

**Original Research Article****New Findings and Cultural Analysis of Mirror Work in Iranian Historical Buildings from the 10th Century AH to the Contemporary Era**

Alireza Sheikhi\*

Handicrafts Department, Faculty of Applied Arts, Iran University of Art, Tehran, Iran.

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**Abstract**

Mirrors held a special place both in ancient Iran and during the Islamic period, as evidenced by their presence in Persian literature. Polished metals were used as looking glasses before the Safavid era, during which big planar mirrors (In Persian “Aina Jam”) were first used as wall decorations. The creativity of Iranian artists in using broken mirrors, aina jam, and convex mirrors led them toward mirror work. This study aims to identify mirror work methods from the Safavid era up to the present day. It also sought to explore the development of mirror work and present a cultural analysis of the studied works. This research question is What are the methods of mirror work from the Safavid period to the contemporary era, and how can their cultural significance be interpreted? In this basic descriptive-analytical study, the statistical population included mirror work in historical buildings in Isfahan, Tehran, Shiraz, and Mashhad. In total, 47 historical buildings were selected using convenience sampling. The findings revealed seventeen mirror work methods developed in different eras: four methods from the Safavid period, ten methods from the Qajar and Pahlavi periods, and three contemporary methods. Furthermore, the mirror work methods in each historical period represented the dominant intellectual context of the epoch, and the sensory, emotional, physical, and aesthetic dimensions of mirror work in the studied periods are perceptible. The art of mirror work reached its apogee in Iran during the Qajar period and has undergone transformations in the contemporary era.

**Keywords:** *Mirror Work, Architectural Ornamentation, Historical Buildings, Safavid, Qajar, and Pahlavi.*

**Introduction**

Historical records indicate that mirror work in Iran dates back to the Safavid period. Big planar mirrors (aina jam)<sup>1</sup> were the first instances installed on the walls and ceilings. These mirrors were imported from Venice and other countries, and some would break and shatter in the transportation process. Perhaps the first artists who used mirrors were tile cutters and stucco artists; they cut the mirrors using their basic tools and decorated

their edges with stucco work. Over time, Iranian artists' creativity and ardour led them to make innovative use of mirrors. They set out to make jams by glassblowing and turned them into mirrors, utilizing geometrical cuts and other techniques. Mirror work was popularized during the Qajar and Pahlavi periods as it was performed extensively in religious and royal buildings. Some techniques were revived, and new forms of mirror work, like “cupbori”, decorated the walls.

This study had two major purposes: first, examination

\* Corresponding author: [a.sheikhi@art.ac.ir](mailto:a.sheikhi@art.ac.ir), 0989155338016

of mirror work methods from the Safavid period to the contemporary era in Isfahan, Tehran, Shiraz, and Mashhad; second, cultural analysis of forms of mirror work. Therefore, what are the methods of mirror work from the Safavid period to the contemporary era, and how can their cultural significance be interpreted? To this end, analysing mirror work techniques in each historical epoch and presenting instances based on field studies was necessary.

### Research Background

Sālehi Kākhki & Aslāni (2011) explicated different kinds of stucco decorations and touched upon cupbori in “Presentation of 12 Kinds of Stucco Works Used in the Architectural Decoration of the Islamic Period in Iran Based on Technical Properties”. Moghimpour Bijani (2008) examined mirror work in the Imam Reza Shrine, Narenjestan-e Qavam, and the Golestan Palace in addition to probing two mirror work techniques. In “Study of Mirror Making and Mirror Work in Architectural Decorations in Iran”. Mishmast Nehi & Abed Isfahani (2007) scrutinized the history of mirror work from Sidon to Venice and Safavid Isfahan. They also elucidated the methods of distinguishing glass mirrors and reviewed some of the techniques in an article titled “Investigating the technique of making mirrors and mirror work in Iranian architectural decoration”. Mehrpooya (1997) broadly described the architectural decorations, including mirror work, in Iranian mosques in “Traditional Architectural Ornaments in Iranian Mosques”. Addressing the gap in the literature on mirror work in Iran, this study aimed to delve into the technical properties of mirror work methods in the Safavid, Qajar, and Pahlavi periods as well as contemporary Iran. Accordingly, mirror work methods and socio-cultural developments manifested in the historical Iranian buildings were analyzed from the tenth century AH to the contemporary era.

### Research Methodology

In this basic descriptive-analytical study, historical residential, religious, and royal buildings located in

Isfahan, Tehran, Shiraz, and Mashhad were identified. All accessible sites were photographed and documented. Next, mirror work methods in the Safavid, Qajar, and Pahlavi periods and contemporary Iran were typologically analyzed with the help of relevant written documents and the author’s twenty-year experience in mirror work. The dominant methods were then pinpointed. Purposive convenience sampling was used in order to categorize the mirror work techniques, given the extensive field visits. The studied buildings were as follows: seven historical houses (Akhavan Haqiqi, Martha Peter’s, Aristotelian, Sheikh Ol-Islam, Qazvini, “Mashrutiyat”, & Vasiq Ansari), four royal buildings (“Chehel Sotoun”, “Hasht Behesht”, “Rakibkhaneh”, & “Abbasi Hotel”) and four religious buildings (Imamzadeh Ibrahim, Imamzadeh Shahmirhamzeh, Aqa Mausoleum, Mirfendereski Mausoleum) in Isfahan; ten historical buildings (Mirza Shafi, Zorufchi, Fakhr Ol-Moluk, Sultan Begum, Qavam Al-Saltaneh, Moqaddam, Teymourdash, Vossuq, Imam Jomeh, Alaa Al-Dowleh), five royal buildings (Palaces of Golestan, Sa’dabad, Niavaran, Sahebqaranieh and Masoudieh), and Imamzadeh Saleh in Tehran; six historical buildings (Zinat Ol-Molk, Mohtasham, Forough Ol-Molk, Nasir Ol-Molk, Kazerunian, Manteqinezhad), Narenjestan-e Qavam, and eight religious buildings (Imamzadeh of Seyyed Mir Mohammad, Ibrahim, Zanjiri, Bibi Fatemeh Bint Hasan, Bibi Fatemeh Imam Kazim, Seyyed Ala Od-Din Hosein, Seyyed Taj Od-Din Gharib, & Ali Ibn Hamza) in Shiraz, and the Imam Reza Shrine in Mashhad. In total, 23 historical houses, 10 royal buildings, and 14 religious buildings were analyzed to present a comprehensive categorization of mirror work methods in Iran.

### The Historical Use of Mirrors in Iran

In late 4000 BC, the people who lived in Sialk, Kashan, Iran, made cosmetic mirrors of round copper sheets turned into convex surfaces (Ghirshman, 1993, 35). “Adding a well-polished silver coating on metal mirrors was common until the 200s and 300s AD. An instance of such copper mirrors belongs to the Sassanid

period. It was found in Amlash excavations and still retains an extent of its brightness after centuries” (Semsar & Zoka, 1988, 268).

In the eastern states of Iran during the Seljuk rule, a number of works, inspired by the Chinese Tang art, were found with different motifs such as lion, human, hybrid creatures, and constellations decorated with Kufic scripts. It is interesting to note that in addition to their usual and daily use, these mirrors were frequently used in occult sciences, soothsaying, fortune telling, magic, and spell casting. Metal mirrors were made with a quicksilver coating in Iran. This is why they were very bright. Nizami Ganjavi alludes to this topic in one of his lines:

*No mirror gleams as the silvered glass moon  
Except the nakhshab moon, born from Mercury’s tune<sup>2</sup>*  
(Nezami Ganjavi, 1999, 80)

The first direct reference to glass mirrors goes back to 220 AD. Frames of silver mirrors with duck or plant motifs remain from the Sassanid era; however, their glass parts are lost (Mishmast Nehi & Abed Isfahani, 2007, 3). Mirrors made in Venice were imported to Iran from the first half of the 16th century. They were very rare and expensive, but they began to be used as architectural ornamentations since then. “The historical use of amalgamated glass mirrors in interior architectural decoration of Iran likely dates back to the Timurid period” (ibid.).

According to Jean Chardin (1957, 344), glass mirrors were less common than metal mirrors as they were less durable and would become unusable when they lost their shine. Nonetheless, with the mass production of mirrors via new methods in Europe and their import to Iran, metal mirrors were forgotten (Tahvildar, 1963, 110).

### **Introduction of Mirrors to Iranian Buildings**

The first historical documents about the art of mirror work in Iran belong to the Safavid period. Since then, various methods have been used in the performance and composition of mirror work by Iranian artists. Moreover, this process was accelerated with the country’s flourishing political and commercial relations, particularly with Europe. This study aimed to examine

Iranian mirror work methods in different historical epochs based on the available data, historical documents like travelogues, and field studies in historical buildings in Isfahan, Tehran, Shiraz, and Mashhad as the centres of mirror work. About 25 travelogues remain from the dawn of the Safavids including those written by Amborgio Contarini, Giosafat Barbaro, Caterino Zeno, J. M. Angello, Vincentio d’Alessandri, the Shirley brothers, Georges Tectander von der Jabel, Dan Garcia, Pietro Della Valle, Fedot Afanas Yevic Katof, Robert Stodart, Ian Smith, Jean-Baptiste Tavernier, Adam Olearius, Jean Chardin, André Deslandes Daulier, Nicholas Sanson, Engelbert Kaempfer, Giovanni Francesco Gemelli Careri, Judasz Tadeusz Krusinski, and Dürrî Ahmed, as well as Travelogues of Venetians in Iran and La belle Brelandière, ambassadeur en Perse. Mirror work found a special place in Iranian architecture, particularly the architecture of palaces and their ornamentations, from the Safavid period. The extent of its manifestation is also evident in the palaces built in later periods. Mirror work became prominent in religious buildings due to the reflection and refraction of light, and in luxurious buildings as it resembled diamonds and bestowed splendour and magnificence to the buildings. In this regard, the hall of mirrors turned into one of the most luxurious and frequented parts of the palaces to flaunt its grandeur and magnificence when special guests visited. In addition to mirror work, other related arts such as stucco, painting on mirrors, and layeh-chini (pastiglia) were utilized to amplify the architectural beauty. With the mass production of glass mirrors in Europe and their extensive importation into Iran, the use of glass mirrors gradually replaced metal mirrors.

As a result of a lack of written documents, it is not clear in which building the mirror work was first used. Nevertheless, the evidence indicates that mirror work was probably used for the first time in the decorations of Shah Tahmasp’s Divankhane Mansion in Qazvin. The use of mirrors in this building goes back to the 16th century. When the capital was changed from Qazvin to Isfahan, mirror work developed in this city and other cities in Iran, like Ashraff (today called Behshahr). It was

used in the decorations of many Safavid palaces in at least 137 buildings only in Isfahan, according to Chardin (Riazi, 1996, 11). Moreover, mirror work was used to decorate the houses of some of the Safavid courtmen (Olearius, 1984, 221).

In the Qajar era, many explorers visited Iran, including Jakob Eduard Polak, Edward Granville Browne, George Nathaniel Curzon, Sir Percy Molesworth Skyes, Baron de Bode, Guillaume-Antoine Olivier, Eugène Flandin, Édouard comte de Sercey, Joseph Arthur de Gobineau, Jane Dieulafoy, Eugène Aubin, Samuel Greene Wheeler Benjamin, and Hnedry Pottinger. In addition to their literary value, travelogues are first-hand accounts of events in a particular time written at that time. Accordingly, they are considered primary sources for historical, sociological, and anthropological studies.

Evidence shows that during the rule of Naser al-Din Shah Qajar, the Dar al-Siyadah Portico in the Imam Reza Shrine was the first religious structure to be decorated with mirror work (Qajar, 2009, 170). Apparently, mirror work remained exclusive to wealthy people in different periods. Wheeler Benjamin, the first American minister to Persia, points at a relatively fresh and newly invented art of decorating ceilings and walls with strange designs using fragments of mirrors. He admits that although the materials used in mirror work were not very expensive, the final cost of performing mirror work was expensive due to the amount of work that was required for large surfaces (Wheeler Benjamin, 1984, 333). With a glimpse at the works remaining from the masters of the art of mirror work, it seems that besides the kings and the wealthy, the custodians of Imamzadehs were the clients of mirror artists.

### Mirror Work Techniques

The simplest and most basic method of performing mirror work in different historical periods in Iran since the Safavid era was the flat method, where mirrors in various sizes were installed on walls, whether in one piece or broken into pieces. This category of mirror work includes mirror work on muqarnas, painting on the surface and back side of the mirror, mirror and

plaster, stucco and mirror, and the combination of mirror and wood “gereh-chini” in “alat-o loqat” format. The convex method, which is the dominant method in mirror work, can be found on the ceiling and walls of religious buildings where shamsa and toranj are performed in convex form. Double- and multi-layered, semi-embossed, “barhashte” (high relief) mirror work, and perhaps cupbori could be categorized into this group. The concave method was used occasionally on small surfaces in flower or crenulated shapes in the frames or above the mirror crown and other frames. It incorporates an arrangement of petals or half ovals attached to the background concavely. The techniques were named by the common terms used by mirror work artists and researchers, and based on field studies and personal experience.

#### • The Safavid period

##### - Big planar mirror (aina jam)

The travelogues from the Safavid period frequently mention the use of flat, full-length, large mirrors installed in Safavid palaces and mansions as a symbol of pride. Most of these mirrors were installed in the entrance and main halls of palaces that belonged to the Safavid and Qajar kings. They have been recorded as similar to mirrors used in the French court and the Venetian instances. Sources have highlighted the dimensions of the Chehel Sotoun mirror; when a person entered Chehel Sotoun from the east entrance, their image would be visible in the mirror on the iwan (Jaberi Ansari, 1942, 344). Many Iwans surround the mansion. They are covered with straw mats and curtains. The rooms have multiple doors. In one of the rooms, two large mirrors are placed on the sides of the door and windows on one wall facing the mirrors on the other wall to reflect their images, making you think that there is an infinite number of rooms beyond them” (Della Valle, 1969, 265). These mirrors were apparently thick and could not be cut easily (Fig. 1).

##### - Mirrors and stucco

This method was probably invented by tilers and stucco artists. “The designs were done in a way that the space between the pieces of mirror was concealed by plaster,

making the mirror seem uniform and in one piece” (Sālehi Kākhki & Aslāni, 2011, 103). As historical accounts like travelogues have recorded, the importation of mirrors from Venice rendered them an expensive and fine product. Some of the mirrors were broken and shattered in the transportation process. In his travelogue, Olearus describes the hall in which Mirza Aqa Khan Nuri (E'temad-ol Dowle), the prime minister of Iran at the time, had given a feast in this way: “The bottom of the walls was decorated with mirror work; hundreds of small pieces of mirror were installed side by side in an ordered and artistic manner” (Olearius, 1984, 221). In 1694, Careri talks about the mirror room when he visited the house and palace of Mirza Taher, the ruler of Azerbaijan, in Tabriz. Not only the walls but also the area above the stove were decorated with shining pieces of mirror. It made an interesting and dazzling scene when the rays of sunshine beamed over the room. Iranians’ virtuosity and creativity in putting these broken mirrors into use may have led to a particular process. The tile cutters first cut the mirrors into different shapes and sizes using their tools, and the stucco artists filled the spaces between the pieces with plaster, bestowing them an appealing look. The most beautiful instance of this method of mirror work can be observed on the muqarnas of the main hall of Chehel Sotoun in Isfahan (Fig. 2).

### - Cupbori

Chardin (1957, 344) described Iranian mirrors: “Iranian mirrors are all almost round and convex”. A combination of convex mirror work and stucco was another method of mirror work in Isfahan during the Safavid period. However, it was less common in the later periods (Aslani, 2014, 234). There are notable instances in Hasht Behesht Palace in Isfahan and the Church of the French in the early Pahlavi period. Additionally, the beautiful designs and motifs performed with this method in the contemporary era can be seen on the walls of the Shah Abbasi Hotel (Shah’s Mother Caravanserai). Spherical mirrors were made by glass blowing in workshops (Wulff, 1993, 152; Mousavi Bojnourdi, 2014, 543). Next, a lead solution was poured into the cup to turn



Fig. 1. Installation of big planar mirror (aina Jam) on Chehel Sotoun iwan ceiling, Isfahan, Safavid. Photo: Alireza Sheikhi, 2022.



Fig. 2. Chehel Sotoun iwan interior wall, Isfahan, Safavid. Photo: Alireza Sheikhi, 2022.

it into a mirror. As the cup was made larger, it would become thinner and have less surface curvature, resulting in finer cuts and less waste.

In this method, the pieces of the convex mirror cut according to the decorative design transferred onto the wall were installed on the layer of plaster spread on the wall. The design would then be transferred again to the new layer of plaster. Next, the stucco artist would cut the parts of the spread to reveal the covered mirrors. Finally, a complementary step, like attaching gold and painting, would be performed. The cupbori decorations in Hash Behesht prove that they historically belong to the Safavid period (Aslani, 2014, 236) (Fig. 3).

### - Wood and mirror Gereh-chini

This art can be found on the ceiling of some Safavid and Qajar palace halls. An instance is on the ceiling of the iwan of Chehel Sotoun. The shamsa and the barg-e chinar (plane tree leaf) are made of mirrors, and the other parts are wooden and decorated with paintings. It is probable that this method began to be used in the Safavid period and was popularized in the Qajar era. Another mode of using this method is placing mirrors in place of coloured glass in sash windows. Furthermore, there are instances that the frame or the alats of the doors and windows are carved to place a mirror. It can be argued that using mirrors in gereh-chini, particularly in “Qavareh-bori”<sup>3</sup>, was to amplify the shining effect and give a bright and beaming appearance to doors and windows. These linear cuts in the form of thin uniform strips or pieces of mirror were placed on straight and curved lines (Fig. 4).

#### • Qajar and Pahlavi Periods

Historical documents underscore the advancement of mirror work in the Qajar and Pahlavi periods, particularly in the former. Its instances can be observed in works remaining in the historical Qajar buildings, both residential and religious. “The first post-stagnation experiences indicate a tangible and considerable development and advancement in the Pahlavi period. Such developments and innovations can be seen in the mirror work in Shahvand (Sabz) and Marmar palaces in 1927 and 1936. The widespread use of mirror work was another development of the century” (Kiani, 1997, 241). While the four previous techniques survived with their ups and downs, other mirror work methods became more common.

#### - Semi-embossed mirror work (mirror on plaster)

Full-wall mirror work with geometrical girih and various frames, which were mostly found in religious places, began from the Qajar period. Although this type of mirror work in the form of a text or margin was a clear manifestation of wall and ceiling decorations in religious places, its combination with flat and large mirrors in the court and palaces like Golestan Palace and



Fig. 3. Right: Hasht Behesht Palace Hall ceiling decorated with cupbori, Isfahan, Safavid/ Left: cupbori decorative frame in Shah Abbasi hotel, Isfahan, contemporary era. Photo: Alireza Sheikhi, 2022.

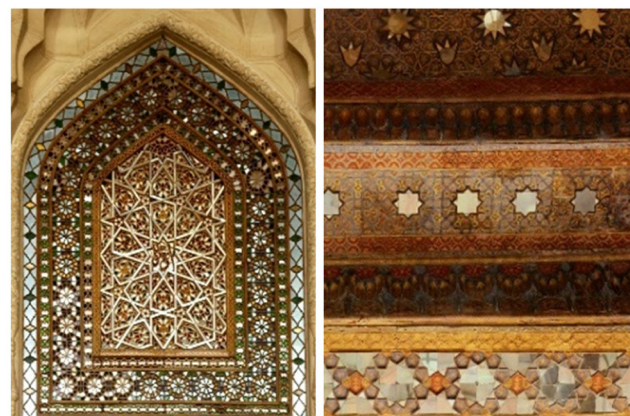


Fig. 4. Right: Wood and mirror gereh-chini on Sheikh Ol-Islam House, Isfahan, Qajar/ Left: Wood and mirror gereh-chini on Chehel Sotoun hall ceiling, Isfahan, safavid. Photo: Alireza Sheikhi, 2022.

Saadatbad Palace was extensively used in this period. The mirror was cut based on the geometrical girih or the target frame, and some parts of it were embossed by placing more mortar under the design and breaking the cut mirror on the work. The refraction of light resulting from the change in the angle of the surface of the mirror led to a certain shining effect in the space. Its instances can be seen in the Imam Reza Shrine, Imamzadeh Saleh, and other religious buildings. In addition to flat surfaces, this technique was used in muqarnas, covering its cups with larger geometrical surface cuts. This was performed in buildings such as the House of Sultan Begum (Fig. 5). Barnes (1994, 61), who travelled to Iran during the rule of Fath-Ali Shah, mentions the mirror work on the walls in the entrance of the Imam Reza Shrine: “The mirrors are embedded in the external screen of the walls and are

lighted with pendant lights at sunset”. Flandin (1945, 96) who witnessed many buildings when he travelled to Iran in 1840-41 during the rule of Mohammad Shah describes the Qajar Palace or the Qajar seat, which was Fath-Ali Shah’s summer palace built to avoid the tent-dwelling habit of the people, writes that “the houses of the Qajar Palace had mirrors and paintings and pictures of Iran’s heroes like Rostam, Afrasiab, Timur, and Genghis can be found in them”.

#### - Stucco on mirror

Mirror work was accompanied by stucco performed on big planar mirrors, particularly in the royal palaces and mansions. In this method, stucco was the frame or a decorative element in a picture (Fig. 6). Wipert von Blücher (1990, 170) also briefly points at this type of mirror work: “... We went up the stairs and arrived at a space where the walls and the ceiling were decorated with mirrors... We passed by the courtyard that had a square howz and tall old trees in it, and its walls were covered with colourful tiles. We reached the steps where the walls and ceiling were decorated with mirrors... As soon as I entered from the large door, I found myself in a room decorated with mirror work...”.

#### - Almas-neshan (diamond-like)

In semi-embossed mirror work, particularly in Qajar palaces, besides mirror work on the ceiling or the base of the arch, performed with geometrical girihs, large pieces of the same size flat mirrors were repeatedly installed on the walls, evoking a similar quality to the Daria-i-Noor [Sea of Light] and the Koh-i-Noor [Mountain of Light] diamonds. The technique was used on the top portion of

the walls and ceiling to display a shape of gemstones on a background of reflected light. Additionally, another instance could be the large mirror frames placed side by side in buildings like Shams-ol-Emareh and the Hall of Mirrors, serving as full-length mirrors. Benjamin writes: “One of the fine arts in Iran, which is relatively new and newly invented, is mirror work. They decorate the ceiling and walls of the room with strange designs. The magnificence of such halls is stunning, like the light shining from the crystals of millions of gems. Although the materials used in mirror work are not very expensive, the final cost of performing mirror work is high due to the amount of work. The hall that the Iranians had built during the previous Paris exposition was decorated with mirrors like this. Most of the halls in royal mansions and houses of the wealthy in Tehran are decorated like this” (Wheeler Benjamin, 1984) (Fig. 7).

#### - Painting on the surface and back side of the mirror

One of the techniques of mirror work in the Qajar period was painting on the surface of mirrors or carving mercury on the back side of mirrors. Different parts of the wall and ceiling were decorated with gol-o-morgh (flower and bird) motifs and images of women, scenery, and postcards. Moreover, painting on plaster and mirror work were closely linked in Qajar houses, holding a prominent place in the decoration of architectural spaces, particularly the shah neshin (Fig. 8). “The shah-neshins held by crystal columns surrounded the house. On the walls and the ceiling, thousands of mirrors mixed with shining gold work and bright paintings depicting

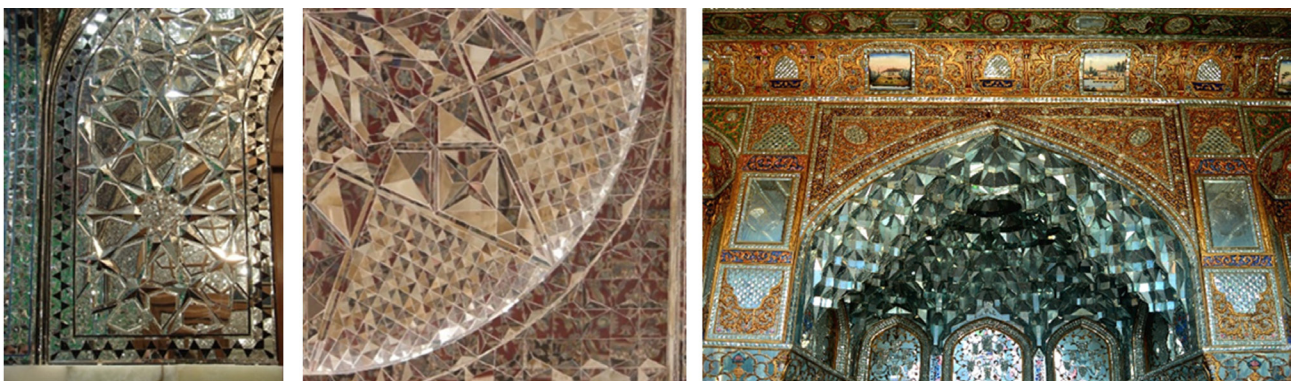


Fig. 5. Right: Semi-embossed mirror work in Imam Reza Shrine, Mashhad, the contemporary era/ Middle & Left: embossed mirror work in Sultan Beyum House, Tehran, Qajar. Photo: Alireza Sheikhi, 2022.

flowers, scenes of battlefields and hunting, and other fine subjects could be seen” (Saltykov, 1957, 65). Carla Serena (1983, 197) described the Qajar Palace: “... The interior of the palace is decorated in purely Iranian style and with expensive articles. Large mirrors and paintings are the main decorative elements inside the palace”. In his *A Winter’s Journey*, James Baillie Fraser notes the decorations of the building when describing the royal palace and the common bar hall. They include paintings, gold work, tile art, mirror work, and small pieces of mirror decorated according to the Iranians’ conventions (Fraser, 1985, 121).

#### - Mirror on mirror (double- and triple-layered)

Mirror on mirror, double- or triple-layered, is another Qajar technique of mirror work. It is an innovation of Shiraz artists. Mirrors were installed on mirrors or coloured glass, or vice versa, with delicate motifs that were mostly plant motifs. The harmony of the coloured glass and mirror bestowed a certain beauty on delicate works that decorated the walls with various frames. In



Fig. 6. A part of the stucco frame on the mirror in the Qavam Al-Saltaneh House, Tehran, Qajar. Photo: Alireza Sheikhi, 2022.

this method, blue, green, and red pieces of glass were used with mirrors. As the number of layers increased, the surface on which the mirror work was performed extended. Narenjestan-e Ghavam and the Zinat Al-Molk House are beautiful instances that bear this method of mirror work on their walls (Fig. 9).

#### - Shaving (linear cuts on the surface of mirrors)

In some houses in Shiraz and Isfahan, shavings were observed on the mirrors. These shavings may have been performed to accelerate finishing the work or to reduce the costs of mirror work. Shavings in geometrical form or designs like feathers were made on the surface of the mirrors.

#### - Volume (three-dimensional) mirror work

Volume mirror work refers to a method that was performed occasionally. It was not used for a vast surface, but rather for covering small portions. In this method, an image was created using mirrors and heterogeneous colours in multiple layers. An instance of this method is the ‘tuti dar qafas’ [parrot in cage] mirror work in the



Fig. 7. Almas neshan mirror work in Shams-ol-Emareh Palace iwan, Tehran, Qajar. Source: Mina Hosseini’s Archive.

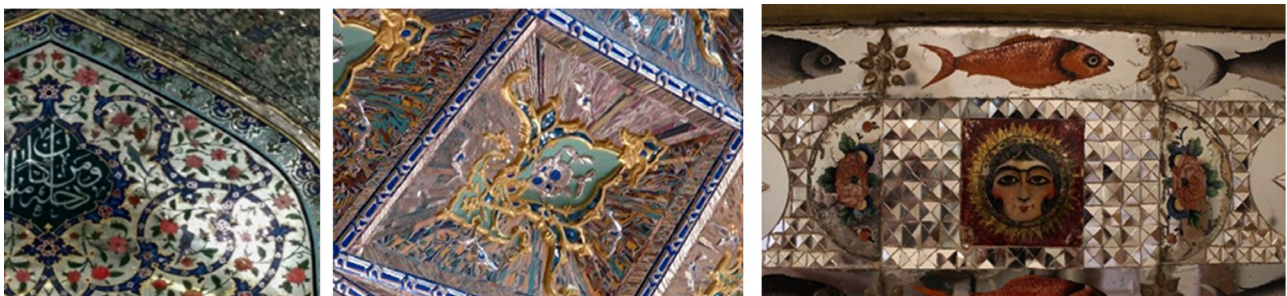


Fig. 8. Right: Painting on the surface and back side of the mirror in the Moqaddam House, Tehran, Qajar/ Middle: Painting on the mirror in the Imam Khomeini Portico in the Imam Reza Shrine, Mashhad, the contemporary era/ Left: Painting on the mirror in the Dar-al-Sayyidah Portico in the Imam Reza Shrine, Mashhad, second Pahlavi. Photo: Alireza Sheikhi, 2022.

Manteghinezhad House in Shiraz. The background of the work incorporates mirrors, the parrot is performed on the next layer, and the bars of the cage are performed in blue on top, creating a three-dimensional effect (Fig. 10).

#### - Plaster mirror

In this method, different geometrical and round motifs were created by attaching mirrors to the wall. Once the plaster coating was applied, a combination of the mirror design with a plaster background would be revealed by shaving the plaster or applying a plaster coating on the surface of the mirror on the whole work or some parts of it. This technique can be traced mostly to the dado of houses in Shiraz, although it was also performed in houses in Tehran. The plaster mirror technique included two methods: dipping the mirror in plaster and applying a plaster coating on the whole mirror, and then shaving the extra plaster, which was the step the mirror would be revealed. In this method, the background and the foreground are at the same level, and the mirror work design creates a silvery reflection on a white background. An instance is the Zanjiri House in Shiraz (Fig. 11).

#### - Barjaste and barhashte (relief and high-relief) mirror work

The number of reliefs in mirror work depends on the design. However, the reliefs are about 15 mm to 5 cm in the barjaste method. This increases up to 20 cm in the barhashte method. The technique is known as kasei [bowl-like] among the mirror artists and has to be performed with a premade work. The mirror work in Mirza Shafi House in Tehran, where small square mirrors are placed on large arabesque designs on clod can be categorized as this type of mirror work. Another instance is the centre of the ceiling of the Narenjestan Mansion hall in Shiraz (Fig. 12).

#### - “Dandan moushi” (Crenulated) mirror work

Crenulated mirror work can be grouped with occasional mirror work methods. It was mostly performed on small frames on the crown of the design, such as the crown of the toranj design, or on the ceilings. In this technique, the pieces of mirror in unifoliate or oval shapes were placed side by side concavely on the background. It was sometimes performed with two or three overlapping

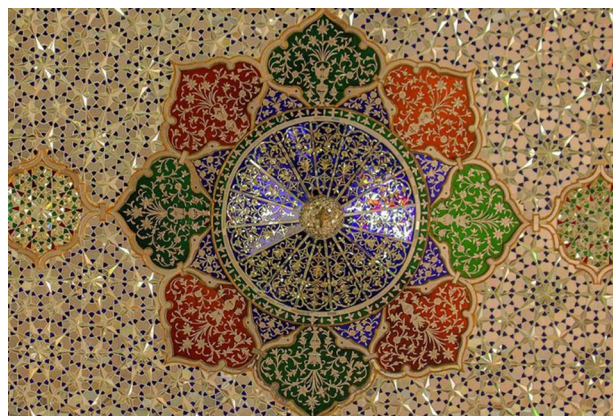


Fig. 9. Mirror on the mirror in the Zinat al-Molk House, Shiraz, Qajar. Photo: Alireza Sheikhi, 2022.

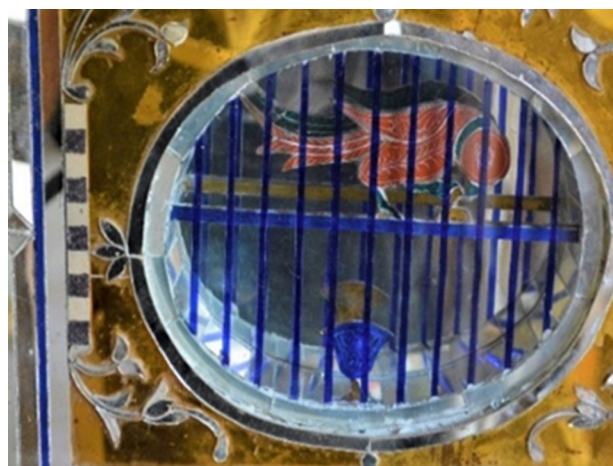


Fig. 10. Volumetric mirror work in the Manteghinezhad House, Shiraz, Qajar. Photo: Alireza Sheikhi, 2022.



Fig. 11. Mirror stucco on the plinth in the shah-neshin in Nasir al-Molk House, Shiraz, Qajar. Photo: Alireza Sheikhi, 2022.

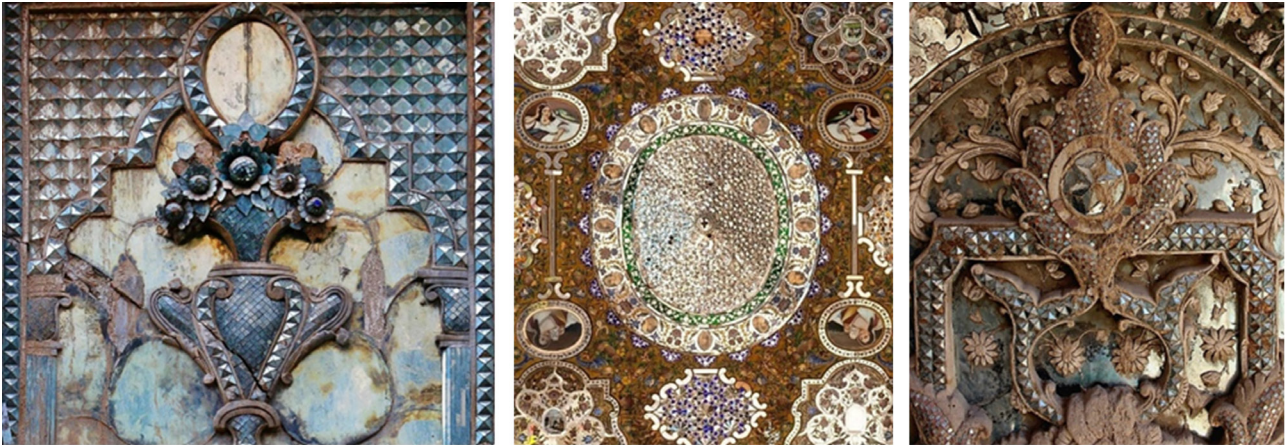


Fig. 12. Right: Barhashte (high relief) mirror work in the shah-neshin in Mirza Shafi House, Tehran, Qajar/ Middle: Embossed and barhashte mirror work on the Zinat al-Molk hall ceiling, Shiraz, Qajar/ Left: barhashte mirror work on the Alaa Al-Dowleh House, Tehran, Qajar. Photo: Alireza Sheikhi, 2022.

layers, displaying a beautiful flower. The crenulated form was also used to decorate and frame big planar mirrors. When depicting a flower, the petals were performed in larger sizes, and when performed on frames, it was cut in smaller sizes. Multiple layers of mirrors were used to make the shape of a flower, and one layer was used for decorating frames. Due to its concave shape, the background of the work was slightly visible, and the plaster can be seen (Fig. 13).

### • The contemporary period

#### - Mirror and muqarnas

Combining mirror work with plaster in muqarnas was an innovation of the contemporary period. Using flat mirrors in various sizes in some parts of the muqarnas gave it a special look and an interesting visual quality. The mirror work does not cover the whole muqarnas, and it only covers some parts of it, like the shamsa or the kase [bowls] by the white plaster, showcasing a skilful and impressive performance. Instances of this method can be seen in the tombs and houses in Isfahan (Fig. 14).

#### - Abshari (waterfall) mirror work

Abshari mirror work was an innovation of Mashhadi mirror artists. It was performed on the Niloofari columns in the Imam Khomeini Portico in the Imam Reza Shrine. On the eight and four-pointed girih, the shape of an armlet with multiple diamond-like cuts is placed side by side with a 1 mm space. The design seems matte and silvery when looked at from each side. In this technique,

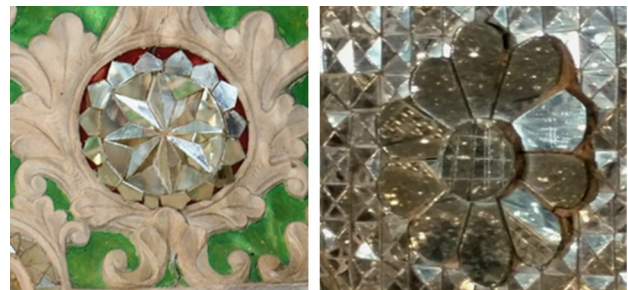


Fig. 13. Right: Dandan mushi (Crenulated) mirror work in the Allah Verdi Khan Portico in the Imam Reza Shrine, Mashhad, the contemporary era/ Left: Eight-point star frame in the Vasigh Ansari House, Isfahan, Qajar. Photo: Alireza Sheikhi, 2022.

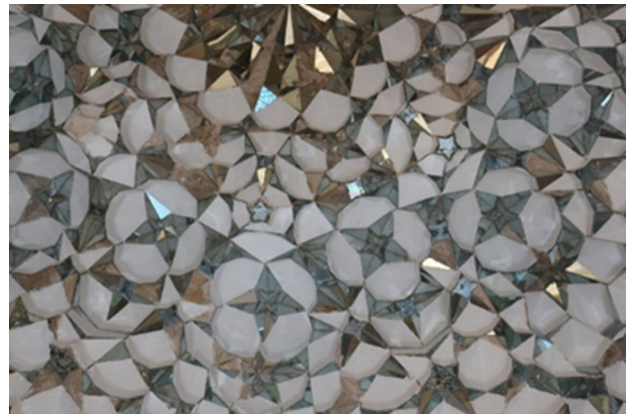


Fig. 14. Mirror and muqarnas on the ceiling of Aqa mausoleum, Isfahan, the contemporary era. Photo: Alireza Sheikhi, 2022.

the mirror was not broken, but the repeated and continuous cuts gave it a matte look. From the front, the multiple parallel lines appear like a waterfall. It can be regarded as a cascade of light and brilliance within the spiritual atmosphere of the Imam Reza Shrine (Fig. 15).

#### - Industrial mirror work

Industrial mirror work includes new methods that have

become common in many welfare service complexes and even residential buildings in the last two decades. It is performed by uniformly covering the walls with mirrors in diamond, rectangular, and triangular shapes with their margins moulded and a minimum 3 mm thickness. These mirrors can quickly cover the surface due to their large size and the use of silicone adhesives. As per the client's request, the mirrors can be installed on the walls in copper and bronze colours. The shapes are also arranged according to the artist's creativity and skill, as well as the client's request (Fig. 16).

### Cultural Analysis of the Developments of Mirror Work in Traditional Iranian Buildings

Mirrors were a cultural element with various uses,



Fig 15. Abshari mirror work in the Imam khomeini Portico in the Imam Reza Shrine, Mashhad, the contemporary era. Photo: Alireza Sheikhi, 2022.

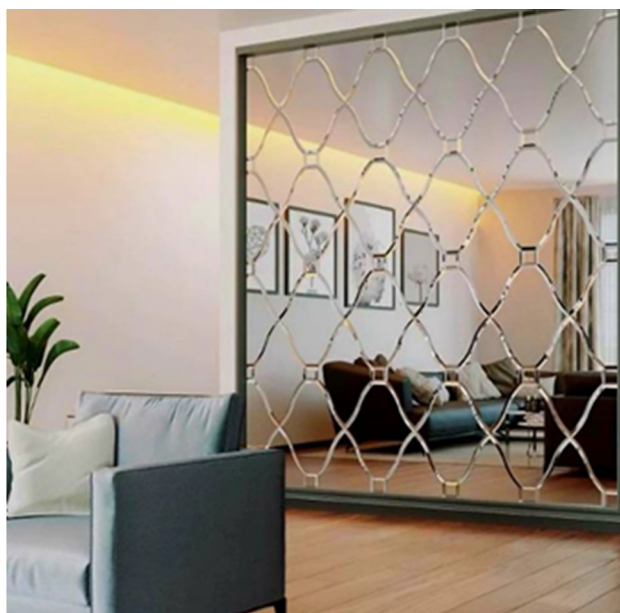


Fig. 16. Industrial modern mirror work for residential use. Photo: Alireza Sheikhi, 2022.

dimensions, and aesthetic principles from the Safavid to the Qajar periods in Iran. It seems that mirrors have been used as a pure material in the fabric of buildings, and they have undergone significant developments both in form and content with regard to their governmental, religious, residential, and commercial uses.

The popularization of big planar mirrors (*aina jam*) in the Safavid period reflects different cultural and sociological factors. Accordingly, the following can be explored to analyse the developments of mirror work in the Safavid era.

**Cultural penetration:** The importation of mirrors as a material cultural element to Iran during the Safavid period can be examined through several aspects. When large pieces of mirror were imported, they would shatter into smaller pieces during the transportation process. Therefore, it was necessary to concoct a method to put the shattered pieces to use. The broken pieces were given to glass blowers who avoided wasting the material by performing geometrical knots on the mirrors. However, the author of this study proposed another explanation for the emergence of the material and spiritual aspects of mirrors in Safavid Iran: it seems that Venetian mirror artists also came to Iran when large pieces of mirrors were imported to the country, due to the fact that skilled expertise was required to install and utilize the mirrors. At the end of the sixteenth century, Marie de' Medici, the queen of France (1600-1610 AD), decided to build an office with mirrors for herself following the trend of the day. She then ordered the Venetian artists to build a hall or house of mirrors (mirror house). To this end, 119 mirrors were purchased from Venice. It is probable that the Europeans' visits to the Safavid court led to the crossing of cultures. Cultural penetration refers to "the tangible and stable influence of a culture on another. This influence is neither necessarily positive nor necessarily negative" (Fakuhi, 2015, 131). This article sought to corroborate the view that the introduction of mirrors to Iranian society as a cultural element was positive, based on the anthropological grounds that being "positive" or "negative" depends on boosting or hindering the level of creativity, growth, and development in a culture. The entrance of mirrors to Iran opened the way for Iranians to

see mirrors as a medium for creative expression, which led to the formation of various mirror work methods. Thus, it can be said that the importation of mirrors to Iran boosted cultural creativity, growth, and development.

**Mirrors as an item for entertainment in kings' private rooms:** The kings' self-indulgence and special attention to their harems led them to install full-length or so-called *badan nama* [body mirror] and *bozorg parcheh* [large-planed] mirrors in their royal private rooms. Today, it is still common to install mirrors in the bridal chambers of newlywed couples in some parts of Iran, including Sistan and Baluchestan and Hormozgan provinces.

**Mirrors as interior decoration in palaces to instill a feeling of grandeur:** Mirrors were installed in Safavid palaces and mansions as a symbol of glory and pride. The reflection of light added to the holy image of Safavid kings, who considered themselves descendants of the lineage of Shia imams. Mirror work and reflection of light also amplified the feeling of grandeur. In terms of aesthetics, technical uses like *cupbori* in Safavid buildings, such as *Hasht Behesht Palace* in Isfahan, heightened their architectural magnificence. Mousavi Nami Esfahani, a historian at the court of Karim Khan Zand, writes about the construction of *Shahriyar Zand Palace*: "It was constructed and decorated with wood, marble, and other wide and long large mirrors that were imported from Russia, the Roman Empire, and Europe" (Mousavi Namai Isfahani, 2011, 193). The reference to mirrors in large dimensions can imply that big planar mirrors were still commonly used in Zand buildings following the Safavid tradition.

Despite the emergence of new methods in Qajar architecture, Qajar architects also followed Safavid architects. Even with their travels to Europe, it was not until Naser al-Din Shah ascended the throne that mirror work witnessed tangible changes. Given Naser al-Din Shah's fifty-year reign that coincided with certain events, inventions, and occurrences like the introduction of photography to Iran, it would be better to divide the study of the developments of Qajar

mirror work into two periods of pre- and post-Naseri eras:

**Desire for glory, grandeur, and pride:** Qajar images and paintings manifest the kings' self-glorification and desire for luxury. The case is more prominent during Naser al-Din Shah's ruling years, as he was considerably more concerned with the materialization of grandeur and glory. Spectacular works remain from the era. Mirror work was extensively used to decorate royal buildings and shrines. One of the techniques used in Qajar buildings was wood and mirror *gereh-chini*, which resulted in increased reflection of light in the space; the doors and windows also appeared brighter. Semi-embossed mirror work (mirrors on stucco) was another technique in the Qajar period, particularly in holy tombs. The refraction of light made by the changes in the angle of the surface of the mirrors created a special kind of reflection in the space. This technique can be analysed in terms of aesthetic agency. Based on the dimension of agency, the *almas neshan* [diamond medal] technique used in Qajar palaces was a symbol of the kings' desire for pride and luxury.

**Attention to the construction, renovation, and decoration of holy tombs to legitimize:** During the Safavid era, due to their descent from Sheikh Safi al-Din Ardabili, the Safavid rulers held a spiritual leadership position among their followers and thus did not need additional legitimization. However, in the reign of Naser al-Din Shah, following the Treaty of Paris, the Herat affair, and other defeats, the monarchy's popular support had weakened, prompting the court to seek public approval. Since sacred shrines have always been a refuge for the disenfranchised, attention to the condition of these structures was perceived as attention to the people themselves.

Beyond the restoration and reconstruction of mirror work from earlier periods, often integrated with modern art, mirror decoration flourished in sites such as the *Marble Palace* and *Sa'dabad* during the Pahlavi era. Of particular note in the contemporary period is the development of cascading mirror work, which has significantly enhanced the visual appeal of religious architecture.

## Conclusion

The study of the technical developments of mirrors in buildings indicated that the first mirror work method was installing large mirrors on palace walls. The owners found such works pleasing. Other innovations during the Safavid period were adding mirrors to other arts such as gereh-chini, attaching mirrors to glass globes, and placing convex mirrors on walls in various shapes, and often symbolically. Expanding trade ties with Europe and access to the craft of making mirrors in the Qajar period resulted in developments in mirror art, as various mirror work methods were reflected in Qajar buildings. For the first time, religious places were decorated with uniform wall-to-wall mirrors. Moreover, the houses of noble families were decorated with mirror paintings on the surface or back side of mirrors. This was performed in the form of rotating designs in royal buildings in Shiraz. However, the delicate art of mirror work, combined with patterns like Khatam, was used in religious buildings in Shiraz during the Pahlavi and contemporary eras at a small scale. The viewers admired such works of art. Artists from Mashhad invented new methods that embellished the Imam Reza Shrine with beautiful, bright, or matte mirrors in geometrical knots. The importing of industrial machines, particularly in the contemporary era, and making different mirrors of various thicknesses and colours have driven contemporary Iranian architecture to utilise mirrors in interior architecture. Therefore, fine works of mirror work are now rare to find, and large copper and bronze-coloured moulded mirrors cover the walls in modern-day houses. It is, nonetheless, noteworthy that mirror work in religious buildings remains as before, although the former delicately-made rotating designs and patterns, or their combination with other arts, are now forgotten.

## Conflict of Interest Statement

The author declares that there is no conflict of interest in the conduct of this research.

## Endnotes

1. Big planar mirrors (aina jam) are large, flat, and uniform mirrors without any

cracks or holes on their surfaces. In travelogues, they have been recorded as flat, full-length, large mirrors installed on palace walls.

2. «نه ماه، آینه سیماب داده چو ماه نخشب از سیماب زاده»

3. Qavareh-bori is a mixed media art including wood and glass. It is, in fact, a subset of Gereh-chini and is extensively used in making and decorating doors, windows, and sashes. It is very similar to Gereh-chini in terms of performing method and technique. The difference is that in gereh-chini, geometrical motifs are usually used while in Qavare-bori, round and curved motifs are used.

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