners in the Mirror-tile Artwork (Design. Author).

illusion, and light. In this position, everything invites the soul to immerse itself in a specific existential position and eliminate the ego (Burkhart 2007, 37). Believing means creating Mirror-tiles of the ego, mirror-holding and adorning the space of the soul with inner purity like pieces of a mirror, finding the talent and ability to looking at the face of God, and attaining the grace of meeting and observing the 'Friend' (MullaSalehi 1998).

Anything in sacred art is the message of a higher truth, a secret that leads man to the higher truth and, as a result, evokes a kind of intuition (self-validating); while appearing in the image, it also has a path to infinity. It guides human beings to the truth and infinity and has transparency. Like the 'Mirror,' while it is an object, it leads humans to absolute truths (Awani 1996, 325). The message that has always been, and is, and will be, like a pearl inside the oyster is in some way both achievable and not, in the interpretation of Abd al-Razzaq Kashani, "It is far from reason and narration, and they will not be discovered except by the discovery Masters." These mysteries are not status and contractual symbols but are based on the system of existence (341). Decipherment is also realized in the light of inner experience because, in mystical experiences, the Mystic discovers the hidden meanings of existence (Karimiyan Seyghalani 2013, 88). The symbol is not the vague thing or the result of a sensorial tendency, but the symbol is the language and expression of the spirit (Burkhart 2007, 111).

The nature of beginnings, or when a topic was created, is shrouded in mystery. One such enigma is the nature of a point, which is the primary, self-evident genesis of geometry: is it conceivable that a point 'has no dimension,' save as a metaphysical point, and how can it occupy 'place' if space has not yet been formed from its unfolding? Although there must be a clear distinction between physical and metaphysical, both are included by the same reality between concept and expression. No God without God, no part without total, no reflection without source are some of the ways this ultimate mystery manifests itself as a contradiction in the human mind to remind it of its inherent limits. It holds in geometry as well: there is no dimension without all dimensions. We see things grow, have a lifespan, and then be reabsorbed in our visible reality. This fundamental rule of all phenomena may be mathematically represented in that space, when seen as an extension, is formed by expanding through the dimensions and can be folded up again by grasping its essence. All occurrences of the visible, corporeal world are susceptible to the third dimension. Let us consider these three-dimensional movements to be symbolic of our world's construction of space. It follows that we may reverse them in the folding up of dimensions, bringing us back to the point of oneness or the indivisible. In terms of consciousness, this may be characterized as the route of reabsorption, implying the potential of reconciliation between the 'Knower,' 'Knowing,' and 'Known,' a convergence where subject and object are erased in oneness.' Everything we have ascribed to universal nature emerges from it (Critchlow 1976, 7).

There is no secret deeper than light for divine unity (Burckhardt 2007, 48). For this reason, religious rites and the holy books of the divine religions take on a symbolic aspect. Nevertheless, the critical point here is that this cryptocurrency is not arbitrary and of the type

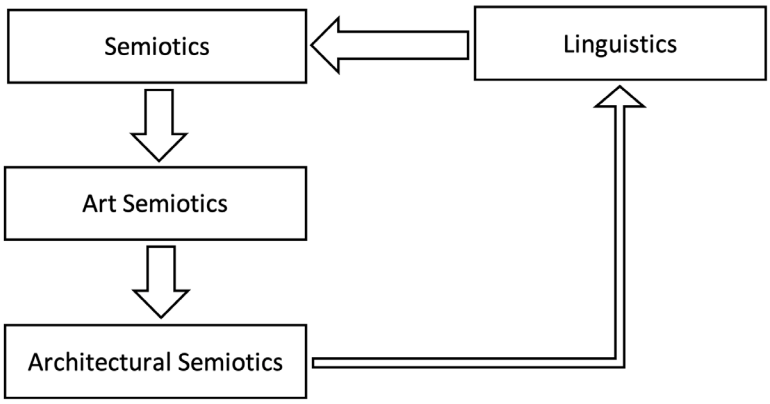

Diagram 9: Traceable roots in the formation of *Architectural Semiotics* (Dabbagh, & Mokhtabad 2015; Drawn. Author).

of human-made contracts, and that is why sacred art uses a cryptic (symbolic) method as a way of expressing the truth, with the help of which it can accurately and effectively represent the supreme truth in the lesser order. Thus, sacred art is a way of contemplating, knowing, and ultimately mentioning the truth that is the principle of existence and is often hidden behind the dark cover of the material world and multiplicities (Critchlow 1999, 9).

3. METHODOLOGY

The essence of this research requires a qualitative research method. This qualitative research is primary, focusing on *constitutional* and *operational* descriptions of the symbolic significance of the Mirror, in Iranian-Islamic culture, according to the "Descriptive research method" (Best and Kahn 1995, 120). Content analysis involved 'Thematic, Formal, and Structural analysis methods'. In addition, data was collected by different methods: "interviews and questions", "direct observation", and collection of existing data: secondary data and documented data". Besides communication and the personal interviews with related masters and professors, "exploratory interviews" (Quivy and Van-Campenhoudt 1988), along with scientific and practical training in Mirror-tile artwork, the purpose of research aims to create a basis for future research in these cases.

Fieldwork and observation form most of the remaining research regarding historical and contemporary buildings. Additional information was gathered through semi-structured interviews in place, "collected and analyzed obtained content" (Baker 1988, 315) and was analyzed through "Comparative Study" (Ezzati 1996; Bukhari 2011).. Research between topics used multiple resources as the secondary data "to achieve different characteristics of the message, views, and ideas of the message issuer, the reasons for issuing the message and its effects " (Ezzati 1996, 230). This comparative study shows "how cases/subjects are similar or different" sharpens the power of description (Bukhari 2011). Moreover, relevant Persian mystical poems have been used better to understand the obtained concepts and general thesis topics.

It is essential to consider *semiotics* in more depth and its roots in the field of *linguistics* in order to create a suitable method for reading *architecture*. As a result, studying 'art semiotics' or 'sociocultural semiotics' alone does not pave the way for 'architectural semiotics' to emerge. Instead, by referring to linguists' themes and representing their point of view, a suitable *lens* for viewing architecture as "a spatial text in the environment" around it can be provided:

This research explores analytical perspectives on linguistic and semiotic concepts and then uses the information obtained from those analyses to explain architectural semiotics. As a result, the concepts related to semiotic ideas are first dealt with descriptively in this study. Then a connection between various theories is established using an analytical approach, according to Amirmasoud Dabbagh's "new paradigm for reading architectural text."

4. RESULTS

The process layers of the Mirror-tile arts (Diagram 10), like intertwined strings, connect the system layers to form a structure (Table 1).

According to Saussurean theory of the Sign, the mirror is not just of linguistic signifiers, but spatial, graphic signifiers as Mirror-tiles. Moreover, according to Umberto Eco and Roland Barthes, the textual architecture is layered and has original links with its social and cultural context. The beliefs and values that govern society have always influenced the art and architecture of its time. Sacred and spiritual Iranian-Islamic art is rooted in ancient Persian traditions, faiths, and thoughts.

Table 1: Semiotics of the hidden layers and dimensions in the Mirror-tile decorative art in architectural built-space (Drawn. Author).

The Geometry	The Light	Cognitive	Spiritual	Encrypted Expression	Allegories Manifestations
Origin and Surroundings	Source of Light	Psychological	Intuitive Perception	Traditional Sacred Art	Divine Glory Beauty
Proportions of Shapes	Ambient Light	Phenomenology	Religious Issues	Geometric Patterns	Wisdom
Circle Divisions	Brilliance of Space	Hermeneutic	Professional Ethics	Geometrical Symmetry	Purity Honesty Truth
Triangles	Glitter of Space	Viewpoints	Mysticism	Signs and Inner Language	Plurality in Unity
Irregular Polygons	Multiplicity of Reflection	Functions	Social Ideology	Symbolic Literature	Unity in Diversity

Consequently, the Muslim craftsman's materials were unpretentious and straightforward, and his tools were also simple. Because of their Islamic convictions, Muslim artisans began utilizing shattered mirrors as recycled creative art (being wasteful is an act that is abhorred in Quran). Also, in Islam, Muslim artworks are often known as "Economy of Art" (MullaSalehi 1998, 11), referring to an identity rooted explicitly in the Quran. That resourceful economy is one of the multiple meanings embedded in Mirror-tiles. Currently, the rapid evolution of consumerism is incompatible with that spirit of the artist's creation. It has created a *gap* (the schism between recycling and quick, easy use) in the *art economy* between the artisans in this area because modern imported mirrors do not break in shipping as often anymore, and these newer mirrors (produced in Iran or imported from China) are less expensive and can be arranged in any geometric shape quickly and easily.

Generally, the mirror refers to two forms: first, physical application and acts, as a substance, and the object. Second, it is conceptual form, which indicates the symbol and the sign (Table 1).

Understanding the mirror is too complex to examine solely from the mystical point of view. In Iranian-Islamic Mystical culture, art, and literature, the mirror refers to the human being and light to the divine existence that appears the light, like soul manifestation in the body. What is artistically done within the mirror is to meet, and apperceive, existence with the existing. This has been clearly (and using allegories) explained in Persian mystical literature. The same material has been utilized in very different ways to achieve very different results.[1]

A complete image, when transformed through the different shapes and dimensions of the tiny mirrored image is reconstituted in a unified architectural space, like a particle in the mass of other particles in the unity, such as a fish is joined with the sea in a boundless ocean of existence.

The mirror's geometry differs in the inside, state, and shape. The reflected light from a Mirror-tile takes the shape of its host, depending on each little mirror. That is precisely the allegory of the manifestation of the one Divine Spirit in various forms that have been expressed in in Persian mystical literature by the Mystics.

In analyzing the background of the Mirror-tile artwork, prevailing thoughts were studied. This order's spiritual phase's massive presence and index can be attributed to the long mystical tradition of the people of these lands [old Persia] and the Iranian society. Using the topics and the items cited in the body of the research and relationships between them (Diagram 10) was drawn as follows:

1 The traditional education culture of art and architecture in Iran, like other crafts, has been the Master-Apprentice method (like Sufi-Disciple), and certain secrets govern such a system. Some of the mentioned meanings have been related to discovery and intuition.

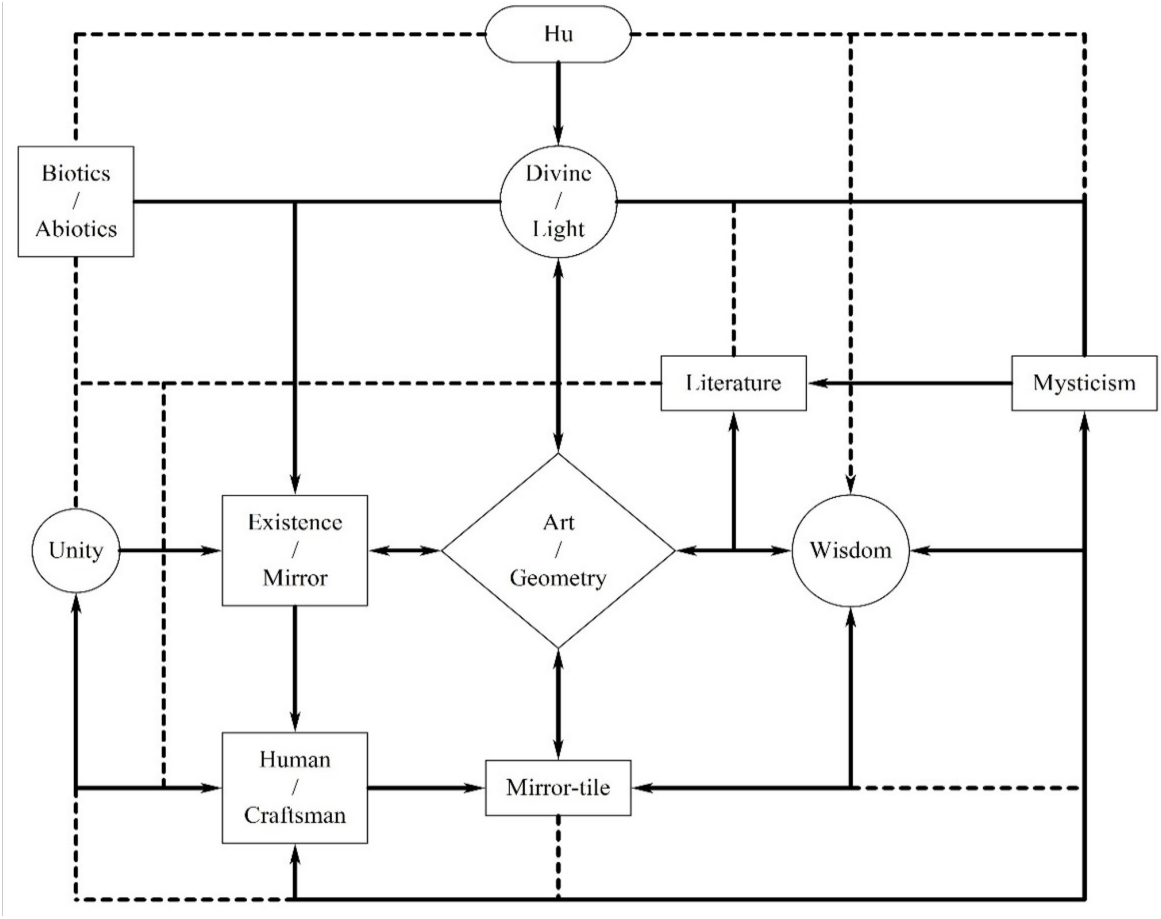

Diagram 10: Hierarchy and backgrounds of the ruling thought on the formation of the Mirror-tile Art (Drawn. Author).

Islamic art and architecture lead humans to the oneness of God from the multiplicity of the world. It places humans in the presence of God by sanctifying the space through the aesthetic experience of symbolic manifestations. Mirror-tile art in traditional Iranian-Islamic architecture and uses the language of natural sciences and mystical tools to record and transmit cognitive concepts.

LIMITATIONS OF THE RESEARCH

The present research shows limitations that can be summarized in three ways. The first limitation is that it was complicated to understand, interpret, and translate the old Persian mystical expressions as they are not used today. Words in Persian Mystical literature are like bricks in that the way they come together creates a building. The second limitation is the specific mystery (secrets) that governs the Mystical Orders. "Before being understood, anything that includes or grows from mystery must live in it and experience it" (MullaSalehi 1998). Finally, the primary use of mirrors was in buildings dating from the early 16th century CE that have been removed or destroyed. Most evidence has been neglected due to a lack of interest and attention and obscured by the lack of specific documents (by Craftsmen) because of the secrets governing this Master- Apprentice system.

CONCLUSION

After reviewing relevant previous literature, this research forms a framework based on relations from that review. First, from a brief history of the mirrors and Mirror-tile art this work draws a parallel with sacred geometry in Iranian-Islamic art in relationship to Mysticism (Divine Light and Unity of Existence). Second, analysis of spiritual and traditional art of the mirrors, especially Unity of Existence, is connected to the semiotics of architecture. Finally a comparative study of mystical thoughts in Persian poems is related to each of the appointed subjects in the body of this research. According to Nizami Ganjavi, "the key to the Mystical treasure is under the tongues of poets." Persian poetry, as literary art, has always contained a message that remains over time and [if possible] is hard to distort because of its inherent nature. It has always

carried hidden messages from past Grand Masters' illuminations, discoveries, and intuitions.

Mirror-tile artwork is one of the latest initiatives of Iranian spiritual art. This art transmits its symbolic expression and mysterious character, conveys the revelations and mystical thoughts in the cover of matter and form to its audience, and affects them consciously and unconsciously. This art is a symbolic language and conveys intuitive concepts. Traditional art has always been based on symbols, allegories and expresses the spirit of its time. The art and architecture of one civilization and literature are closely related to the mood and identity of the people of that civilization (Ardalan and Bakhtiar 2015, 21).

In Persian civilization, the mirror expresses honesty, purity, truth, and reflection of the light in code on the spiritual path. In Persian poetry and mystical literature, the richness and variety of mirror allegories and the symmetry of the mirrors with existence are much broader and more affluent than the mirror decoration of spaces in Iranian-Islamic architecture.

The art of Mirror-tiles and the illuminant relationship of the mirrors with the origin of creation (Light & Spirit [Hu]) is symbolic and cryptic. The use of symbols in the material elements creates another layer of semiotic relations. Mirror-tile art uses Islamic illumination teachings and combines Mysticism through allegories of light, water, mirror, number, and geometry. As a sacred, spiritual and traditional art, it prioritizes the soul over the ego and the glorification of the appearance and presence of truth in the earthly world. At the same time, Iranian Masters have emerged and transferred their perceptions of the sublime world to the earth. The roots of the art of Mirror-tile in mystical Islamic thoughts are based on the manifestation of divine glory light in the mirrors.

Furthermore, unity's multiplicity, which is both symbolic and impalpable, promotes discovery and intuition. As nature is mysterious and what carries the mystery is not known. However, it exists, and understanding is achieved through presence and experience. So, art with no allegorical mysteries and expression does not signify anything beyond itself; it is what it is, and its appearance and interior are the same. Furthermore, it was not a mirror for the appearance of transcendent truths (ordinary language reflects the partial knowledge acquired through logic and emotion, but the language of symbolism expresses knowledge acquired through reason. That is Mysticism [Ardalan and Bakhtiar 2015, 35]).

According to Roland Barthes, "learning a language is the same as learning how to think in that language" (Barthes 2001, 44). Mirror and existence have been a symbol of Persian Mysticism that has been illustrated by the art of Mirror-tile. Plurality in unity and unity in diversity in the different shapes and sizes of tiny mirrors are brought together as one in a single piece of architecture. In traditional Iranian-Islamic art and architecture a specific language is used, and if one is aware of it through signs, the built space can be better understood. In traditional art these signs can be seen and received in the circle of culture.

CONFLICTS OF INTEREST

The author declares no conflict of interest.

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

Al-Ghazali, H. 1985. *Meshkat-Al-Anvaar*. Translated by S. Ayinevand. Tehran: Amir Kabir Publishing Institute. NBN: 1886708.

Aliabadi, M., and S. Jamalian. 2012. "Recognition of Mirror Work Patterns in Qajar Monuments at Shiraz." *Negareh Journal* 7, no. 23 (Summer): 17-30. http://negareh.shahed.ac.ir/article_52.html?lang=en.

Ardalan, N., and L. Bakhtiar. 2015. *The Sense of Unity: The Sufi Tradition in Persian Architecture*. Translated by V. Jalili. 5th ed. Tehran: Architecture Science Institute. NBN: 2502424; ISBN: 978-600-5344-65-3.

Awani, G.R. 1996. *Spiritual Wisdom and Art: (Collection of Articles)*. Tehran: Grrous Publishing. NBN: 1597277.

Azaimabadi, H.G. 2012. *Tadhkira-yi nishtar-i ʿishq: (Volume 1)*. Edited by H.S. Javadi, S.K. Tehran: Written Heritage. ISBN: 978-600-203-045-0; ISBN: 978-600-203-046-7 (vol.1).

Baker, T. L. 1988. *Doing Social Research*. 2nd ed. United States, New York: McGraw-Hill Book Company. NBN: 3898598; ISBN: 0-07-100196-4.

Barthes, R. 1957. *Mythologies*. Ed. Original. Paris: Éditions du Seuil. NBN: 2629394.

Barthes, R. 2001. *Criticism and Truth*. Translated by Sh. Daghighoan. Tehran: Center Publication.

Best, J. W., and J. V. Kahn. 1995. *Research in Education*. 7th ed. Private Limited, Prentice Hall of India: New Delhi – 110 001. ISBN: 81-203-0966-9.

Bolkhari, H. 2013. "Geometrical Manifestation in Iranian Art of Mirrors According to Seyed Heidar Amoli's Thought." *International Journal of Arts* 3, no. 1: 1-9. p-ISSN: 2168-4995; e-ISSN: 2168-5002; https://doi.org/10.5923/j.arts.20130301.01.

Bolkhari, H. 2018. *Illusion and Beauty Geometry: A Study on the Views of The Brethren of Sincerity on the Wisdom of Art and Beauty*. 2nd ed. Tehran: Academy of Art Publisher. ISBN: 978-964-232-041-7.

Bootwala, A. V. 1988. "A Study on the Use of Geometric Proportions Used to Design Single Unit Mosque Plans in the Ottoman Turkish Empire." Master's thesis, Kansas State University. http://hdl.handle.net/2097/22265.

Borisova, K. 2011. "Girih Patterns in Information Technologies Teaching." In *Mathematics and Education in Mathematics 2011*, *Proceedings of the Fortieth Jubilee Spring Conference of the Union of Bulgarian Mathematicians*, Borovetz (April 5–9), 335-339. The Union of Bulgarian Mathematicians. http://www.math.bas.bg/smb/2011_PK/tom/pdf/335-339.

Bukhari, S. A. H. 2011. "What is Comparative Study." *SSRN*, (November 20). http://dx.doi.org/10.2139/ssrn.1962328.

Burckhardt, T. 2007. *Fundamentals of Islamic Art*. Translated by A. Nasri. Tehran: Haghighat Publication. NBN: 1105025; ISBN: 964-7040-93-8.

Critchlow, K. 1976. *Islamic Patterns: An Analytical and Cosmological Approach*. Great Britain, London: Thames and Hudson Ltd. ISBN: 0-500-27071-6.

Critchlow, K. 1999. *Islamic Patterns: An Analytical and Cosmological Approach.* Introduction by S. H. Nasr, Translated by S. H. Azarkar (2011). Iran, Tehran: Hekmat Publication. NBN: 2187729; ISBN: 978-964-244-025-9.

Dabbagh, A. M., and S. M. Mokhtabad. 2015. "A New Paradigm for Reading the Mosques of Contemporary Tehran." *Naghshe Jahan*, 4th year, no. 2 (Spring): 29-42. http://ensani.ir/fa/article/430380.

Eco, U. 1979. *A Theory of Semiotics*. USA, Indiana. Bloomington: Indiana University Press.

Eco, U. 1988. *Le signe.* Éditions, Bruxelles: Labor. ISBN: 9782804003265.

El-Said, I., and A. Parman. 1997. *Geometric Concepts in Islamic Art*. Translated by M. Rajabnia. 3rd ed. Iran, Tehran: (IRIB) Sourush Publication. NBN: 763615; ISBN: 964-435-248-3.

Evans, B. H. 1981. *Daylight in Architecture*. New York: Architectural Record Books. ISBN: 978-0070197688; Translated by S. Pourdahimi and T. H. Adl. (2000). Tehran: Nakhostin. NBN: 7820539.

Ezzati, M. 1997. *Research Methods in Social Sciences.* Iran, Tehran: Tarbiat Modarres University Press. ISBN: 964-6230-10-5.

Fallah, G. Q., R. Aziznejad, and A. Vaezi. 2016. "The Importance of Mirror-tiles Artwork in the Safavid and Qajar Periods." *International Conference on Civil Engineering, Architecture and Urban Infrastructure*, Tabriz. https://civilica.com/doc/448394.

Gardner, H. 2015. *Gardner's Art Through the Ages: A Concise Global*. Translated by M. Islamiah and H. Darabi, et al. Tehran: AGAH Publisher. NBN: 3855644.

Hejazi, M. 2009. "Sacred Geometry in Nature and Persian Architecture." *Journal for the History of Science* 6, no. 2 (Summer and Autumn): 15-36. ISSN: 1735-0573. https://jihs.ut.ac.ir/article_22386.html?lang=en.

Hekmat, N. A. 2006. *Metaphysics of Imagination in Golshan-e-Raz Shabestari.* 2nd ed. Tehran: Academy of Art Publisher. ISBN: 978-964-8802-63-4.

Heraclitus. Fragm. DK22 B103.

Hays, K. M. 2021. "The Architectural Imagination." Forms of the Sign, GSD1x, edX: HarvardX Course. Harvard University Graduate School of Design.

Karimiyan Seyghalani, Ali. 2013. *The Fundamental Principles of Aesthetics in Islamic Mysticism.* Tehran: Organization for the Study and Compilation of University Humanities Books (SMT). ISSN: 978-964-530-872-6. https://samt.ac.ir/en/book/3125/the-fundamental-principles-of-aesthetics-in-islamic-mysticism

Kiani, M. Y. 1997. *Decorations Related with the Iranian Architecture of the Islamic Period*. Tehran: National Cultural Heritage Organization, Research Institute. NBN: 766728. https://www.mcth.ir.

Madkour, E. 2008. *Symbolism in Ibn Arabi's Thoughts*. Translated by D. Vafaei. Tehran: Center Publication. ISBN: 978-964-2130-26-9.

Mohamadianmansoor, S., and S. Faramarzi. 2012. "A Comparison Between Quasiperiodic Order of Shah Gereh and the Quasicrystal Structure of Silicon." *University of Tehran, Honar-Ha-Ye-Ziba: Honar-Ha-Ye-Tajassomi* 4, no. 50 (Autumn): 69-80. https://doi.org/10.22059/jfava.2012.28940.

Moradzadeh, S., and A. Nejad Ebrahimi. 2020. "Islamic Geometric Patterns in Higher Dimensions." *Nexus Network Journal* 22 (May 11): 777-798. https://doi.org/10.1007/s00004-020-00486-0.

Motalebi, G. 2019. *Lessons from Environmental Psychology.* Iran, Tehran: Faculty of Architecture and Urban Planning: Soore University.

MullaSalehi, H. 1998. "Iranian Cinema: Glory Images in Islamic Architecture of Iran." *Farabi Magazine*, no. 29 (Summer): 4-31. https://www.noormags.ir/view/en/articlepage/311472.

Nasr, S. H. 1980. *Science and Civilization in Islam*. Translation by A. Aram. 2nd ed. Iran, Tehran: Kharazmi Publication. NBN: 1786195; ISBN: 978-964-4456-53-4.

Poorzarrin, R. 2014. "A Comparative Study of the Visual Signs of Persian Mirror Work and the OP [Optical] Art Painting." *Negareh Journal* 8, no. 27 (Spring): 75-86. http://negareh.shahed.ac.ir/article_117.html.

Quivy R., and L. Van-Campenhoudt. 1988. *Manual for Research in the Social Sciences*. Translated by A. NikGohar. Paris: Dunod.

Quran. https://quran.com (Quranic verses).

Riazi, M. 1996. *Illustrated Dictionary of Iranian Art Terms*. Tehran: Al-Zahra University Research Association. NBN: ‏772431.

Saussure, F. 1983. *Course in General Linguistics* (Cours de linguistique générale). Translated by Roy Harris. Chicago: Open Court Publishing.

Sauvé Meyer, S. 2021. *Ancient Philosophy: Plato & His Predecessors*. Plato's Mathematical Physics Course. Penn Arts and Sciences. USA, University of Pennsylvania.

Seth Miller. 2007. https://elements.spiritalchemy.com/articles/IbnArabi.html.

Taghavi, N. 2015. "Evaluation Art of Mirror Work and its Philosophy in the Islamic Architecture (Case study: Ardebil's Traditional Houses)." *First International Conference on Human, Architecture, Civil Engineering and City. ICOHACC* (June). Iran, Tabriz. https://civilica.com/doc/409916.

Tennant, R. 2008. "Medieval Islamic Architecture, Quasicrystals, and Penrose and Girih Tiles: Questions from the Classroom." *Bridges Leeuwarden: Mathematics, Music, Art, Architecture, Culture*. London: Tarquin Publications. ISSN: 1099-6702; ISBN: 9780966520194. https://archive.bridgesmathart.org/2008/bridges2008-297.pdf.

Torkaman, A., and A. H. Farshchian. 2016. "The Productivity of Mirror Art in Stylizing the Architectural Space According to the Re-creation of Islamic Architectural Space." *Arts and Humanities Studies* 1, 2, no. 10 (December): 43-49. http://ensani.ir/fa/article/369901.

Zamiran, M. 2003. *An Introduction to the Semiotics of Art*. Iran, Tehran: Qeseh Publication. NBN: 824955; ISBN: 964-5776-34-1.