Semiology Study of Shrine Geometric patterns of Damavand City of Tehran Province

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Abstract

Remained works of decorative Arts in Islamic buildings, especially in religious places such as shrines, possess especial sprits and visual depth. Damavand city having very beautiful architectural works has been converted to a valuable treasury of Islamic architectural visual motifs. Getting to know shrines and their visual motifs features is leaded to know Typology, in Typology, Denotation and Connotation are the concept of truth. This research is based on descriptive and analytical nature and the collection of the data is in a mixture way. Sampling is in the form of non-random (optional) and there are 4 samples of geometric motifs of Damavand city of Tehran province and the analysis of information is qualitatively too.

In this research after study of geometric designs used in this city shrines, the amount of this motifs confusion are known by semiotic concepts and denotation and connotation meaning is stated as well. At first the basic articles related to typology and geometric motifs are discussed. Discovering the meaning of these motifs requires a necessary deep study about geometric motifs treasury of believe and religious roots and symbolic meaning of this motifs. Geometric patterns with the centrality of the circle In drawing, the incidence abstractly and creating new combination is based on uniformly covering surfaces in order not to attract attention to designs independently creating an empty space also recalls “the principle of unity in diversity” and “diversity in unity”.

Keywords: Geometric designs, semiology, shrine, Damavand city.

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Introduction:
Persian architectural Art, both from Islamic period and before that have had stable index and values in which the most important was, the relation between Art and spiritual tradition which is taken from the Art itself. The evolution of Persian art work is happened often in the context of the evolution of internal conceptual meanings of artists mind. These feature artists prefer ideal to reality and simplicity and also briefing instead naturalistic, even in the oldest architectural monuments and epigraphy. There are some beauty principles in shrines architecture which are whole Islamic. Arabesque and curves, geometric patterns and pictographs have been emerged. Motifs types are numerous, because any archaeological search leads to the discovery of a new set of designs, thus, Persian Art motifs study and checking, needs classification. During archaeological research some of great researchers including “Arthur Upham Pope” in the book “a survey of Persian art from pre historic times to the present”. “R.W. Ferrie” in the book “Arts of Iran”, “Zaki Mohammad Hasani” in the book “Iranian Arts in Islamic era”. Derek Hill and Oleg Grabar in the book "Architecture and Islamic decorations” in order to classify the motifs often can be seen in four groups that are relates to the subject matter of this research program, so includes (plant motifs, geometric motifs, animal motifs and human motifs) that in this paper citing the same case, variety of the motifs used in Damavand shrine’s in terms of image are divided into four groups(plant motifs, geometric motifs, animal motifs and designs of pictograph) in this four classified categories, pictograph is added because Human motifs is not used in shrines.
Persian artists, in the selection of natural forms for treasury monuments, have had an important mission and great responsibility and their ideal was creating a link between the physical and spiritual world. Hence, their usage patterns are formed on the basis of Specific concepts but it have been not only used for decorating object and buildings. <decoration; which is the main source of Iran> is not only the eye joy or mind pleasure, also has deeper meaning(Pope, 1380, p.2) this is why despite of numerous encounters Persian Art with other cultures and civilizations throughout history, new features has been made despite its long-standing commitment to the Islamic traditions in that.
The target of this research is to investigate the semiology of plant design of Damavand city shrines. The motifs which are used in shrines, itself is an issue that attracts artists. Geometric patterns has provided a various field for investigation. In fact, these motifs and luxurious decoration introduced shrines as one of the most spiritual, interesting and beautiful arts in the religious places. In the following research we are trying to study the semiology of geometric patterns of Damavand city shrines.

An introduction of Semiology
The information era is full of meaning and is empty of that, generally all intellectual currents and cultural branches are all under the semiology umbrella and the study of signs (a subgroup who use it and other group distinguish between these two words) have gathered and this logical because semiology always had been a part of philosophy, linguistics, the science of sociology, anthropology, communication and all eras of human activities. Which includes symbols. (Without any doubt there is another group of signs which are the subject of semiology research)
by considering the importance of this science it can be said that understanding art and literature without contemporary dominating on aesthetic elements is very difficult. If we want to clear the simple meaning of semiology it can be named a regular and systematic study of all the factors in appearance and interpretation of signs. (1385. Nouri)

**Explicit denotation, implied denotation**

Each word furthermore its literal meaning (Explicit denotation) could has implied meaning. In semiology Explicit and implied are the meanings of concepts which deal with signifier and signified. (Sojoodi, 1387, p.77) the meaning of Explicit is described by the terms such as “definition” “literary meaning” “obvious meaning” or “the meaning based on common sense”(chandler, 2007, p.37)

Chandler wrote about these three stages of implications, first stage (explicit denotation) that basically considered representational. Second stage (implied denotation) that is reflecting of pointer values which is linked to every sight. In the third stage (mythical or ideological) sign is the reflect of changing cultural concepts which is the base of especial worldviews, like masculinity, femininity, freedom, individualism, and etc. (chandler, 2002, p.145)

**Geometric Motifs**

Geometric is the knowledge that express various forms and characteristics or with the relationship between them. This knowledge along with the "account" is counted as the oldest branch of mathematics. The word geometry is the Arabic version of its Persian interpretation of the word "Size". The word geometry has come from its Greek root which means "measuring" the earth.

Residents of the Mesopotamia and the Egyptians are known as the first nation who benefited from geometry, as far as Egyptians could take advantages from geometry in the way they were able to fix the issued problem of uncertain bored of agricultural land after annual flooding of River Nile, even it was made possible to build complex buildings like Pyramids

The fascinating shapes and discovering its secrets encourages engineers to use geometry not only in the construction of magnificent buildings, but also in decorating them. this aspects got more depth meaning especially in Islamic countries that there was a respect for human and animals illustrations and became a remarkable feature of Islamic arts. Hence, geometric shapes such as circle, triangle, square, stars and polygons during their mixing became an image for decorating buildings that were deployed on the same knowledge. These forms are seen in the abundance in the majority of Persian art works, including architectural decorations, tiling, girih tiles, stucco, mirror decorations, mogharnas, break work, weavers and old wooden windows.(Keshavarzi and Ahmadi Sheykhani, 1389, p.9-10)

Islamic geometric patterns with their visual and symbolic meanings, could be used as an element with a particular, cultural and traditional identity of this land and could get to an integral part of this people life. Geometric patterns in Persian traditional arts have had a deep and unbroken link with its theoretical principles philosophy and real origins, the religion is a common way to reflect the philosophy of it. (Mirfakhraie, 1393, p.9) most of the geometric patterns in Islamic art and architecture are based on the repetition of one-pattern based unit. The named pattern should be
designed in such a way that the possibility of the link between all repeating components being well possible. (Bruge, 1393, p.10) human always have believed that everything in the world is a repeating symbol of its eternal examples in the spiritual world. Base on this belief, human himself is the symbol of God creation and existence and also attempts to activate this spiritual attributes. Since people are not all in the same spiritual unit, they need to a common language. This common language is the same its symbolic one in which by relying on the function of Islamic and Iranian traditions. It wants to say esoteric facts which are presented in its form. (Mirfakhraie, 1393, p.12)

The proportionality between the components and total combined figures will continue regardless of template limitations, showpiece, style, and its specific measures. Thus access to a whole vast world was possible in which Islamic believes that all creations are coordinated and consistent. (Saeed, 1392, p.13)

We could see geometric motifs in most of the existing building in Damavand city. These motifs structural tissues are alike with the motifs of Islamic-religious places. Like; mosque (the designs are in tile, stucco, etc,…) local materials like clay, wood(created especial geometric forms) are used in the designs of this era, although in the analysis of the pattern mythology except a very great beauty there is nothing to talk about.

Image 1.geometric patterns, mirror decoration, holy Shamsedin Mohammad shrine of Damavand; source: Atiye Youzbashi
Windows pattern of holy hamze shrine of Mohhamad abad, geometric pattern in the sash window

Holy Hamzeh shrine: Tehran province, Damavand city, Abali city, Roodehen town, Mobarak abad village, Haraz road 43 kilometers from Tehran

<table>
<thead>
<tr>
<th>Composition</th>
<th>Pattern format</th>
<th>Decorating techniques</th>
<th>Materials kind</th>
<th>Kind sign</th>
<th>Pattern kind</th>
<th>Pattern name</th>
<th>Color</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>symmetry</td>
<td>square</td>
<td>girih tiles</td>
<td>wood</td>
<td>symbolic</td>
<td>geometric</td>
<td>sash</td>
<td>brown</td>
<td>window</td>
</tr>
</tbody>
</table>

Image 2. The pattern of the Holy windows Hamza shrine, Mobarakab, geometric pattern in the sash; Source: Atiye Youzbashi
Explicit denotation survey
Building of Hamzeh shrine has eight sides, between each side there is something that is similar to Column from out view (table 1, image 2,3) each of these eight sides has arches which at the top of them there are (breast bonic arcs). Four sides of the mentioned sides, has a small window which in one among provide light of the inside building and des the conditioning action.
In the design and a manufacturing of windows, an style was used in the name “Girih tiles” which today is less welcomed however this type of design can be seen in windows and some parts of the doors in old houses and historical mosque. In these in the designing of these door and windows mathematics are used.at the first glance we can see a square that its diameter is divided into four isosceles triangle that each of them contains two triangles. The window deems in square shape from another view and it is made of four equal squares. Each one of the squares consists of two right-angled triangle that totally included eight triangle.
Implied denotation survey
This concepts and mathematical structure which are mostly related to Safavid era and the time Shia got power, have mostly beliefs and religious theme. We could see clearly that these patterns are based in yhe Number four, three, six, eight, seven, ten, five and twelve. With no doubt the use of this technique that are based on numbers and shapes was an expression of their mystical theme. They believed that the secret of creation is in numbers and shapes so they tried to understand them by duplicating and making of those secrets. The reason of the use of these specific shapes is that they knew some secrets lies in the specific geometric shapes. Thus, each of the officials showed that with a defined Girih tile project. They use some polygons by a certain repeating times. Sufis could gain that position by considering of those secrets. Persian girih tiles is one of the fields and techniques which is based on geometric patterns, visitors of the first encounter would be influenced by its balance unconsciously when light scattered by girlish tiles as if it is going to accommodate uniformly the lighting a mystical aspect. Although girlish tile art is used for door and the windows but the main goal is not just decoration. Because it was alike masters of this technique and art with no doubt uses the other decoration techniques and did not emphasis on these mathematical motifs, in some of this art tips, parts are fully integrated and light and air could not pass through it, while some other tips, pieces are fixed together in a way that light could pass and lights the buildings indoor. This is clear that to achieve the goals of this art is not possible when it analyzed with modern perspective. Because today perspective mentions art as an expression of emotion and innovation and even introduce its main goal as some kind of decoration which has so much difference with Safavids point of view upon this case. Art works are based on this point that, Safavid and Qajar era, everything, art, and even rituals and routing were done. This belief was so common is this period but after that it get limited and had almost decorative function. Girih tile depending on location and kind of function was made in three types, in the names; ret form, glassy and <Alat and Loghat> “(Alat means; Tool) (Loghat means; a shape in which is made from Straight lines and regular geometric based)” the retiform kind is the capable to pass both light and air, while glassy girih tiles could pass the light only. In “Alat and Loghat” kind of girih tile neither light nor air could pass, so girih tiles and ret forms are usually installed at the top of the corridors. In order that lightb and air could pass through the hallway while glassy girih tiles are used in rooms window while light could pass but could not effect the room air. The major expression or duty of this of this art is guiding the human soul to the truth. The truth is not anything except absolute perfection and beauty that is the same belief in Safavid era in which has gone through much hardship. They knew their work as a kind of conduct and a way to get closer to perfection. They have expressed their believes in girth tile by using of several ways including; geometric arrangement and specific use of color in the glasses and also by applying these specific numbers in geometry in which that using of colors could have decorating aspects too. But using numbers mostly based on their faith because they could use the other numbers but they have an especial emphasis on these specific numbers. Now, in architecture and construction that used in buildings and apartments, wood is used less. The main matter of usage of the iron and steel is the appearance of rough lines with repellent is important (such as bayonet, arrows, etc) even colors variety and arabesque designs could not play the old doors function. However in such an era which technology serves
some attacks, rape and robbery, people should not be advised to use the wooden and unsafe doors instead of its steel and tall forms, but at least Persian genuine can be kept in the designing of doors and windows. The feeling of insecurity and creating distance between the residents of a neighborhood and street or a city, tall walls of disturb between us stretched as far as neighbors are not aware from each other, and they do not know how easy and quick the kindly identity which is full of compassion and relation is missing behind these thick and steel doors.

**Holy Shrine pattern of Imamzadeh Taher (AS) Ahran, reguilar Hexagon**

Table 2. Holy Shrine pattern of Imamzadeh Taher (AS) Ahran, geometric pattern based on Hexagon; source: Negaraneghan

<table>
<thead>
<tr>
<th>Composition</th>
<th>Pattern format</th>
<th>Decorative techniques</th>
<th>Material kind</th>
<th>Kind design</th>
<th>Pattern name</th>
<th>Color</th>
<th>Pattern location</th>
</tr>
</thead>
<tbody>
<tr>
<td>symmetry</td>
<td>circle</td>
<td>wood carving</td>
<td>wood</td>
<td>symbolic</td>
<td>six-pointed star</td>
<td>Brown</td>
<td>Seyed mohhamad shrine</td>
</tr>
</tbody>
</table>

Holy Imamzadeh Taher (AS): Abesard 1.5 KM toward, the southwest of the village Ahran, southern of mosque, Imamzadeh.
4. Shrine pattern of Imamzadeh Taher (AS) Ahran, geometric pattern is based on hexagon design
Source: Atiye Youzbashi

Explicit denotation survey
Twisted circles could be found (at the top and the bottom) and in four corners of inlaid wood (six-pointed star). There are two parallel rows on the both top and down bottom, in the way that centuries of a circle row is exactly on the line between two rows of tangent circles, (table 2, picture 4 and 5)
One of the most common geometric patterns in Islamic art is the kind which is based on hexagon and summery device of third roots. In this method one side of the surface that must be decorated, are divided with compassioned into equal parts and by considering the number of times that the basic pattern should be repeated. And later with regular hexagons inscribed in circles and gradually entire surface is filling by same circles. And inscribed adjacent hexagons are drawn by the method of connecting the dots. In fact the basic of this pattern is the hexagon which its side is equal by the radius of the circumscribed circle. In the next level main ret form would be created by drawing of the six-pointed star by contact one among two hexagons side with the mid points of the sides of the hexagons.
Hence the connected system would be continued; all elements has get linked together and by their repetition this system could expand unlimitedly. Composition of the pattern is symmetry and its color is brown.
Image 5. Shrine pattern of Imamzadeh Taher (AS) Ahran, the color and line reconstruction and geometric infrastructure. Source: Negaraneghan

**Implied denotation survey**

Geometrically the images based on hexagon are confusing and just can be drawn by the use of a complex comas so. This complexity is for the growth of artistic and geometrical knowledge of Muslims. This base design is original one and has a architectural background of Iranian-Islamic treasury. There is not any secrets and allegory in the world that could express the internal complexity and transforming of the undivided unity to “unity in diversity” or “diversity in unity” which is better than geometric designs series in a circle or multi-levels in a sphere. In order to
understand the mathematical Islamic based patterns must be considered with the precision of all basic movements in geometry that often ignored easily. Spot means the simplest and most obvious origin and the beginning of the geometry in which its nature is a secret. For instance; the first moves towards the next step, stars with a bright spot. The first line is that spot expansions. When we arrive to the end of this expansion, internal motion happens in order to surround the other territory. With demotion of such a fence, a circle got completed. The circle becomes a standard which forms the foundation of its all inner geometric shapes.

The circle primary and inherent quality is to being six, which is shown based on a radius and its relation with the circle parameter. In the primary circles and hexagonal compounds, there is a group of tangent circles with same radius that make the original shape. The line means; when a spot moves out away from its origin and this matter is the symbol of this world symmetry. When a circle get completed a unity is produced which reflects the unity of the origin spot. Circle is not only the perfect expression of justice and equality in all directions in a limited scope, but also the most beautiful "mother" for all polygons that fits in and incorporates them. out of the concepts of time circle is always as a symbol of eternity, without beginning and end circle is the symbol of spirit.

the function of this images in art of the Islamic world has changed with development of time and technology that were used by Islamic-Persian masters. There is an excellent example of these images during 6 to 9 (AH) that is visible in the treasury of Islamic art. The eight-pointed star is known as the Islamic star among some religious friends and people. to use of the six-pointed star by Jewish in 900 lately years, mostly after their illegal establishment especially in the last century, that star has became to a symbol of zionistic stream.

Shrine pattern of Imamzadeh Zeinolabedin (AS) Zan, eight-pointed star (Shamseh)

Table 3: Shrine pattern of Imamzadeh Zeinolabedin (AS) Zan, Shamseh pattern, sours: Negarandegan

<table>
<thead>
<tr>
<th>Composing</th>
<th>Pattern form</th>
<th>Decorating techniques</th>
<th>Material kind</th>
<th>Sign kind</th>
<th>Pattern kind</th>
<th>Pattern name</th>
<th>color</th>
<th>Pattern location</th>
</tr>
</thead>
<tbody>
<tr>
<td>publish</td>
<td>square</td>
<td>girih Tiles</td>
<td>wood</td>
<td>symbolic</td>
<td>geometric</td>
<td>shamseh</td>
<td>brown</td>
<td>shrine</td>
</tr>
</tbody>
</table>

Holy Zine ol Abidin amount Shrine: 70 meters East of Tehran, Damavand, The second U-turn, Ayyneh Varzan St., Imam Khomeini St., Holy Abdullah St.
Explicit denotation survey
This shrine is eight-pointed. This eight-pointed star was made by turning of two squares, this geometrical pattern is beside of Bazooband pattern. Composition is used in designing pattern structural and it expanded entire building. (Table 3, P 6)

Implied denotation survey
Eghit pointed-star is known as a symbol of sun carrousel because the number eight from a very long time ago was mystic in all around the Europe, Asia, and Africa. (P. 70-71, P. 711387) From the perspective of a Muslim artist or an artist in the world of Islam who wanted to design any surface, any complexity geometric certainly was considered the most rational way because this pattern is a very obvious sign of the variation divine unity idea in the source of world. In fact, divine unity is beyond all manifestation, because whatever is complete covers everything and does not leave the second existence. Despite this matter throughout the existence of this divine unity could expend in the world. Harmony is nothing except “unity in diversity” (Alvahdatel fel Kasre) in the same way that “diversity in unity” (Alkesrate fel Vahde), entanglement represent on aspect and the others. Unity is the base of everything, it means that the whole universe emerged from a unified factor like a rope or a line in which constantly turns back to itself and get far away again in such a unbounded survey.
Picture 6. Shrine pattern of Zine ol Abedin (AS) zan, reconstruction of line and color pattern and geometric basic. Source: Negarandegan
Explicit denotation survey
In method of mirror decoration strapping is done at first. This pattern is silver. For-pointed star is located at the centre of square. And there are four squares in any four corners that each of these squares are made from four triangles and there is a rectangle between each of the squares. Symmetrical composition is used in designing patterns, which expend in whole the building. ( table 4, image 7)

Imamzadeh Qasem (AS) : Damavand , 2 km north of the 17 Shahrivar St., Dashtemzar St, opposite the cemetery

<table>
<thead>
<tr>
<th>composition</th>
<th>pattern format</th>
<th>Decorating techniques</th>
<th>Material kind</th>
<th>Sign Kind</th>
<th>Pattern kind</th>
<th>Pattern name</th>
<th>color</th>
<th>pattern location</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>square</td>
<td>mirrored</td>
<td>mirror</td>
<td>figurative</td>
<td>geometrical</td>
<td>Four-pointed flower</td>
<td>silver</td>
<td>Roof</td>
</tr>
</tbody>
</table>

Forming visual elements: Spot, line, surface, volume
Image 7: Shrine pattern of Imamzadeh Ghasem (AS) Oure, the color and line reconstruction and geometric infrastructure. Source: Negaranadegan

**Implied denotation survey**

Mirror decoration is deeply rooted in Iranian mystical tradition and their spiritual beliefs. The first sign or mirror was to show man’s face. Maybe it is better to know that the cause of appearing the mirror was that man wanted to see himself clearly. But mirror decoration introduces it as a spiritual foundation. In fact according to what could have been seen in eastern mysticism and especially from the some mystic points of view such as Rumi is to pass from materiality to reach the sublime universe or nature divine. actually, for reaching the fact in which is the existence of god. One should relinquish himself, so far perfection and joiner could achieved, as Rumi introduced the way to righteous by skip and ignoring the world.
When a mirror breaks or cracks at its surface it shows figures fragmented, that this refers to two mystical beliefs. First fragmentation is irony of smashing of face which is for achieving the righteous. And the second one is the creation of multiple images of a single object. Normally, a mirror shows just one image but as soon as it cracks thousands image appears. In fact the viewer finds his face in the mirror for thousands times. This issue could be regarded as a sign of unity in diversity. Thus we could say that the mirror is reminiscent in Persian architecture. The unity of creation and the creators of universe is to guide the religious person. Apart from these two features in Persian architecture mirror decoration is manifested as well as light. Mirror reflects light and increase its effect thus we could say Persian mirror decoration motifs are taken from girih tile and this patterns are themselves a visualization of nothing except praying. Hence it can be said that mirror decoration is an art that interests its viewers to the absolute nature of god and is an unquestioned embodiment of religious art. (www.honarnews.com)

Girihs, are the Persian architecture decoration and form from stright lines according to certain rules, and girihs could make their own instrument (Sherbaf, 1372, p9). Therefore girih or roman rope is just one part of the patterns various part, in which could be used alone or in combination with other motifs (Najiboghloo, 1379, p.155) according to the naturalistic theme in buildings, those buildings which are covered by two or three dimensional girih pattern could tell the universe allegories. Through geometric patterns, those which have stars are most associate the sky. Night, which is made of orbital and concentric circles reminds, stars orbit and are shining in the full star sky. The fractures lines of the various stars centre which have intersection and makes the polygons and subsidiary stars has an ambiguous visual identity (Najiboghloo, 1370, p.161) “Number four is one of the most completed numbers «and is the number of divine perfection and manifestation. According to Euclid geometry, “four” about its standing form get changed to square. (Akbari, 1389, p.88) the square is the password of the divine throne.

**Conclusion:**
In all Islamic lands and holy respectful places, were always some positions as an opportunity to improvement and growth of talent for genius and artist Muslims. Religious centers, like holy shrines and Begaa valleys has became to a wonderful treasury of Islamic art effects. Semiology is trying to answer to those questions that how meanings have been made and how reality is represented. Meaning is not going to send for us also we create that throughout a complicated interaction or with decoding some contracts which we are not aware of their existence. Awaking from such these secrets are charming and make us wisely powerful. understanding secrets, their relations together and their construction helps us to become a person with specific culture (Chandler, 1387, p.222). By attention to the metrologies point of view there are so many capabilities of analyzing designs. Existence of geometric patterns which has designed with basic of circle. When they are used in their abstract form and creation of new compounds which are created for integrated covering yhe surfaces in order not to pay attention to independent projects and making empty places. Reminds
the principle of “unity in diversity” and “diversity in unity”. Since the preservation of cultural values is an important action in country cultural development, these patterns should be kept very well. Discovering these motifs meanings requires depth study. We should examine geometric features, religious roots and symbolic meanings of these motifs.
References:


