

The Development of Bricks Ornamentation from the early Islamic Centuries to the End of Kharazmshahian Period in the Architecture of Mosques in Iran

¹Habib Shahbazi Shiran, ²Mehran Montesheri, ³Seyyed Mehdi Hosseni Nia, ⁴Zahra Mohammadian Farsani

¹Assistant Professor of Archeological Education, Faculty of Humanities, University of MohagheghArdebili, Ardebi

² Master's Degree in Archeology, University of MohagheghArdebili, Ardebil

³ Ph.D. of Archeology, Faculty of Humanities, University of MohagheghArdebili, Ardebil

⁴ Master's Degree in Archeology, University of MohagheghArdebili, Ardebil

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ABSTRACT: The brick ornamentation in Islamic architecture represents the unique skill of the architectural artists and we have seen the perfection of this kind of art during the Seljuk period. There is little information about the process of developing brick art in the architecture of Islamic mosque in Iran, and it has not yet been dealt with as it is worthy of this precious art. Therefore, it is necessary to carry out further research in this regard due to its importance in Iranian architecture. In this research, through library studies and with a descriptive-analytical approach, the trend of development of bricks ornament in the architecture of the Islamic mosques of Iran from the beginning to the end of the Ilkhan era, as well as the causes of importance and development to the bricks of the Seljuk period were studied. The brickwork decoration in the Islamic architecture of Iran gradually begins from the third century A.H. Generally speaking, the early Islamic centuries can be considered as the formation and development of brickwork ornamentation, which reaches its peak in the Seljuk era, thus the richest brick-making projects develops in this era, because during this period, artists managed to create numerous works and structures with the element due to the calm and stability of the Seljuk territory. After this period, bricklaying works continued during the Kharazmshahi era in the Khorasan area, and in the course of the Ilkhani period, its development was reduced and other techniques such as acrography and tiling were popularized.

Keywords: *Islamic Architecture of Iran, Brickwork Decorations, Tile-work, Mosques.*

INTRODUCTION

Decorative arrays have a privileged place in Islamic architecture and are an integral part of the monuments, every culture and land, and this art, both in the interior of the spaces and at the levels of the buildings, has established the background of a vast link between the arts and architecture, and the time and the arena of history has shown that all these inventions originate from the association of human beings, the confluence of cultures, the growth of thoughts and beliefs (Kiani, 2013, 16). It should be acknowledged that the use of many bricks makes the appearance and beauty of God, especially on "mosques," a thousand times. Certainly, various designs in brickwork have not only captured the hearts of Muslims but also captured the hearts of artists and great architects of the world and non-Muslims.

One of the important aspects of the use of this element in the Islamic architecture of Iran is the combination of its structural and decorative role in the building. Bricks, as a structure with many visual abilities, in terms of shape, color, size, and form have created solid and durable buildings in the long periods of the history of Islamic architecture in Iran. The existence of bricks ornamentation in the architecture of the Islamic era of Iran such as the Al Boya period, especially the Seljuk period, as well as somewhat during the Kharizmshahian and Ilkhan times, is evidence of this claim. Brickwork ornamentation in Islamic architecture of Iran has been sparse in various sources, but less attention has been paid to the development of bricks art in the Islamic mosques of Iran during the period. The purpose of this study was to study the development trend of bricks decoration in the architecture of Islamic mosques of Iran from

*Corresponding Author Email: mehdihosseyini5518@gmail.com

the early Islamic centuries to the end of the Ilkhani period from a more intimate perspective, from different angles and with the knowledge of new findings and researches, and is in such a way that is true in the scene of Iran's past history.

Review of Literature

In the field of bricks ornamentation in Iranian Islamic architecture, researches have been carried out by researchers in the field of Islamic art and architecture, but the process of the development of bricks ornamentation in mosques of Islamic times no source has been fully published and, except for the limited available works, less information is available. However, it should be said that, on the whole, the manifestations of the above discussion, which somehow include topics such as the continuation of the Seljuk brick ornamentation in the decorations of the Kharizmshahi and Ilkhani period, the types of decorative bricks, types of brickwork, Seljuk period brickwork, brick ornamentation and geometric roles in Iranian architecture, etc., have been written. One of the researches in this field is Sepanta's article dealing with the issue of brickworking in Islamic architecture of Iran. In this study, he has studied the bricks decoration in Iran. In his sketch firstly, Maherolnaqsh refers to a variety of bricklaying techniques in the book of Bricks and Roles. Then, he wrote a short research on the topic of bricklaying in Iran, in which he studied the history and construction of bricks, and also examined the general features of it. Another of his works in this area is the valuable book of the "Iranian Brickworking Heritage", which explores how to make furnaces and bricks, bricks in the past, masonry and brick designs in various geometric fields, as well as the knot problem. Anthropology has been studied

(Maherolnaqsh, 2002). Mousavi-Haji and MaziarNikbir, in the book of the Applied Art of Islamic period, have devoted a chapter to the study of bricks ornamentation in Islamic architecture of Iran, including the study of general features and characteristics of brick, as well as brick types and decorative bricks. (MousaviHaji & Nikbir, 2014). Among other recent studies, an article on the theme of the brickwork of the Seljuks and its continuation in the decorations of the Kharazmshahi and Ilkhani era, in which firstly studied the designs and layout of the brickwork decoration of the Seljuk period, then the discusses the continuity of the bricks of this period in the decorations of the Kharazmshahi and Ilkhani periods (Shekoftehet al., 2015). Although, on the subject of the above discussion, we have not yet reached the stage of historical studies and hypotheses, and with today's data and knowledge it is hardly possible to make a definitive judgment about it and achieve definitive and final results. Therefore, the main objective of this research is to study and analyze the trend of bricks decoration development in Islamic mosques from a more in-depth perspective and from different angles based on new needs and with the knowledge of new findings and researches in a way that the past scene of Iran has come true in the past scene of Iran.



MATERIALS AND METHODS

The research method was descriptive-analytic and data collection was as library and field in a formof visiting some buildings. In this study, the brickwork decorations are the most important buildings of the Islamic era (mosques and minarets) were described and analyzed by the end of the Kharizmshahian. Due to the fact that there were many monuments of this period, and it was impossible to explain the entire decoration of the

Table 1: The scope of the study of bricks ornamentation in Islamic mosques of Iran from the beginning to the end of the Kharazmshahian period.

Row	bulding	province
1	Mosque of Susa	Khuzestan
2	Fahraj Mosque	Yazd
3	Damghan Historical Mosque	Semnan
4	Jameh Nairiz Mosque	Fars
5	Jorjir mosque	Esfahan
6	Jame Mosque of Isfahan	Esfahan
7	Ardebil mosque	Ardebil
8	Sajas mosque	Zanjan
9	Jame Mosque of Isfahan	Esfahan
10	Mosque of Golpayegan	Esfahan
11	Heydarieh Qazvin mosque	Qazvin
12	Damghan Historical Mosque	Semnan
13	Damghan Jumeirah Mosque	Semnan
14	Saveh Mosque	Central
15	Malek Zozin's mosque	Khorasan
16	Freemod's Grand Mosque	Khorasan
17	Gonabad mosque	Khorasan

Table 2: Development of brick ornamentation in architecture in centuries 1 and 2

sample	Brick development	Brick place	bulding	NO
Building has been destroyed	Pre-Islamic continuity of architecture	Base of columns	Susa	1
	Pre-Islamic building method and ornamentation continuity	Minaret with abode	Fahraj Grand Mosque	2
	Pre-Islamic architecture continuity	Columns of Harem	Tarikhaneh Mosque in Damghan	3

buildings in this text, the most significant ones were mentioned. In order to achieve the research objectives, the details of the decorations of the buildings were noted in the sections where the decorations of brickwork appeared. These sections included columns, harems, arches and minarets. In the table 1 list of index mosques which are studied in this research and as having the decorative brickwork belong to the early centuries of Islam until the end of the Kharazmshahian period, is shown along with the city and province.

The background of bricks decoration before Islam

For the first time, the peoples of the Mesopotamian land began to bake bricks. The word "brick" is Babylonian and the name of the clay-writings which at that time the orders and charms were carved on. According to experts, the largest brick building ever built by mankind was the Babylon Tower (3000 BC), in which 85 million bricks were used (Naima, 1997, 17). The use of bricks in Susa and the Kaşan Silk Hill also indicates the use of this element in its time. The background of the decorative element of brick should be searched in the pre-Islamic era. Especially in the era of Ilami architecture in the Choghazanbil Ziggurat building complex, which in this building we encounter bricks with inscriptions mounted on the wall. In the building, the raw clay was applied by red brick and the glazed bricks can be seen in blue and green. The dimensions of the Ilami ziggurat bricks are 37×37 cm in thickness of 7 cm and dimensions 40×40 cm in thickness of 10 cm (Golabchi & Javani Dizaji, 2013, 341). Through the ziggurat, mortar layers were used between the brick rows, and in one part, the trunk of bituminous trees was used instead of a rivet was used to attach a brick layer to the brain from a clay dried in the sun (Patts, 2012, 346). Also in Achaemenid architecture, glazed bricks were used to make up various buildings, including palaces. Among the Apadana building and in some parts of the Shosh Palace is adorned with glazed bricks. Before the invention of the brick, the adobe was

the most important building component in the architecture, which after the recognition of the brick and its properties, has gradually replaced the bricks, and to this day its importance has not been diminished. During the Sassanid era, brick-making has made significant progress. Many buildings, including the Caisson Palace, Ivan Karkheh and Kasra, have been built with this element.

Brickwork Decorations in the Architecture of Islamic Mosques in Iran from the Beginning to before Ilkhan Period Early Islamic Period (1st and 2nd A.H)

In the early Islamic centuries most of the buildings were known with bricks like columns. Like the Mosque of Susa, the foundation of its columns are brick, as well as the Tarikhaneh mosque of Damghan, whose pillars are of brick. In the bricklaying that is in the columns of the Tarikhaneh mosque, it is evident in the form of horizontal rows and vertical rows following the Parthian and Sasanian periods. The bricks used in this mosque are square shaped. In the early centuries, Sassanid bricks were common. The large dimensions of adobe bricks in the Fahraj mosque reflect the continuity of the construction and decorating techniques of Sassanid architecture in the early Islamic centuries. The use of adobe bricks in large dimensions similar to the Fahraj Mosque has been commonplace in the early Islamic centuries (Bozorgmehri & Khodadadi, 2013)

It can be said that during this period, due to the simplicity, simple-living and introversion influenced by the teachings and thoughts of Islam, as well as the high cost, the preparation and difficult processing of bricks in the post-Islamic buildings of Iran such as the mosque of Fahraj and Tarikhaneh in Damghan where no special brickworking is seen. It seems that the element of brick in the first and second centuries was used as materials in buildings, especially mosques, thus playing a more structural role in the buildings and no attention was given to it as a decorative element in the buildings.

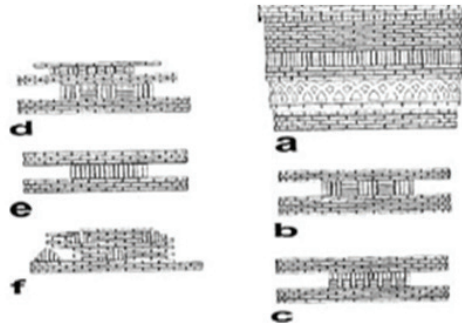


Fig.1: brickworking in body of minaret of Grand Mosque of Neyriz (Zakeri & Memariyan, 2005, 69-70)

3rd to 5th century AH

By the beginning of the third century AH, brick decoration is prevalent in buildings, one of its primary examples and its index can be found in the minaret of the Grand Mosque of Neyriz (Fig.1).

During the Samani period, the brick ornamentations have been linked to its overall shape, which somehow resulted in a real unity between the materials and the design of the building, as examples of the unique, finely constructed and valuable monuments of this period, including the tomb of Amir Ismail Samani, GonbadQaboos have been remained. But, during the Al Bouyeh era, brick ornamentation enters a new stage, and bricklaying art is of great importance. Therefore, it seems that the beginning of the art of decorative brickwork should be taken into account in the monument, especially the mosques, because during this time due to problems and limitations such as the lack of use of wood in some parts of Iran and also, the problem of stone application, as well as the cost and efficiency, the high performance and application of bricks in all parts of the building, in particular its abundant performance in the construction of large and long covers, in the construction and architecture of art Al-Bouyeh era was

considered throughout the vast region of Iran. Undoubtedly, one of the most spectacular examples of bricklaying during the Al Bouyeh era is the decoration of the mosque of Jorjir of Isfahan, in which has used beautifully designed geometrical bricks, especially the Eighth brickwork. The use of bricks to decorate the octoploid began from the second century AH and its prototype can be found at the gate of the Raqeh in Iraq (Olyan, 2012, 5). This technique is then used very elaborately in the tomb of Amir Ismail Samani, but its prevalence can be attributed to the period of the Deeliman. Among the most prominent examples of it are decorations of the bricks of the Grand Mosque of Isfahan and Nayin, which is very beautiful in the mosque of Nayin. Brickwork in the buildings of Deylami is part of the structure and foundation of the building, as with the erection of the pillar of the building, brick-ornamentation is also formed. The first samples of brickwork decorations with geometric designs are prevalent in the Jorjir mosque during the Al Bouyeh period, in which the brick marble motifs such as motifs of wickerworking and of candlesticks of seven brick branches are observed in this mosque. In the Al Bouyeh period, the bricklaying process, the repetition of the motif of the crosses are seen in two Grand Mosques of Isfahan and the Jorjir Mosque of Isfahan (Shekofteh et al., 2015, 88) (Fig. 2 & 3).

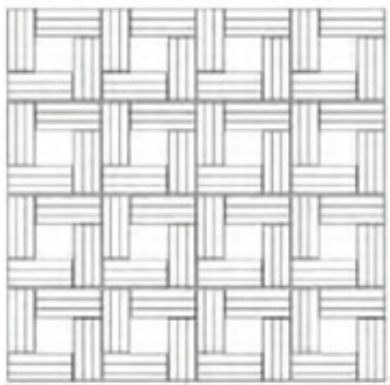



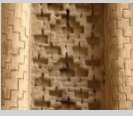


Fig. 2: brick ornamentation design with wickerwork motifs of Jorjir of Isfahan (Pakdaman, 2013)



Fig.3: Brick-laying cross in Jorjir mosque of Isfahan mosque (rastegari et al., 2015)

Table 3: Brick ornamentation development in architecture from century 3 to 5 AH

sample	Brick development	Brick place	building	NO
	Prevalence of Geometric motif of wickerwork	Azareh harem	Jorjir mosque	1
	Geometric motif of seven-branch brick candlesticks	West arch	Jorjir mosque	2
	Usage of cross motifa	Column of harem	Grand mosque of Isfahan	3
	Usage of cross motif	Interior column	Jorjir mosque	4

Seljuk period

One of the most important decorations of the Seljuk era is the brick-working that art history scholars attribute the perfection of these decorations to the Seljuk period. The rich brickworking and the supply of various motifs and designs can be considered as features and architectural styles in the Seljuk period decorations. By recognizing the potentials of this element, the Seljukis created a highly developed structural and decorative use of the element, resulting in the surviving effects of the "magic of Iranian brick" in the construction and decorating of different parts of the architecture. During this period, the art of bricklaying progressed to the highest level,

so that until the later centuries, the masonry techniques of the Seljuk period were imitated (Ramezani, 2005, 31).

Without doubt, the magnificence and glory of the brickwork of the Seljuk era is evident in one of the largest, most beautiful and most magnificent mosques in the world in which brick decoration is also manifested both structurally and decoratively, and that is the Grand Mosque of Isfahan. The important parts of this mosque are beautiful brick decoration, the dome of the Taj al-molk (dome of Khagi). In this dome, various techniques of brick-working have been used such as lay, rowed, dormant, forward-driven bricks, mosaic brickwork on inscriptions, as well as jointed gypsum plasterboard decoration (Fig. 4).

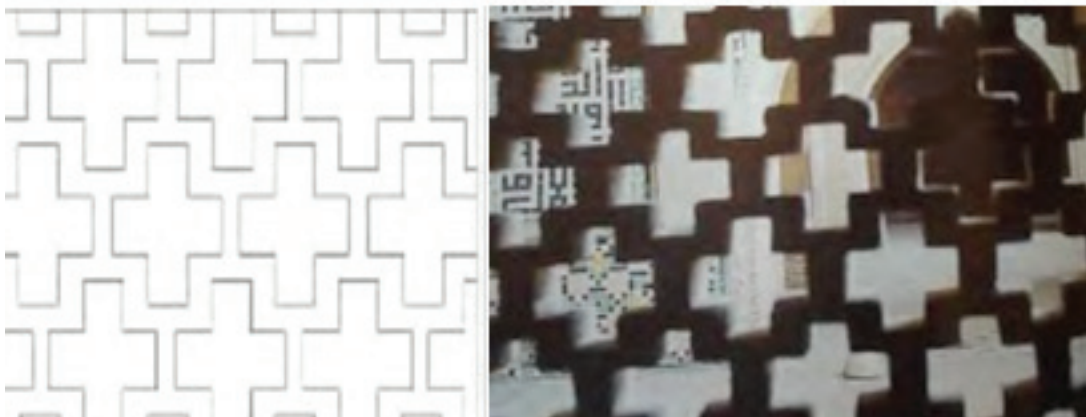


Fig.4. a sample of brick ornamentation in Grand Mosque of Isfahan (source: Maherolnaqsh, 2002, 255)

In the Seljuk period, most of the bricks are commonly used in various designs of the anthology, which are commonly used in bricks ornaments used in most buildings, especially in Seljuk mosques. Unique examples of this technique can be found in the Seljuk period under the dome of the Grand Mosque of Isfahan, the dome of the Grand Ardestan Mosque, the dome of the Grand Mosque of Barsian, and the dome of the Grand Mosque of Zavareh. Another bricklaying method in this period is Fakhr and Medin. This lattice technique has been used in

most buildings for light port. There are examples of Fakhr and Medin in the Grand Mosque of Isfahan and the Ardestan Grand Mosque. Knitting is also another very elaborate and bricklaying style decorated with different pieces of bricks cut out and adzed in various sizes. Brick-knitted masonry has been performed as brick-plaster composition and brick-tile compound. In the Seljuk period, this decorative style is promoted and thereby beautiful and complex geometric designs are created (Shekofteh et al., 2015, 92-95). (Table 4 & Fig. 5).

Table 4: brick layers in Seljuki period

Layering tpe	ornamentation	NO.
A:Golandaz		
B:Ganaghi		
C:Badbezani	Rag-layering	1
D:Ragchin 2raj		
E: Inscription Ragchin and Banayi		
(Patgin (octagon	Dormant rowed	2
-	(Fakhr and Medin (lattice	3
-	knitting	4
A: Dormant and erect Klukbandi		
B: Geometric With Stucco Nest Bee molded brick	Brick and plaster combination	5
C: Inscription and brick forward-driven and plant plastering		
-	Tile and brick combination	6

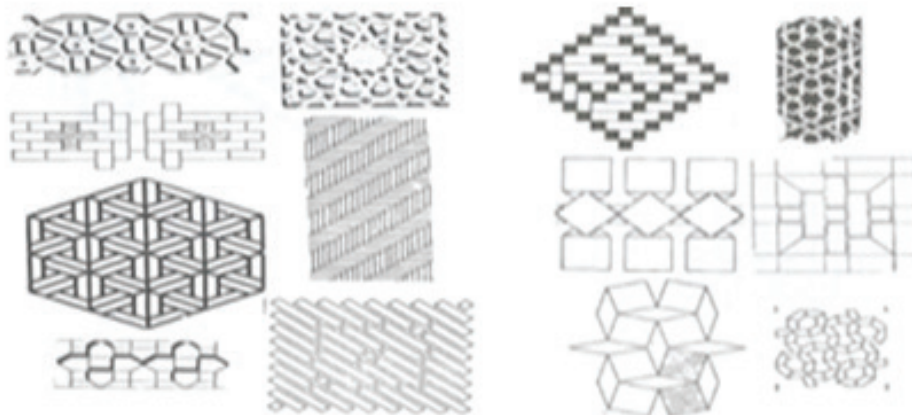


Fig. 5. brick ornamentation designs in Seljuki period (Hatam, 2000, 242-243)

Brick designs in the Grand Mosques of Golpayegan, Qazvin, Boroujerd and Zavareh, as well as mosques of the Kharazmshahi period, created a magnificent mosaic and creative mosques of bricks in the most beautiful form of Islamic architecture in Iran. In these mosques, the art of brick motifs with and all kinds of shelter sets and a defending knot was used. There are some decorative edges in Seljuk brickwork that are seen in most buildings of this period. These margins are usually made of moulded bricks and circles next to each other, or moulded bricks or S-shaped bricks. The samples of these margins are seen in the ornamental decoration of the Grand Mosque of Isfahan, the corridors of the Grand Mosque of Barsian and the dome of the Grand Mosque of Golpayegan (Fig. 6). It has been customary to decorate and paint the minarets since the half of the third century AH, but the construction and decorating of the minaret developed and evolved in the

Seljuk period at a very broad level, and it was also of particular importance. In the Seljuk period, the minarets of the beautiful and engraved bricks of mosques from the combination of brick designs and inscriptions of the brick line from the Kofi line and knitting patterns actually created the immortal values of this exquisite art in Iranian architecture. Among these minarets are the minarets of the Grand Mosque of Ardebil, the Gran Mosque of Saveh and the Tarikhanehmosque of Damghan. During this period, the minarets, to a great extent, lost their initial simplicity and were decorated with the richest designs and decorative bricks (Fig. 7-9). Brickwork decorations are common with the Kofi script in the Seljuk period. One of the evident examples of this kind of decorating has been manifested in the Grand Mosque of Isfahan as well as in the minaret of Grand Mosque of Saveh



Fig. 6. brick edges common in brick of Seljuki period (Shekofteh et al., 2015, 96)



Fig. 7: Minaret of Grand Mosque in Ardabil and its layering



Fig. 8: knitting motifs of Grand Mosque in Saveh (Shekofteh et al., 2015, 96)

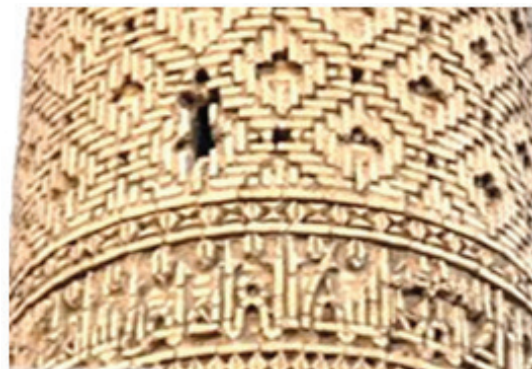


Fig. 9: brick motifs in minaret of Tarikhaneh mosque, (Karimi, 2010, 99)



Fig. 10:Kofi inscription of brick minaret in Grand Mosque of Saveh (source: Azad, 2014)



Fig.11:floral rowed dormant brick ornamentations in Golpayegan Mosque (Rastegari et al., 2015)



Fig.12:chain rowed dormant motifs in minaret of Tarikhaneh mosque in Damghan (Azad, 2014, 51)

(Fig. 10).

Other commonly used bricklaying techniques in this period are decoration with dormant techniques that are seen in the Grand Mosques of Isfahan and Golpayegan and the Tarikhaneh minaret of Damghan (Fig. 11 & 12).

Among other developments in the brickwork decoration of the Seljuk era is the popularity of a motif called "end-brick gypseus taps", which is included in the main buildings of this period, including the Grand Mosques of Isfahan, Ardestan, Golpayegan, Zavareh, Barsian, Qazvin, Ghorveh, Sajas and Heidariyeh Qazvin and also in the following periods (Fig.13 & 14).

Kharazhshahi period

Since the rule of Kharazmshahian, there are architectural monuments in Khorasan land that share common characteristics. Three valuable buildings of this period are Gonabadof Grand Mosque, MalekZooosenGrand Mosque and Freedom Grand Mosque, which are only two historic buildings. The FreimudGrand Mosque was built on the basis of many similarities with these two buildings in the architectural works of this period. Among the features of these mosques are two-porch plan, the first examples of bricks and tiles combination, various knitting patterns and the use of inscriptions in architectural decoration. Artists and architects of the Kharizmshahi period like Seljuk era artists, used bricks as

a decorative element in mosques. The combination of tiles and bricks that began in the middle of the Seljuk period to decorate the exterior of the buildings (Kiyani, 1997: 15), was used at that time on a wider scale, with the exception that during the Seljuk period only one tile color is used in combination with brick, while in the late Kharazmshahi, with the use of three colors of the tile, we encounter turquoise and white which is an important step in the development of the art of tiling, which in the Timuridperiod reached to its peak.

The techniques that are common in the brickwork ornaments of the Kharazmshahi era are the technique of molded bricks that have been prevalent in the Seljuk era in a simple and primitive manner. At the end of the Seljuk period, the use of motif masonry bricks, known as motif pottery was used. This style is very elegant in Kharazmshahi period with geometric and plant designs, and often combined with glazed tiles and bricks. Very beautiful examples of this style are in the mosques of this era, including the Grand Mosque of Malik Zosen and the Freemod Grand Mosque, and even later in the Ilkhani era building, including the Soltanieh Dome and BayazidBastami Collection.

The most famous designs in this period are: the motif of the hevagonal, which has been shifted to the axis of its symmetry. The design is called "Six in Six ground" - the use of glazed bricks placed in the middle of a star bricklayer design - the glazed brick design, the decorative design of which is called the "Eight and the Drum of the Wave" (Table 5).



Fig.13: end-brick plaster taps of Grand Mosque in Sajas(Hamidi & Khazae, 2011, 110)



Fig. 14: geometric plaster motif taps and brick-layering in Heydariyeh Mosque of Qazvin (Bakhtiari, 2012, 101)

Table5:brick ornamentation development in architecture of Seljuki period

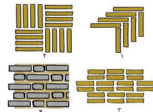
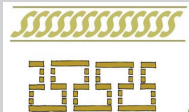









sample	Brickworking development	NO.
	Prevalence of a variety of designs and brick layers	1
	Usage of rotary and s-shaped ornamental edges	2
	Knitting design usage	3
	First sample of brick arch	4
	Prevalence of rowed dormant ornamentation	5
	Kofi-lined brick ornamentation	6
	Prevalence of plaster end-brick tap ornamentations	7

Table6:brick ornamentation development in architecture of Kharazshahi period

sample	Brick development	building	NO.
	Tile-molded technique prevalence	ZozenMalek	1
	Prevalence of tile-molded brick technique	Freyomed	2
	Usage of geometric motifs in brick-working	Gonabad	3
	Usage of glaze brick with geometric motifs	Gonabad	4
	Forward-driven tile Forward-driven brick	Mosques inKhorasan region	5

CONCLUSION

The art of Iranian architecture has long been characterized by several principles, which are well represented in the samples. These principles are: simplicity, simple living, introversion, etc. These principles are always the dynamic and permanent principles of Iranian architecture from the beginning to the present, especially during the Islamic era, as well as in the construction and structural issues has been considered and in the decorative additions of the building it has also been considered. The existence of a simple and simple living in this era is another feature of Iranian architecture, which considering this simple nature that the architects were prohibited from paying attention to other techniques such as tiling from the early centuries to the Timurid period. This simplicity in the buildings was rooted in the early times of Islam. The Prophet's Mosque in Medina during the lifetime of the Prophet was simple and free from architectural decoration. This simplicity made it possible to see mosques with a simple pattern similar to the Prophet's mosque in Iran and other Islamic lands in the early Islamic centuries. Of course, this tradition is not long lasting, and we are witnessing the emergence of diverse mosque designs in Iran. However, there is a kind of respect for the traditions. Until the end of the Ilkhani period, despite the magnificent mosques such as the Grand Mosque of Isfahan, a kind of simplicity and introversion is seen in the decorating of buildings in the external view. From other religious and mystical events prevalent in the Ilkhanites, one can mention the development of Sufism. Looking at the history of Islamic art indicates that Sufism and mysticism have been one of the most influential and intellectual and spiritual influences affecting Iranian art and architecture.

The emergence of Sufism in post-Islamic Iran, which at the same time, intertwines with Qur'an teachings and Prophetic hadiths can be effective in the non-utilization of tiling and other techniques of Islamic art in decorating the facades of buildings. In the construction of mosques of the 1st and 2nd centuries AH, the element of clay and wooden columns like palm tree trunk was more used and the coatings were mostly flat and using wooden beams. In this century, the architectural practices of the Parthian and Sasanian periods continued. The large dimensions of adobe bricks in the Fahraj mosque reflect the continuity of the construction and decorating techniques of Sassanid architecture in the early Islamic centuries. Even the dimensions of the bricks used during the Sassanid period were common in the 1st and 2nd centuries. From the third century AH, gradually brick decoration is becoming commonplace in Iranian buildings, one of the brightest periods of this period being the Sunnis. The main feature of the brickwork decoration of this period is that brickwork of a facade is associated with its general form, which in some way leads to a real unity between materials and designs. After the 3rd century AH, bricklaying works are of great importance during the Al Bouyeh era, and many buildings are decorated with this element; therefore, it seems that the beginning of the art of decorative brickwork should be on the facades of buildings, especially the mosques of Al Boyah time, because at this time because of the existing difficulties and limitations, and on the other hand, the high performance and application of bricks in all parts of the building has been considered in the work of decorating and the art of the architecture of the Al Bouyeh period was considered throughout Iran. The use of bricks to decorate the octoploid and stucco begins in the second century AH, a prime example

of which can be found at the building of the Raq gate in Iraq. This brickwork has been used in the Al-Boya period in the Jorjir mosque. Also, the first examples of brickwork decoration with geometric designs in the Jorjir mosque are found that beautiful designs of bricks are visible in this building, such as motifs of wickerwork, Cross designs and motifs of seven brick chains of candlesticks. In the 3rd to 5th centuries, each of the dynasties of Samanids, Ghaznavids and Al-Bouyeh have been using bricks ornaments, of which few of them have been remained, but the construction of brick with its early stages of growth during the spent period, which later reached its peak in the Seljuk era. During this period, simple primitive nodes that were linked to the structure were commonly used, which began with straight and simple motions, leading to the emergence and development of the grand nodes. In general, the third to fifth centuries AH can be considered as the formation and development of bricks ornaments in Iran. But, in the Seljuk era, bricklaying works with its prolific designs and the supply of various motifs and designs reached to its peak and evolution. The most brickwork in the Seljuk era is located in Isfahan province, which is undoubtedly one of the most beautiful and most magnificent mosques of this era from the perspective of the brickwork of the Grand Mosque of Isfahan. During this period, most of the brick rags and layouts are common in a variety of designs and knotting and create the magnificent mosques of the bricks phenomenon in Islamic architecture of Iran, in the most beautiful form. The brickwork of this era was so advanced and at the height peak that the continuation of the next period, especially the Kharizmshahids and the Ilkhanas, continued as well. In the Seljuk era, building and decorating minarets with bricks develops at a very high level and is of great importance, so that they lose their initial simplicity and with rich brick designs such as Kofi lines are decorated with knitting. Also, brickwork decoration is used by lines and inscriptions of the Kofi line during the Seljuk era, one of the examples of this kind of decorations has been manifested in the Grand Mosque of Isfahan. Among other developments in the brickwork decoration of the Seljuk era is the prevalence of motif called end-brick gypsum taps, which is included in the main buildings of this period, including the Grand Mosques of Isfahan, Ardestan, Golpayegan, Barsian, Zavareh, Qazvin, Ghorveh, Sajas and Heydarieh of Qazvin and also in the important monuments of the Ilkhani period. The architecture and decorations of the Kharizmshahid dynasty had the same characteristics as the Seljuk period, but due to the Mongol invasions and the devastations they carried, there are very few remained works of this period, including the mosques in the Khorasan area namely the Grand Mosques of MalekZozan, Freyomid and Gonabad, which are of great importance in brick decoration. During this period, the use of molded bricks that was used at the end of the Seljuk era was used in the monuments of Khorasan. Also during the Kharizmshahi period, the first examples of the use of brick and tile combinations are seen. In the brilliant mosques of the Khorasan region in the Kharizm

period, bricklaying art came to the ideal of perfection, and in every way it grew abundantly, and the art of craftsmanship and bricklaying was created from a variety of "geometric knots and Kofi lines". Also, decorative bricks are made up of geometric designs, plants and beautiful inscriptions including Qur'anic verses and historical phrases in the bricks of the Kharazmshahi period, especially in the mosques of the Khorasan region, including the designs of the hevagonal, six in six fields, six drums and waves, and six and six up and down.

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