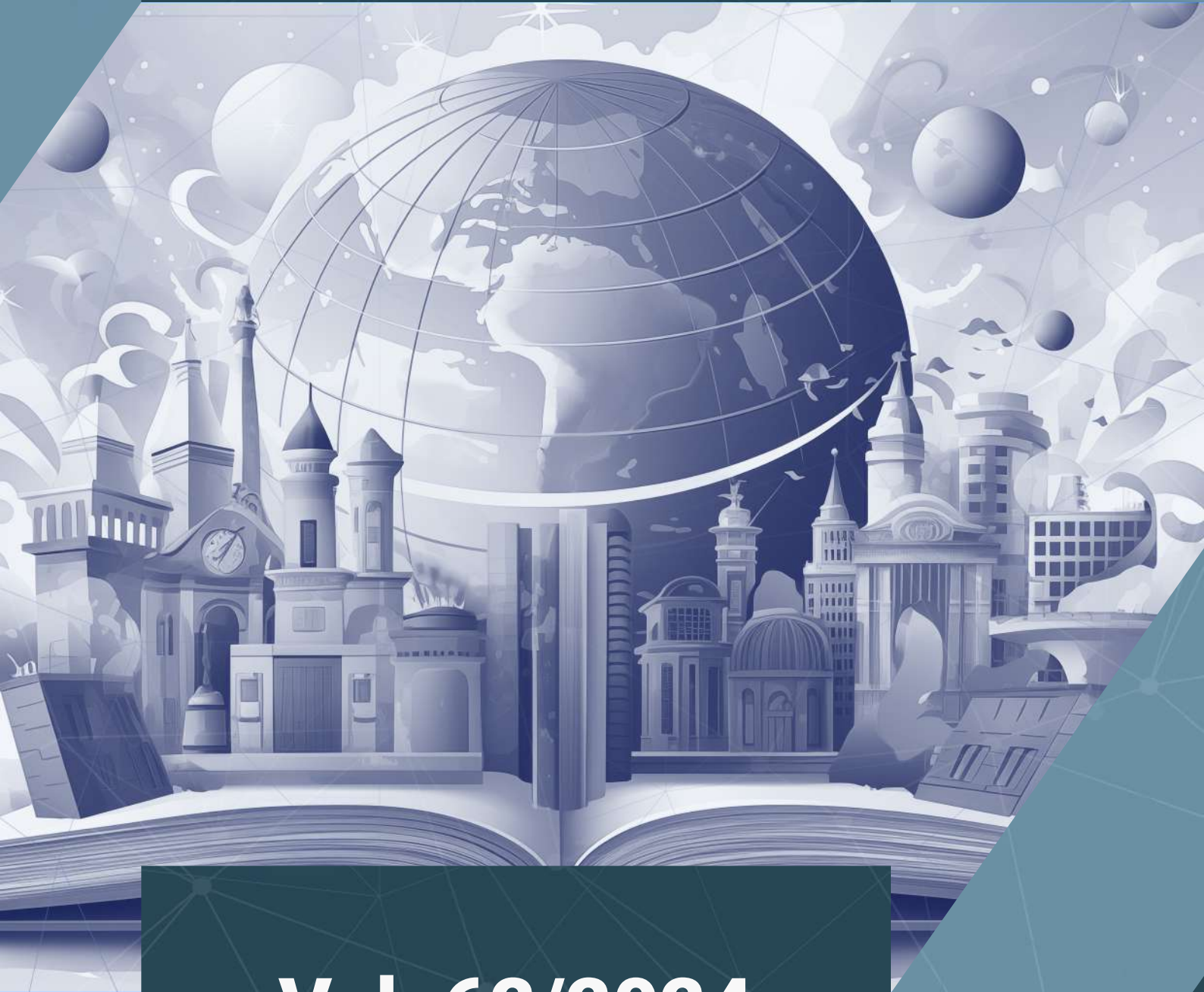




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Analysis of The Architecture and Decoration of Isfahan Masjid-E Jameh in Syntactic Dimension

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Abstract. In this research, the general architectural features and decorations of the Friday Mosque of Isfahan, Iran, which belongs to the 11th century Great Seljuk State period, one of the most important works of Islamic architecture, are examined. This mosque, which is also called Atiq Mosque, Masjid-e Jameh and Great Mosque today, is among the most important structures that have witnessed hundreds of years of history. This study on the expressibility of the semantic dimension of the structure in the syntactic dimension is important in terms of its contribution to the literature. For this purpose, information about the Great Seljuk mosque architecture and the historical development process of Friday Mosque in terms of architecture is given and the subject and purpose of the researches on this mosque are stated. Then, the method to be used in expressing the architectural structure and decorations in the syntactic dimension is explained. In order to obtain the data about the mosque, on-site visual-observation and examination technique and photography technique were used. Basic design principles were used in the analysis of the data. As a result, the architectural features and ornamental motifs used in this mosque, which is an important mosque of the Great Seljuk period, have been revealed with this method. The findings obtained about the structure and ornaments can be used in religious buildings as well as other architectural structures, ornaments, clothing, furniture and decoration.

Keywords. Great Seljuk Period, Isfahan Friday Mosque (Masjed-e Jame of Isfahan), architectural structure, decoration, syntactic dimension

1. Introduction

The Great Seljuk State was first founded in 1037 by the Kınık tribe of Oghuz Turks in the Middle Ages and had the status of a small state. Over time, it grew and expanded its borders to Anatolia and became one of the largest empires in Turkish history. During the period between 1051-1157, the capital of this state was the city of Isfahan in Iran. In this empire, where Turks and Iranians lived together, a mixed socio-cultural structure of Turkish-Iranian traditions developed, which in turn influenced the shaping of the architectural structure and settlement and was reflected in the Great Seljuk architectural and decorative arts. Especially

in Iran, one of the regions under their rule, they built magnificent architectural works on a large scale. One of these works is the Friday Mosque and settlement area in Isfahan, which is located in the Taj al-Mulk settlement with its present name. Isfahan Friday Mosque, also known as Atiq Mosque, Masjid-i Cuma, Nizamülmülk Mosque, Taj al-Mulk Mosque and Great Mosque, is one of the rare historical examples where hundreds of years of regional architecture is gathered in the same work with its architectural and ornamental features. It is also known as the building that best reflects the power of the Seljuks in the city. The Seljuks also pioneered the development of a large square by architecturally organising this unique mosque together with its surroundings. This magnificent mosque was included in the list of UNESCO World Cultural Heritage monuments in 2012 under the name of Grand Mosque.

The Great Seljuk Empire, which ruled between 1040-1307, was first a small state founded by Seljuk and his descendants in Khorasan, but during the reigns of Sultan Tuğrul Bey, Alpaslan and Melikşah, it became an empire in a short time (Aslanapa, 1993). The Turks, who came to Iran under the command of Tuğrul Bey, made Isfahan the capital in 1051. During the reign of Melikşah (1072-1092), the Great Seljuk Empire expanded from Palestine and Yemen to Maveraünnehir and China (Figure 1) (Stierlin, 2015).

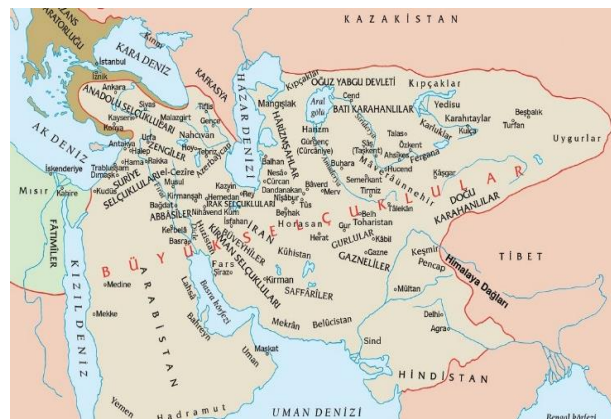


Figure 1. Map showing the borders of the Great Seljuks
(<https://islamansiklopedisi.org.tr/selcuklular>)

In the 11th and 12th centuries, the Seljuks, who dominated a large part of the Islamic world, built a great deal of works in the regions under their rule, especially in Iran. The Seljuks evaluated the settlement and architectural examples previously built in Iran and added entrance courtyards adjacent to the four facades of the Masjid-i Cuma mosque facing the outer courtyard direction. Thus, they developed a mosque architecture with iwan, semicircular domes joined to the top of the iwan in a pointed form and four courtyard plan types. With this architectural style they developed, these two structural features, iwans and monumental entrances, which are unique to the architecture of the Great Seljuk buildings, became the architectural features that determined the character of Seljuk architecture and were used in both religious and non-religious buildings. Thus, these Seljuk mosque types with four iwan, courtyard and dome in front of the mihrab became the dominant planning type in Islamic cities starting from Iran. The mosque types with four iwan and dome in front of the mihrab seen in Turkish mosque architecture also emerged and developed during the Seljuk period. Depending on the regional and environmental characteristics, brick was widely used in the building and its surroundings. In the decorations of the works of this period, stucco-style

decorations consisting of relief workmanship using brick and stone materials were used extensively. Flowers, geometric shapes and religious writings were generally preferred in the form of motifs used in ornaments. The general characteristics of the mosques of the Great Seljuk Period include architectural features such as the spatial planning form in which various spaces for various uses coexist horizontally, a monumental dome with four iwans and a large pointed half-arched dome and courtyard in front of each iwan, the side of each large iwan facing the outer courtyard, cylindrical minarets, and magnificent and rich decorations, especially inscriptions, flowers and geometric relief ornaments on brick and stone. The formally magnificent decorations in the interior and exterior spaces of Seljuk mosques gain a semantic dimension when they are presented as a reference to Allah, the one and only God who loves everything beautiful. These decorations, which are the physical expression of the concept of beauty in religious architecture, carry the meaning of hidden love and pleasure.

According to Faruki and Faruki, a figure or story that expresses tawheed is an expression of truth and goodness for the follower of Islam, and therefore the meaning of beauty is interpreted as a stronger reason (Faruki and El-Faruki, 1999). The vividness and clarity of the colours used in the formal expression of the colourful and luminous world of beautiful emotions such as happiness, hopefulness, joyfulness and vivacity, and the harmony, repetition, symmetry and balance, sovereignty and unity in the combination of motifs constitute the common features of all Islamic arts. The concept of aesthetics is a rich interpretation of an attitude that expresses the human ability to see beauty and the aim of living in a beautified world in a formal way in a work. Every human being who reaches the awareness that everything created by the Almighty Creator is beautiful can reach spiritual beauty by placing the understanding and expressiveness of the created things in a certain order with the consciousness of full submission. Islamic artists and architects exhibit a realistic and logical behaviour in the religious buildings and decorations they design. The reason for this can be given as the view that a building must first meet the functional needs. In other words, Islamic buildings were mostly built to meet worship and social needs. One of the Islamic sanctuaries is mosques. The mosque is not only a religious building used for worship, but also a meeting place where socio-cultural issues are discussed. It is also a place of education where religious sciences are learnt and a meeting place where certain collective decisions are taken. It is also used to understand the situation of the orphans, the poor and the destitute and to help and communicate. The mosque is also a place of psychological refreshment and inner peace. Every Muslim who prays as a group and in a certain order can stop being proud and get used to humility, order and obedience. The mosque is a resting place where the people are relieved from their troubles.

In the early days of Islam, the mosque was a single building used for religious, political, economic and cultural purposes. Over time, with the development of the organisation of society, instead of a single structure that brought together different functions, separate structures began to be designed to meet each function. Therefore, complexes emerged and the mosque was shaped according to religious requirements (Keleş and Friends, 2001). In terms of spatial planning, mosques generally consist of an outer courtyard, entrance courtyard, inner courtyard and under the dome inside the mosque. It also includes the mihrab, which indicates the direction of qibla, the mimbar, where the sermon is read, and the minaret, where the call to prayer is recited (Bammat, 1987; Dickie, 1996; Grabar, 1998). In large mosques, a section called muezzin mahfili was built for the muezzins who would read the adhan and make the prayers in between while the imam led the prayer. In the mosques of the Ottoman period; there are harim or outer courtyard, inner courtyard called harem, prayer area, last

congregation place, minaret, fountain, muvakkithane, imam and muezzin rooms, musalla stone and latrines (Hasol, 2017).

Spatially, the mosque's emptiness, simplicity and, in many cases, lack of any design or pattern is reflected in the fact that God is self-sufficient and rich, while the world is poor and impoverished. The stillness of space reflects the calming presence of the Divine word. The emptiness of the mosque, in relation to both spiritual poverty and the sense of the presence of the soul, is surely a consequence of Islamic revelation's emphasis on the doctrine of Divine Unity and, through it, on the non-iconic nature of Islam's sacred art. These factors give a spiritual significance to the space within the space of Islamic architecture. By emphasising the ritually clean floor, the space of the mosque, which is not piled up with furniture, creates a sense of sacredness in man through the sheer emptiness that manifests the presence of the soul. The air serves as a vehicle for the transmission of the word of God, which periodically echoes throughout the space of the Islamic home. Upon entering the mosque, the emptiness of the space draws attention to the unseen, as in the experience of the floor on which one walks with only one's shoes removed (Nasr, 1992). In Islamic religious architecture, the mosque plan developed transversely. In the Ottomans, in addition to the transversely developed mosque plan, they used the central domed mosque scheme and tried to develop this scheme transversely (Günay, 2002). Praying in congregation is preferred because it is an indicator of religious solidarity. When prayer is performed in a group, it is a simultaneous and repetitive set of movements, an act of social integration and unity. Prayer is reminiscent of a military order. People line up in rows and make common gestures in the name of God. In the presence of God, the one who prays must forget himself and find himself in a feeling of absolute servitude. In states with a social order based on Islam, the most important lifelong building activity of the sultans was the construction of large mosques and complexes with both religious and political content. Building mosques was a symbolic act of sovereignty as well as a sacred duty for rulers. A multi-domed space is not as restful as a single-domed space. It symbolises unity, representing the state of unity, solidarity and equality of people coming together in a space formed under a single dome.

According to Kuban, when the spatial formation of the mosque is evaluated in terms of size, a dominant central dome indicates the presence of worldly power. At the same time, it removes prayer from being a daily act and leads people to a reckoning with a great power (Kuban, 1998). According to Bammat, the dome and its ceiling express universality in the semantic dimension in religious architecture, since it symbolises the dome of the sky in the universal dimension. Functionally, the mosque symbolises an empty space under the sky or a dome, prepared for the gathering of the congregation. In this space, there is no altar, icons, or any kind of depiction, because God is beyond all imagination (Bammat, 1987). In Mimar Sinan's Selimiye Mosque, the dome symbolises the arch, the legs carrying the dome symbolise the angels carrying the arch, and the muezzin's cloister symbolises the Kaaba (Taşkiran, 1997). The dome is associated with the sky dome and carries an abstract and symbolic meaning towards God. The fact that people praying on their knees in the mosque open their palms to the dome space and turn their eyes beyond this space is the embodiment of this idea (İzgi, 1999). While the dome is used as an important cover that forms the cover of the courtyards in the interior spaces, it refers to a rich architectural expression language with its position in the exterior space. Domes of various sizes and shapes have been developed stylistically over time and have become the most important element of the spatial shaping of mosques both physically and semantically, and have become the symbol of the Almighty Creator, the sky, political power and the city.

In this study, Isfahan Masjid-i Jameh belonging to the Great Seljuk Period is analysed. Below, the mosque architecture of the Great Seljuk Period and the general research studies on Isfahan Friday are mentioned. Özkurt analysed the architectural works of the Great Seljuk and Ilkhanid times in Isfahan, the capital of the Great Seljuk Empire (Özkurt, 2005). In his thesis, Kazemivand analysed the spatial formation of the dome in religious and civil buildings built before Islam. Then, it was compared with the spatial form of the dome selected from the religious and civil architecture examples of the Umayyad, Abbasid and Qarakhanid periods, especially the Great Seljuk architecture in the post-Islamic period. Single-domed mosques and the development of the domes in front of the iwan in the outer courtyard of the mosque, which started in the Great Seljuk period, were examined (Kazemivand, 2016). In his study, Doğan revealed the similarities and differences in terms of the style, form and colours of the animal figures used for decoration in the architecture of two different religious buildings and the tile materials used in the expression of these figures. Thus, the interaction between Christian art and Islamic art was determined (Doğan, 2020). In the research conducted by Sokhanpardaz, the plaster decorations and inscriptions on the mihrab of this mosque belonging to the Great Seljuk period were analysed and the similarities and differences with the mosques of other periods were revealed (Sokhanpardaz, 2020). In the research conducted by Kavraz and Yılmaz Yıldırım titled "Grand Bazaars in the Examples of Tabriz and Isfahan", large shopping centres in two different cities with different geographical, socio-economic and architectural characteristics were evaluated in terms of both aesthetics and sensitivity to the physical environment. The originality of the structural features of these large commercial areas and the value of their position and status in the city structure were determined (Kavraz & Yılmaz Yıldırım, 2020). Sepideh Heiranpour Shan examined the characteristics of the four iwan mosque type belonging to the Great Seljuks in the Barsiyan and Gurme mosques built in Iran. Similarities and differences related to the fact that the two mosques have four iwan planning type have been determined. Comparisons were made by giving information about the general characteristics of the two mosques. In line with these findings, ideas about the general characteristics of the structure of pavilion-type mosques were presented (Heiranpour, 2021). Sokhanpardaz analysed the style, the technique and the manner in which the stucco decorations of the religious building were created in the sample mosque. As a result, it was determined that the information about the decorations obtained about the religious building was mostly similar to the plaster decorations of the Anatolian Seljuk State, which ruled between 1075 and 1308, and the Ilkhanid period of Iran, which was between 1256 and 1353 (Sokranpardaz, 2022). Heidari analysed the plan features of iwan, dome, courtyard and shabistan, which constitute the spatial structures of Iranian mosques between the 7th and 17th centuries, and determined the plan typologies of mosques belonging to this period (Heidari, 2023). Doğan analysed the architectural and ornamental features of Isfahan Masjid-i Jameh and Malatya Ulu Cami comparatively (Doğan, 2023).

2. Material and method

2.1. Study area

In this study, one of the most important works of Islamic architecture, the Friday Mosque of Isfahan, in Iran, which belongs to the 11th century Great Seljuk Empire period and is also called Atiq Mosque, Masjid-i Jameh and Great Mosque today, was chosen as the research area (Figure 2). Masjid-i Jameh is one of the most important Islamic buildings witnessing hundreds of years of history. This magnificent mosque was included in the list of UNESCO World Cultural Heritage monuments in 2012 under the name of the Great Mosque. Built in Isfahan,

the capital of the Great Seljuk State, this mosque is a very valuable example of Seljuk architecture and ornamentation, thus reflecting the characteristics of Islamic architecture in the most distinctive way. Even today, it is a magnificent work of the Great Seljuk empire, which is referred to both in terms of architecture and decorations



Figure 2. Location of Isfahan, location of the mosque analysed

(https://en.wikipedia.org/wiki/Isfahan_province#/media/File:IranEsfahan-SVG.svg, Google earth)

2.2. Method

On-site visual-observation and examination technique and photography technique were used to obtain data on the current situation of this unique building, which is taken as an example in the designs of religious buildings and even other building types in terms of architecture and ornaments. In the analyses of the data obtained, the basic design principles of symmetry, contrast, sovereignty, repetition, appropriateness, balance, coram and unity were evaluated.

3. General architectural structure of Isfahan Masjid-i Jameh

During the reign of the Great Seljuk Emperor Sultan Melikşah (1072 -1092), Isfahan became the capital of the Great Seljuk state. During this period, the city of Isfahan in Iran became an important city in the fields of science, science and culture. During the reign of Melikşah, the architectural structures that formed the basis of Seljuk art and Naqsh-i Cihan Square, which is considered the second largest square in the world, were built in the city. During the reign of Melikşah, the ruler of the Great Seljuk Empire, an iwan, called the Melikşah Dome, facing the outer courtyard, was added to the south side of the old masjid-i mosque, also called the Atiq Mosque. Masjid-i Jameh of Isfahan developed and took shape in an approximately rectangular shape as a result of additions in various periods.

This mosque, also called the Great Mosque, was originally in a regular geometric form, but was expanded with additional spaces added under the rule of each ruler and reached its present architectural form (Yörükan, 1998). In the inscription at the foot of this iwan section, which was added to the southern part of the old building during the time of the Seljuk Sultan Melikşah and called the Melikşah Dome, it is written that the dome was built by his vizier Nizamülmülk during the time of Melikşah (Heiranpour, 2019). The first additions to this mosque started with a mihrab dome in 1080 by the vizier Nizamülmülk. After the Seljuks,

Isfahan Masjid-i Mosque became a large building complex with additions made during the Ilkhanids, Muzafferids, Akkoyunlus and Safavids) (Figure 3, 4) (Çoruhlu, 2000).

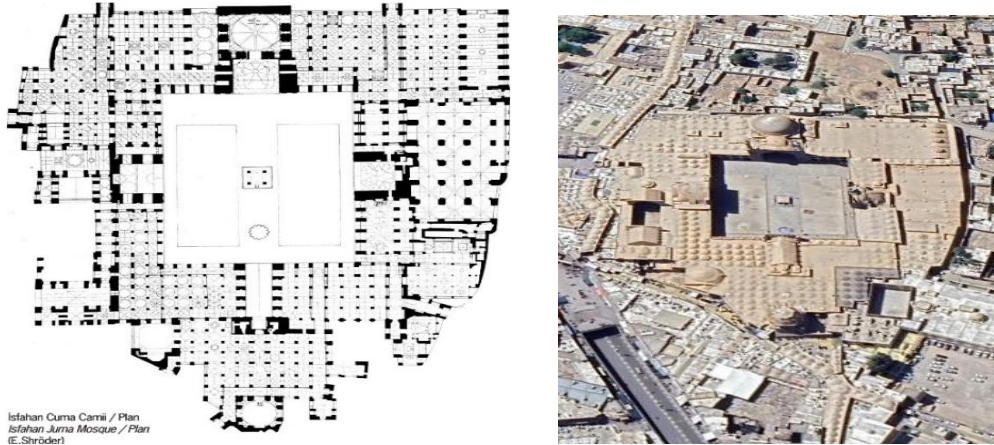


Figure 3. Isfahan Friday Masjid-i Jameh plan (<https://www.selcuklumirasi.com/architecture-detail/isfahan-cuma-camii>), Isfahan Friday Masjid (Google earth)

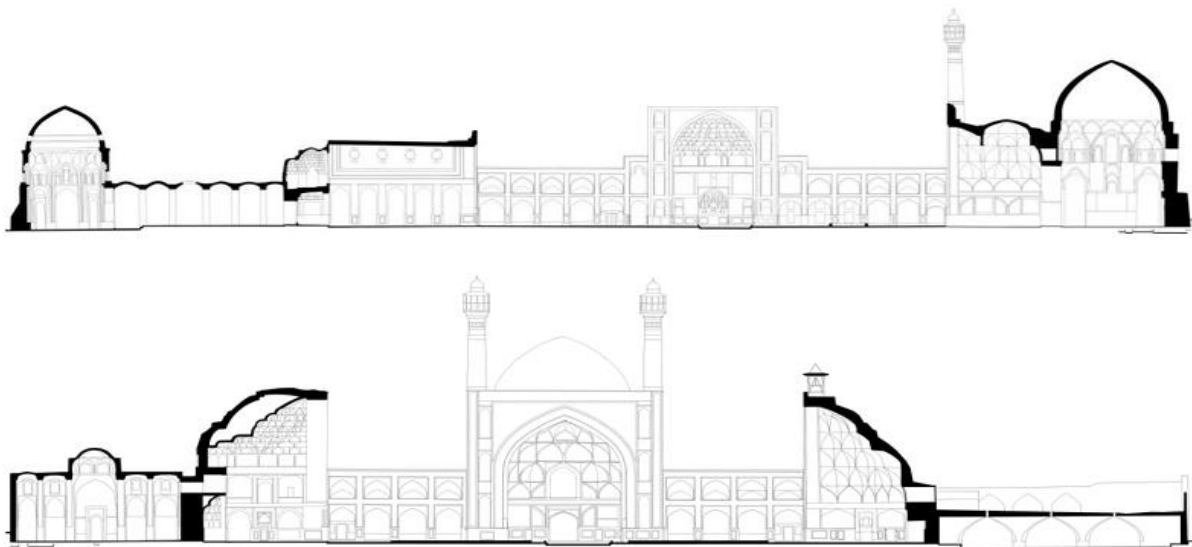


Figure 4. Masjid-i Jameh of Isfahan (Heiranpour, 2019)

Friday Mosque, built by Nizam al-Mulk in 1121, has undergone many changes. The plan feature it created with its iwan courtyard and madrasah rooms was repeated throughout Turkestan and Iran. Therefore, this new mosque type set an example for later Iranian mosques. In this type of spatial planning, an iwan was built on the walls of each facade facing the almost rectangular outer courtyard of the mosque, and a dome was built behind the iwan on the qibla side. With this planning style, it is completely separated from the mosques of Samarra and Damascus. The dimensions of the mosque are 170x140 (Zevi, 1990; Turani, 1992). The depth of the courtyard is 65 m and its width is 55 m. You can enter the mosque from the large iwan in the south, located on the axis of the courtyard. This place is covered with a large dome. The delicate brick minarets on the right and left sides of this iwan were

built during the time of Akkoyunlu Uzun Hasan (Yetkin, 1970). In the early days, there was a large square in front of the mosque for the community to gather. It was surrounded by khanikahs, soup kitchens and the remaining parts of the old Abbasid mosque. The mosque was burned by the Batinis in 1121, and most parts of the large area were destroyed, except for the domed structures at the southern and northern ends and the ruins in the east and west. Melikşah Mosque, which had the only iwan that survived the fire at that time, created a four-iwan mosque plan by adding an iwan to the middle of the eastern, western and northern edges of the courtyard.

Among the additions made to this mosque, various additions such as the large mihrab placed on the western iwan by the Mongol Khan Olcaytu, the madrasa added by the Muzaffarids and tried to be adapted to the structure of the building, the winter prayer hall built during the Timurid period, the halls and special masjid built during the Safavid period, the facade of the southern iwan and the interior decoration carried out during the Akkoyunlu period and regulations (Figure 5) (Çoruhlu, 1990).



Figure 5. Isfahan Masjid-i Jamel plan development (Yetkin, 1970).

4. Evaluation **In terms of planning**

The Mescid-i Cuma work, which has a four-iwan plan, consists of 4 domes and iwans named Melikşah Dome, Taj al-Mulk Dome, Master iwan dome and student iwan in front of each wall facing the outer courtyard of the mosque and other architectural sections connected to them. There is an iwan on each of the four sides of the courtyard, two-storey porticoes between the iwans, and a square pool in the middle of the courtyard. The entrance to the iwans is made in the form of a portal.

Great Mosque has an area of approximately 170 m x 140 m in terms of spatial planning. The central courtyard is 55 m x 70 m. The indoor spaces reserved for prayer are decorated in hypostyle style with small domes superimposed on stone columns. The number of these domes, each different from the other, is at least 300. The mosque, which is considered a model of Iranian art of the 11th and 12th centuries, has four iwans. A large domed bowl lies in front of the mihrab. Kümbet-i Harka, located at the other end of the building and built by Taj al-Mulk in 1088, is a smaller dome. This is the tomb of Terken Hatun, wife of Melik Shah. The feature of the western iwan of Masjid-i Jamel is its semi-dome built with the help of muqarnas. This honeycomb-like decoration soon spread rapidly throughout the Islamic World

(Stierlin, 2015). To enter the Masjid-i Juma campus, entrance gates were built from 10 different places. Among the external entrance doors, the oldest built one is the entrance door in the north of the mosque. The main entrance gate has the characteristics of a crown gate and the outer courtyard campus is reached by passing through a long hall (Figure 6, 7, 8).



Figure 6. Exterior views of Isfahan Masjid-i Jameh (photo, from the author's archive)

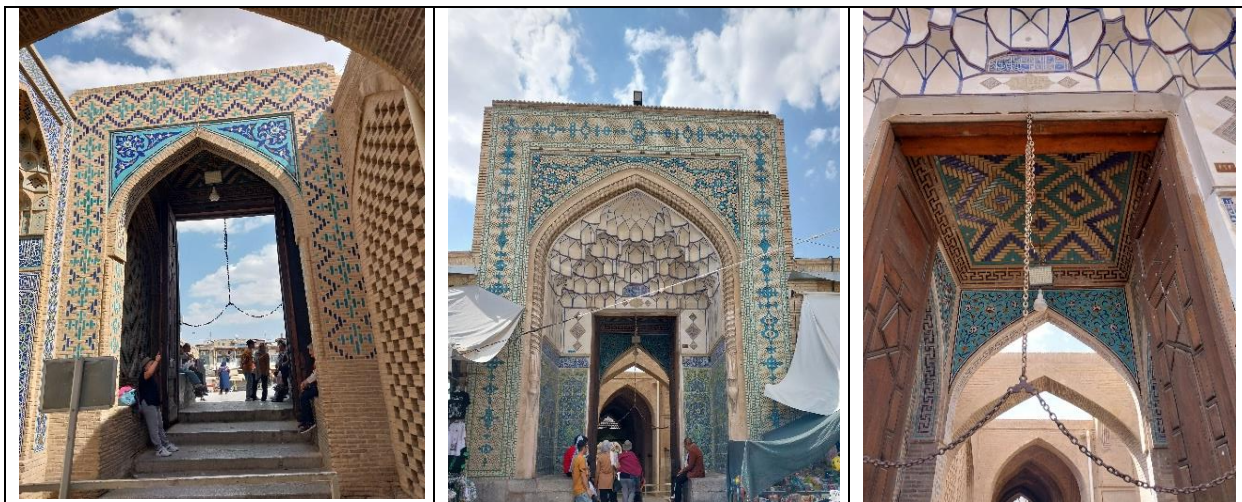


Figure 7. Footage of the entrance to the outer courtyard of the Masjid-i Jameh in Isfahan (photo, from the author's archive)

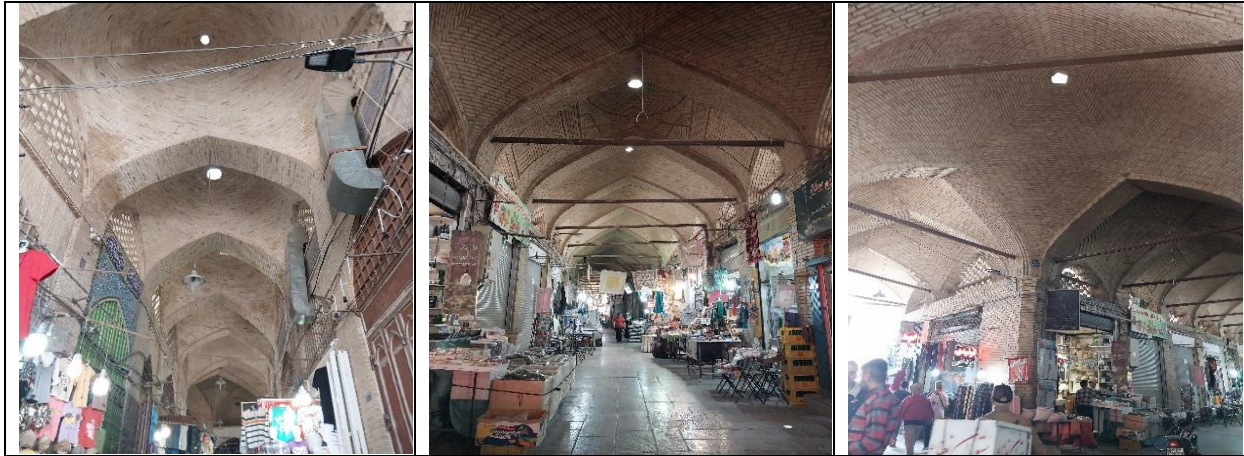


Figure 8. Views from the courtyard of Masjid-i Jameh in Isfahan (photo, from the author's archive)

There is a square-shaped fountain in the middle of the large open courtyard in the Masjid-i Jameh and it was used for educational purposes for those who went on pilgrimage in previous periods (Figure 9, 10, 11, 12, 13).



Figure 9. Views from the courtyard of Masjid-i Jameh in Isfahan (photo, from the author's archive)



Figure 10. Views from the courtyard of Masjed-i Jameh in Isfahan (photo, from the author's archive)



Figure 11. Images of Isfahan Masjed-i Jameh portico and decorations (photo, from the author's archive)



Figure 12. Views of the porticos adjacent to each iwan and their decorations in Isfahan Masjid-i Jameh (photo, from the author's archive)

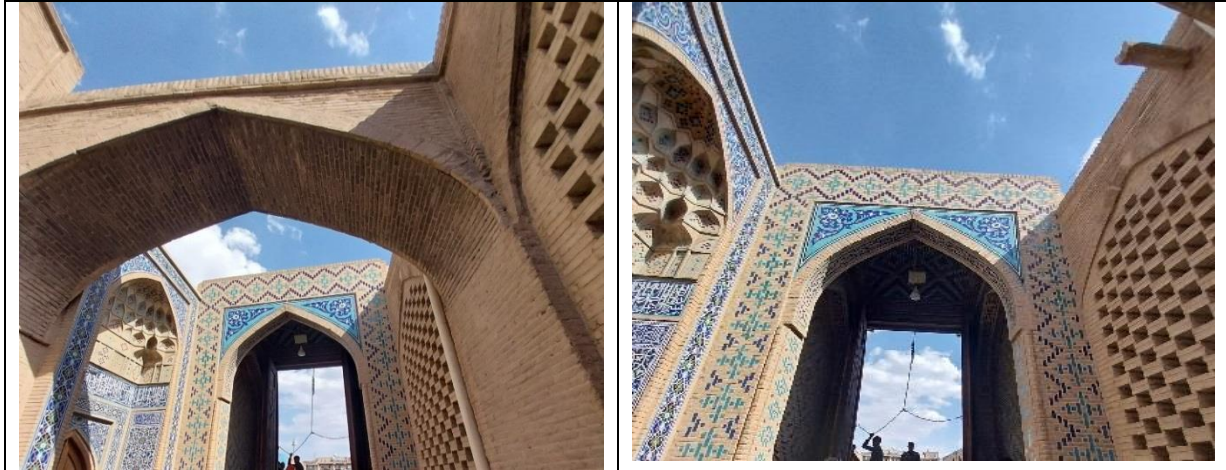


Figure 13. Isfahan Masjid-i Jameh entrance images (photo, from the author's archive)

Harim and dome

In the examination, different patterns were used in each courtyard inside the mosque and on the ceiling that forms the dome of the courtyard. Column forms with additions made during the Ilkhanate, Seljuk, Safavid and Qajar periods are seen together (Figure 14, 15, 16, 17, 18, 19, 20). There are no colourful patterns in the inner courtyards, the materials used are all natural colours. The plaster mihrab with excellent stone workmanship built by Ruler Olchayto in the closed part of the mosque where prayers are performed is quite spectacular and attracts attention (Figure 21, 22, 23). Each dome is beautiful with perfect aesthetics. Repetition and symmetrical principles were mainly used in domes.



Figure 14. Images of inner courtyard, ceiling, columns (photo, from the author's archive)



Figure 15. Images of inner courtyard, ceiling, columns (photo, from the author's archive)



Figure 16. Images of inner courtyard, ceiling, columns (photo, from the author's archive)



Figure 17. Images of inner courtyard, ceiling, columns (photo, from the author's archive)

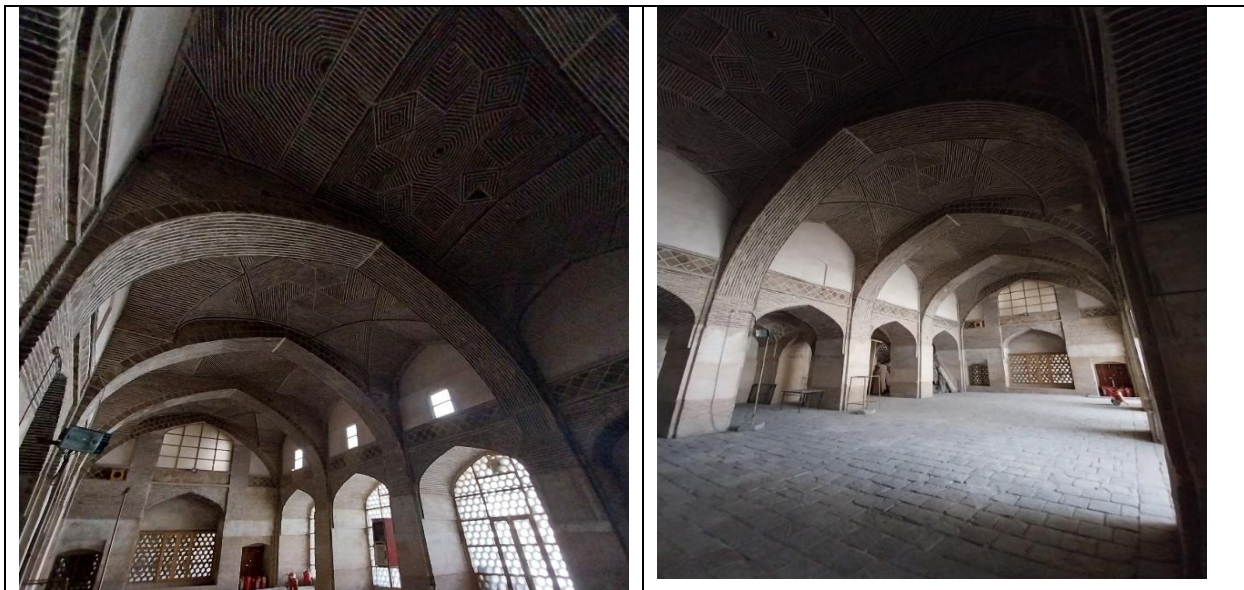


Figure 18. Images of inner courtyard, ceiling, columns (photo, from the author's archive)



Figure 19. Images of inner courtyard, ceiling, columns (photo, from the author's archive)



Figure 20. Images of inner courtyard, ceiling, columns (photo, from the author's archive)



Figure 21. Images of inner courtyard, ceiling, columns (photo, from the author's archive)



Figure 22. Views from the Olchayto altar made of plaster (photo, from the author's archive)



Figure 23. Views from the Olchayto altar made of plaster (photo, from the author's archive)

At this stage, findings regarding the architectural structure and decorations of the 4 large iwans are given.

1. Melikşah dome (Nizam al-Mulk dome); It has a square plan and was built adjacent to the pointed-arched southern iwan (qibla iwan) on the south side of the Isfahan Masjid-i Jameh. There are 2 magnificent minarets on both sides of this large iwan. The entrance and exit circulation, which provides access to the inner courtyard area of the mosque where the main worship takes place, can be accessed from this iwan, which is the domed section in front of the mihrab. The exterior of the iwan is decorated with colorful tiles. Niches for aesthetic purposes are placed on the exterior according to the principle of alternating repetition. The decorations inside the niches are shaped exactly according to the symmetrical principle. On the entire façade, niche decorations were provided with the principle of alternating repetition. Continuity was ensured with continuous inscription decorations on the outer wall of the niches, and on the other side, inscriptions in large and small geometric shapes were made with the principle of alternating repetition. The wall decorations of the iwan mainly include stonemasonry decorations made during the Seljuk period. The segmented iwan, connected to squinches with a three-segmented corner dome at the corners of the dome, was built in rib vault style. Fancy tile decorations were generally used in wall decorations. The names of the Almighty Creator, sacred names, verses and beautiful words were written in Kufi script style on colorful tiles. In addition, compositions with ornamental floral motifs and geometric patterns were created with the principle of exact repetition. Blue and yellow tones were mostly preferred in the tiles used, and each pattern is in integrity with the principle of unity and balance. In shaping both the inner and outer walls of the iwan, the principles of contrast, harmony, symmetry, balance, sovereignty and unity were achieved through color, size and line. When evaluated in terms of both architectural structure and decorations, it can be seen as the most aesthetically successful domed section among the four large iwans (Figure 24, 25, 26).



Figure 24. Views of the southern iwan-Malikshah dome [Nizamul M al-Mulk dome] from the courtyard of Isfahan Masjid-i Jameh (photo, from the author's archive)

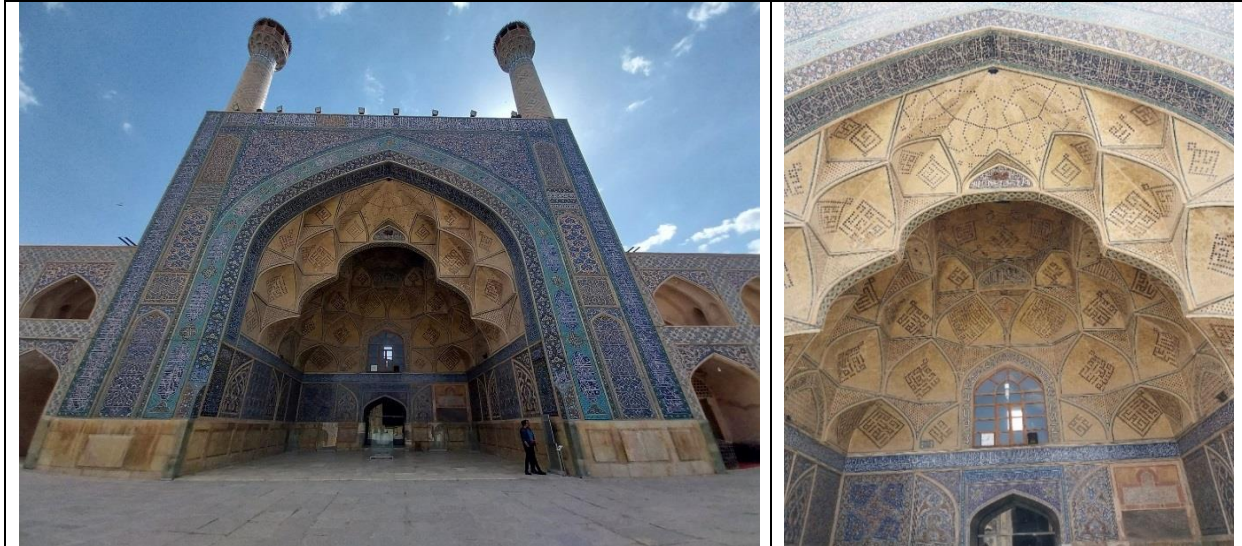


Figure 25: Views of the southern iwan from the courtyard of Masjid-I Jameh in Isfahan (photo, from the author's archive)

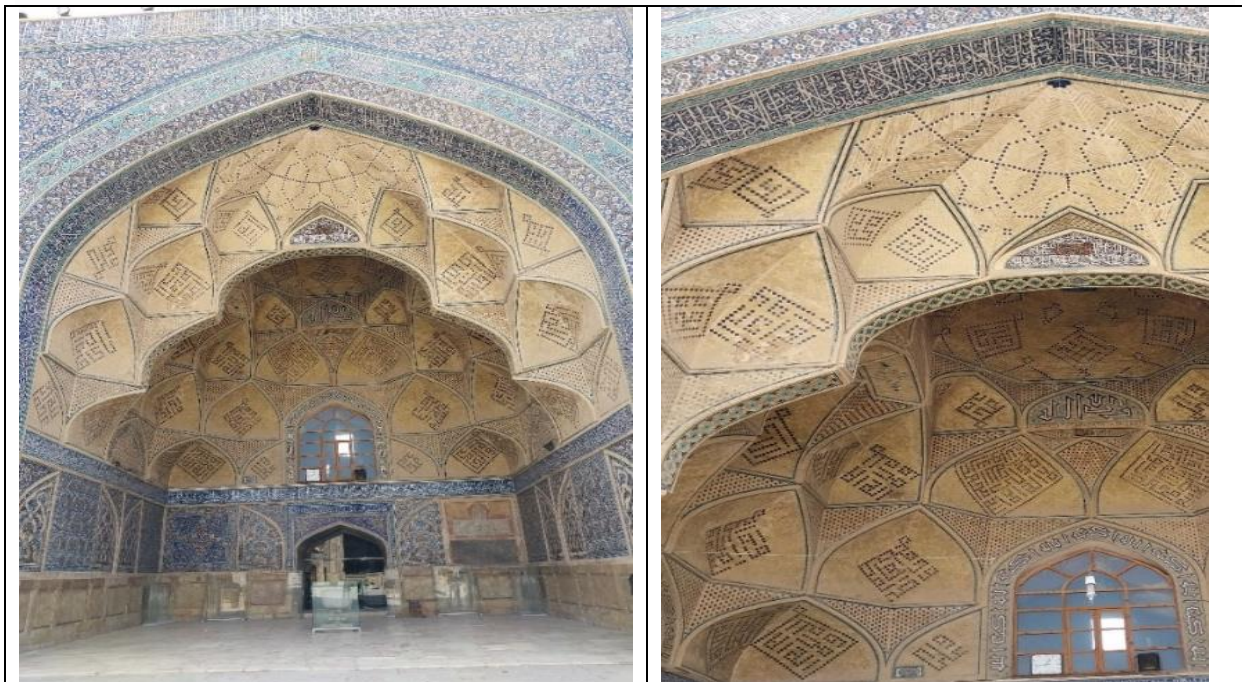


Figure 26. Views of the southern iwan from the courtyard of Masjid-i Jameh in Isfahan (photo, from the author's archive)

2. Taj al-Mulk Dome; It is located on the north side of the Isfahan Masjid-i Jameh, facing the outer courtyard. This domed section, located directly opposite the Melikshah dome, is closed on three sides and its front face faces the courtyard. Additionally, it was built separately from the iwan. The iwan that forms this section where the Taj al-Mulk dome is located has a

rectangular plan with a distinctive long vault. There are columns from the Seljuk period on both sides of this iwan. The building was built symmetrically in terms of architectural structure, both with its face facing the outer courtyard and its interior space. The niches used in the columns on the façade facing the courtyard were placed according to the principle of sequential repetition in terms of form. The decorations inside the niches were again provided with consecutive repetition. Patterns consisting of geometric shapes on the façade were decorated with Kufic script and religious sayings to ensure continuity. Geometric stone formation dominates the entire facade. Additionally, dark blue, blue and yellow color tones were used on the exterior. The Taj al-Mulk dome is connected to the main structure through a high-domed passage corridor with two rows of 16 small and eight large squinches in the interior (Figure 27, 28, 29). There are differences in the decorations compared to the domes on the other three large iwans. The dome of this iwan reflects alternating repetition with quadrangular and triangular geometric patterns, along with interlocking star shapes, mostly in the form of an eight-pointed, five-pointed rectangle. There are decorations in brown brick and stone colors on the inner surface of the dome. On its outer surface, geometric shapes appear in exact repetition and symmetrical style. The texts were written in Kufic style for both ornamental and religious semantic purposes. Balance, sovereignty and unity were achieved in terms of decorations and architectural forms used in this iwan.



Figure 27. Views of the southern iwan from the courtyard of Masjid-I Jameh in Isfahan (photo, from the author's archive)



Figure 28. Views of the southern iwan from the courtyard of Masjid-I Jameh in Isfahan (photo, from the author's archive)



Figure 29. Views of the southern iwan from the courtyard of Masjid-I Jameh in Isfahan (photo, from the author's archive)

3. Master Iwan; When evaluated in terms of architectural structure, it resembles the Melikshah dome and the shape of the southern iwan on which it is located. A symmetrical order is observed in terms of facade formation and interior wall decorations. The niches on the façade towards the outer courtyard are mostly decorated with kufic script style and geometric decorations in terms of size. On the edges of the niches, shapes created from flower motifs are placed in symmetrical exact repetition. The ornamental niches created on both exterior walls of the iwan's façade are placed with the alternating repetition of geometric shapes of large and small sizes. The decorative plaques on all three walls in the interior of the iwan are designed symmetrically and tones of dark blue, blue and yellow colors are dominant. These decorated plaque forms were placed sequentially in alternating repetition on all three walls, ensuring balance. Qur'anic verses and sacred sayings were written on the surfaces, mostly in the Kufic

writing style. At the same time, floral and geometric patterns are placed on both sides in exact repetition and symmetrically. The entire dome is decorated in stucco style with the principle of full symmetrical repetition and sacred words are written on each relief form. Generally speaking, it can be said that balance, dominance and unity are achieved with the principles of symmetry, color, size, repetition and contrast, both at the facade level and at the interior level (figure 30, 31, 32, 33).



Figure 30. View of the master iwan from the outer courtyard (photo, from the author's archive)



Figure 31. Master iwan images (photo, from the author's archive)



Figure 32. Master iwan images (photo, from the author's archive)

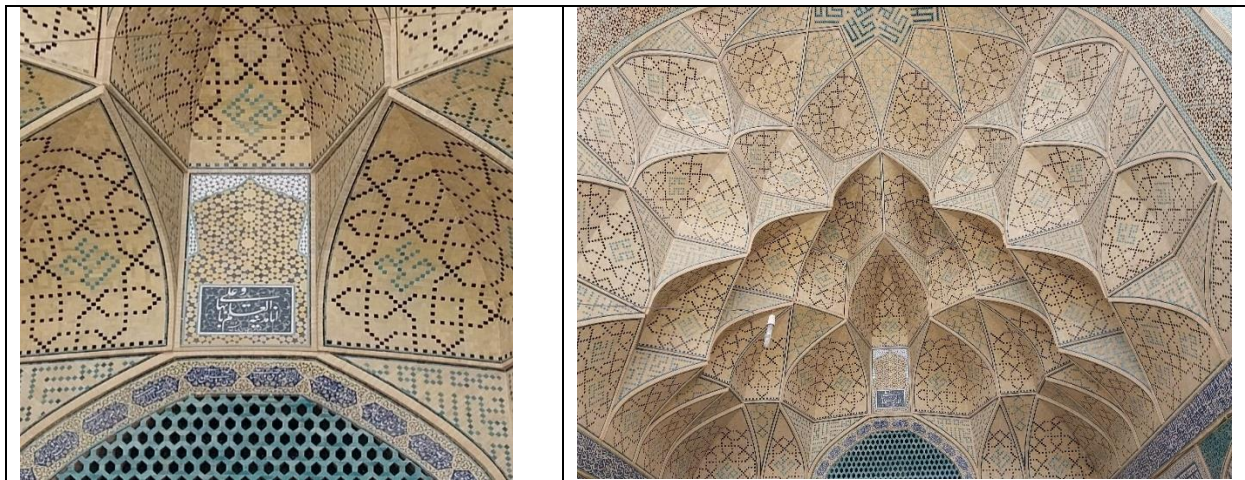


Figure 33. Master iwan images (photo, from the author's archive)

4. Student Iwan; It is formally similar to the dome of Melikşah and the dome of Usta iwan, and the ceiling decoration is also similar. However, natural stone and brick were used in the shapes. Only in the interior are decorations dominated by dark blue, blue and yellow tones in the form of a horizontal strip. The decorations on the ribbon band were created by writing religious words. Tile decorations were used very little in this iwan, and exact repetition and symmetrical principles are dominant in the shapes. Symmetrical order is dominant in the formation of the exterior of this iwan at the building scale. The niches used on the exterior are provided with alternating repetition in terms of shape and size. When looking at the student iwan from both the façade and decoration perspective, balance, sovereignty and unity are achieved with the principles of size, shape, repetition, symmetrical and contrast (Figure 34, 35, 36, 37).



Figure 34. View of the student iwan from the outer courtyard (photo, from the author's archive)



Figure 35. View of the student iwan from the outer courtyard (photo, from the author's archive)



Figure 36. Student's iwan view (photo, from the author's archive)



Figure 37. Student's iwan views (photo, from the author's archive)

During the reign of Olchaytu Khan, the magnificent plaster mihrab, built by the order of the ruler of Olchaytu, was placed in the masjid in the section where the master iwan was located, and at the time of the period, indoor prayers were performed here. Plaster joint decorations were used abundantly on interior wall surfaces.

5. Results

The mosque complex created with these four-iwan domes, including the Melikşah dome, Taj al-Mulk dome, the dome in front of the Master iwan and the dome in front of the Student iwan, is very successful and magnificent in terms of the spatial planning style and the decorations of these spaces during the periods when the mosque was built. Data regarding the results obtained are also included in Table 1. Bricks used as load-bearing building materials were also mostly used in decorations for aesthetic purposes.

While the Melikşah dome and iwan located in the outer courtyard of the Isfahan Masjid-i Jameh and the domes of the large iwans built on the east and west sides are dominated by stucco decorations, plain decorations designed with brick material were used in the Taj al-Mulk dome located in the north. Eight-pointed rectangular motifs and square cross motifs were mostly used in the dome section. Various verses and names were written using the kufic script style in all iwans, and these writings were also used for decoration purposes.

The principles of exact repetition and symmetry throughout the structure are dominant in the ornamental motifs used. Mostly shades of dark blue, blue and yellow colors were used on the exteriors of the entire mosque.

Colorless brick material is naturally found in the inner courtyard areas of the mosque.

Each of the motifs used on the domes of the courtyards in the interior spaces is made differently.

Different shapes and decorations were used in the outer four large iwans and dome sections. The iwan and its dome built in the south of the mosque are the most spectacular iwan. Other iwans are a slightly simplified version of this courtyard. Many muqarnas were used in each large iwan. The edges of the geometric patterns are mostly decorated with dark blue tiles.

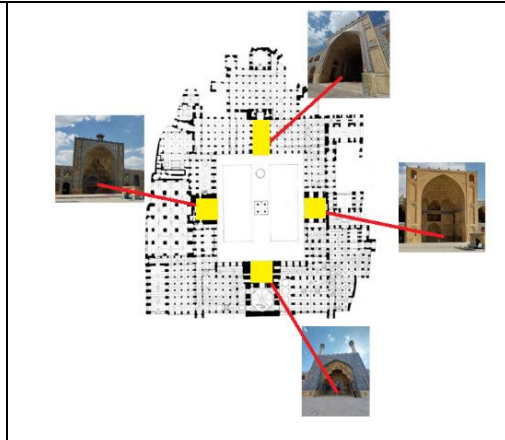
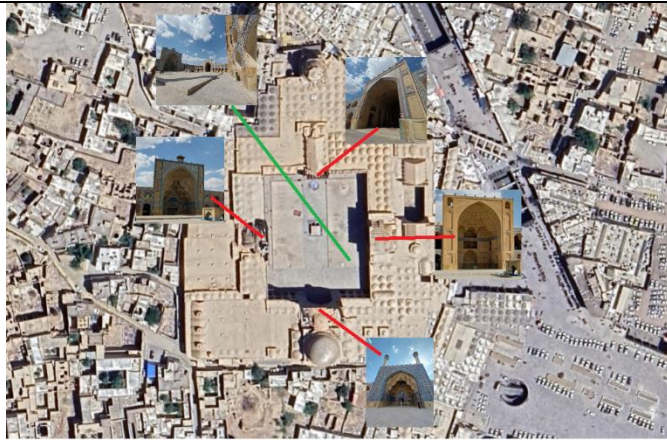
Inscriptions, sacred religious words and names created with tiles were written and decorated in the form of plaques both on the external walls and ceiling coverings. Kufic script, floral and geometric patterns were mostly preferred in decorations.







In the open courtyard, the 2-storey porticos that continue on both sides of the outer dome of the four large iwans are lined up in a complete repetition. Similarly, the shapes and colors of the patterns used on the surfaces were also made in sequential repetition.

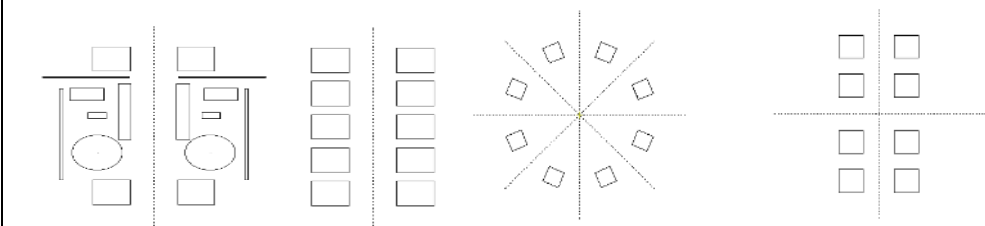


As a result, by determining the architectural features of this mosque and the decoration motifs used, it will be helped to keep this mosque, an important mosque of the Great Seljuk period, alive and protected today. It is an important study in terms of evaluating the determined architectural building features and ornamentation motifs in religious buildings as well as in other architectural structures, ornaments, clothing, furniture and decoration.

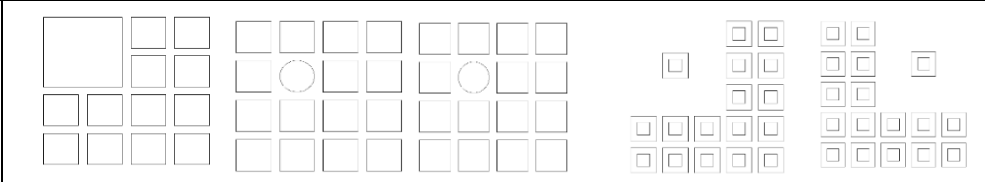


Table 1. Findings regarding the architectural structure and decorations of the Isfahan Masjid-i Jameh (photo, from the author's archive)

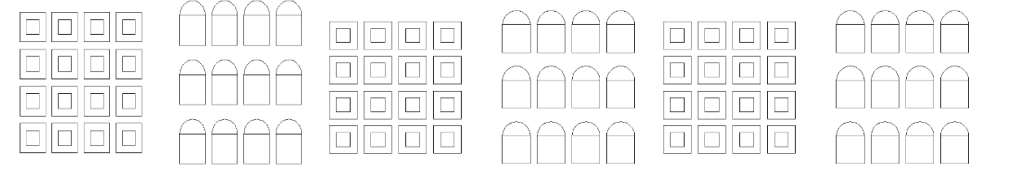

ISFAHAN MASJID-I JAMEH

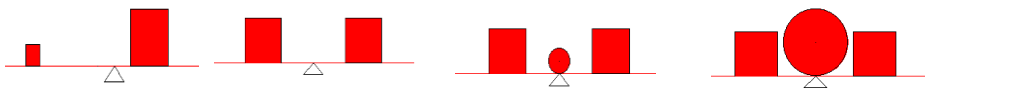



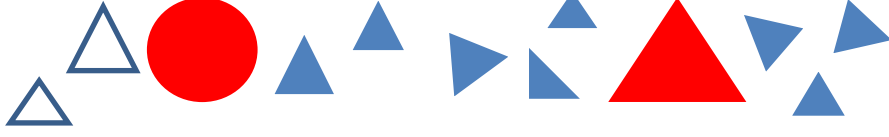
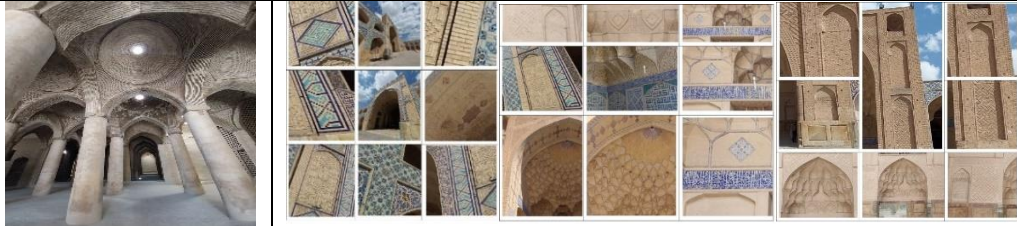
Courtyard				
	Melikshah	Terkenhatun	Student's Iwan	Master Iwan
Iwan				
	Basic Design Principles			

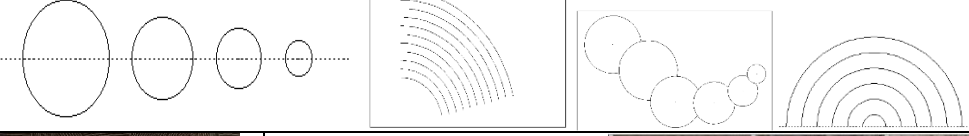
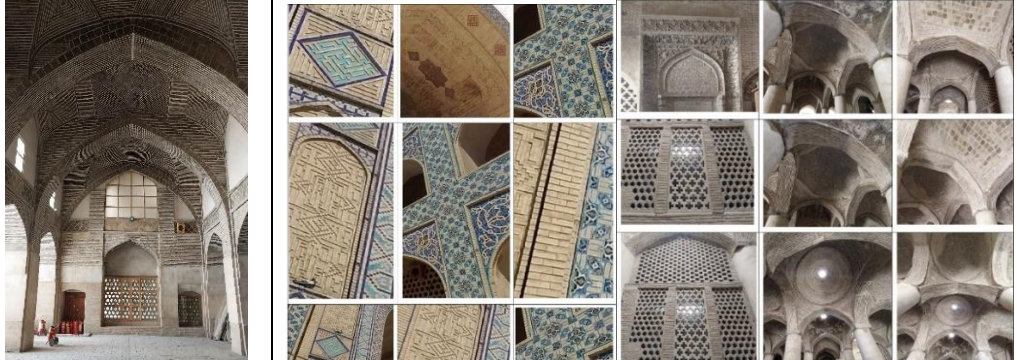
<p>symmetry (balance of axial structures)</p>				
				
<p><i>Symmetry</i> prevails throughout the mosque. The iwans were built symmetrically, both in terms of the side facing the outer courtyard and the interior space. In addition to the symmetrical principle in shapes, the ornamental plaques are also designed symmetrically within themselves.</p>				


<p>Sovereignty (a focal point of interest in the entire arrangement)</p>				
				
<p>In the mosque with a courtyard with four iwans, the Melikşah iwan <i>dominates</i> the building together with its minaret. Dominance was achieved in terms of decorations and architectural forms in the iwan. Only in the interior of the students' iwan are decorations dominated by dark blue, blue and yellow tones in the form of a horizontal strip. Shades of dark blue, blue and yellow colors are dominant in the ornamental plaques on all three walls of the interior of the master's iwan. The decorations on the exterior of the Terkenhatun iwan reference the principle of sovereignty in terms of color and form.</p>				


<p>Repetition (using the created editing pieces at regular intervals)</p>	 
<p>In the open courtyard, the 2-storey porticos are lined up in a row in full <i>repetition</i>. Similarly, the shapes and colors of the patterns used on the surfaces were also made in sequential repetition. There is complete repetition in the ornamental motifs used. It was reused in domes. The aesthetic niches created on the exterior were placed with the principle of formal alternation and repetition. Niche decorations throughout the façade were provided with the principle of alternating repetition. Exact repetition is often found in forms. Master The entire dome is decorated in stucco style with the symmetrical principle and sacred words are written on each relief form.</p>	

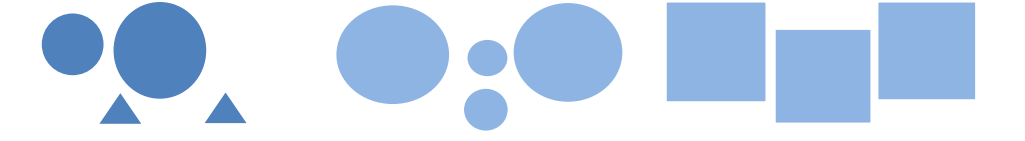

<p>Balance (Symmetry in informal axisless architecture)</p>	 
<p>In the architectural structure of the mosque, the interior courtyards and domes reflect <i>balance</i>, one of the design principles, in integrity in terms of form, color, texture and size. Similarly, balance was achieved in terms of decorations and architectural forms used in the inner courtyards and iwans in the outer courtyard. Dark blue, blue and yellow tones were generally preferred in the tiles used, and the motifs created on bricks and stones are in integrity with the principle of balance in terms of color, form, size and symmetry.</p>	

<p>Contrast (Contrast in creating liveliness in architectural designs)</p>	
	
	<p>In the mosque with a courtyard with four iwans, the Melikşah iwan <i>contrasts</i> with its minaret. Student Iwan refers to the principle of contrast as it is different from other iwans by using natural stone and brick in its forms. Contrast is achieved with the difference in form in the decorations on the master's iwan. The crown door, located at the main entrance of the entire mosque, is superior to other exterior entrance doors in terms of size, shape, color and decorations, and gives reference to the principle of contrast.</p>

<p>Coram (In design, axial or central dimensions gradually decrease or grow and change)</p>	
	
	<p>The interlocking circular shapes in the interior of the mosque and the decorations on the domes reflect the central harmony. The circular and decreasing relief decorations of the domes on the iwans refer to the axial decoration.</p>

<p>Suitability (compatibility of)</p>	
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<p>Although the structure varies in form from an architectural point of view, it reflects the principle of conformity when evaluated as a whole in terms of size, shape, material and color. The Student Iwan is formally similar to the dome of the Melikşah dome and the Usta iwan, and the ceiling decoration is also <i>similar</i>. Master Iwan; When evaluated in terms of architectural structure, it resembles the Melikşah dome and the formation of the southern iwan on which it is located, and refers to the principle of conformity.</p>	

<p>Unity (Having a unity feature with basic design principles)</p>	
	
<p>Although there are differences in form, size and color between the spaces in the mosque, <i>unity</i> is achieved when evaluated as a whole. Similarly, there is a principle of unity in terms of decorations and architectural forms used in each iwan. In shaping both the inner and outer walls of the iwans, the principles of contrast, harmony, symmetry, balance, sovereignty and unity were achieved through color, size and line. Blue and yellow tones were mostly preferred in the tiles used, and each pattern is in integrity with the principle of unity. Generally speaking, it can be said that balance, dominance and unity are achieved with the principles of symmetry, color, size, repetition and contrast, both at the façade level and the interior level.</p>	

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