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Modern trends in the architecture of mosques in Jordan

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Abstract:

This study analyzes the features of historical and modern mosques in Jordan compared to that of Amman. The architecture of the Jordanian mosques reflects the images of great ancient empires and kingdoms of Europe and the Middle East. This has happened due to the geographical position of the country. From the studies of historians and archaeologists, comparative analysis of planning solutions, the use of plastics and decor of the facades of mosques, and the literature on the construction methods of the mosques allow us to conclude that age-old traditions have been preserved through the establishment of mosques in both the countries. Besides, the emergence of new features in constructing mosques has been observed. We find the influence of western architecture in the modern-day architectural designs of Jordanian religious establishments. Meanwhile, in the architecture of Amman mosques, a type of small temple is noticed, the volumetric-plastic composition of which is solved in an innovative way, not to resembling historical temples. In constructing mosques, Amman focuses on preserving the identity and spirituality of the mosques but adds new metaphors by ensuring multidimensionality of space and adopting the architectural designs of modern cities. Changes in the architecture of mosques happened due not only to new technologies and materials but, also to integrate with the processes of globalization and international cooperation of architects. We observe the construction of ancient mosques in both the countries combined both European and American architecture which reveals new images and possibilities of the architecture of the East.

Keywords: Amman`s mosques, Islamic architecture, mosque styles, globalization.

Introduction

The relevance of the study is primarily related to the need for identifying the factors influencing the architecture of modern places of worship in Jordan, which, due to its geographical location, has historically been the gateway to the Arab-Islamic conquests. Second, the architecture of these religious establishments greatly resembles the architectural trends of

the West and reveals new opportunities for the architectural development of the East. In the eastern architecture, we see images of great ancient empires and kingdoms: Byzantine, Roman, Nabataean, Umayyad, Abbasid, and Islamic Caliphate. Third, Prior studies state that Jordan played a prominent role in spreading Islam from the Arabian Peninsula to Asia and Europe. The most important architectural monuments of Jordan are mosques - they are found in all Jordanian governorates, cities, and towns along with palaces, residences, shrines, and tombs of great people.

Fourth, many scholars have studied the art of Jordan, but there exists little research on Amman's unique contemporary architecture. A. Ganimeh, M. Tarad, and A. Rube analyze the mosques of Jordan from a historical aspect. E. Karsten, U. Kultermann, V. Al-Abidi, and others explore the links between the architecture of various public and religious buildings in Jordan and the architecture of the entire Arab region. Amman's mosques, built in the 2000s, have not yet attracted the attention of researchers, although they represent very bold experiments in the country's modern architecture. Local and foreign architects make projects for Jordan and other Muslim countries, taking into account both the traditions and modernity offering new solutions that meet the needs of time.

Purpose of the study – to analyze the architectural solutions of historical and modern mosques in Jordan, and the differentiation between their unity and differences.

Research objectives: to compare the plans, construction methods, and materials, the structure of the facades of archaeological and modern mosques; to identify traditional features that remain unchanged, to determine the function and image of the building; to analyze new trends in the architecture of mosques which are associated with the processes of globalization and international cooperation of architects (Puchkov, 2013).

Research methods: comparison of architectural solutions according to drawings, archival materials, and photos; description, systematization, and generalization of empirical material, analysis of theoretical studies on this topic, historical approach. The study complements the work on the study of Islamic sites in Jordan, conducted by Jordanian and foreign historians and archaeologists, including Yousef Gavanmeh (Youssef, 1986), Ghazi Bibshu, and Wael Al-Rashdan Al-Rashdan, W (1994), Abdul Qadeer Al-Hussan (Al-Hussan, 1999), K. A. C. Creswell (Creswell, 1969), (Helms & Lancaster F& Betts & Lenzen, 1990) Al-Dagmi and Rakan Muhammad (Al-Dagmi, 1998).

Features of the architecture of ancient mosques

The architecture of the religious buildings of Jordan is subject to Islamic values and laws, as well as functional and aesthetic objectives. Muslim scholars analyze these patterns, referring to the verses of the Koran and related prophetic hadiths (Youssef, 1986; Al-Rashdan, 1994). The architecture of ancient mosques is characterized by simplicity of form, rather than exaggeration and complexity of plans and facades. Although there are clear similarities in the building materials used and construction methods, the difference in construction periods, social conditions, available opportunities, and characteristics of the natural environment has contributed to the emergence of different architectural styles of these mosques.

In the process of research, the authors studied mosques in the province of Al-Mafraq: Numerian in Umm el-Jimal, Khirbet As-Samara, Umm al-Surab, and Sama Al-Sarhan; Al-Fudain and Rehab mosques (Al-Dagmi, 1998)..

. These mosques are relatively small in size and vary in the area (from 10 sq. m. to 400 sq. m.), which, according to researchers, is due to the lack of need for large volumes, since most of the mosques were located within small residential settlements located on the fringes

of major roads, such as the inland trade routes in northern Badiya, as well as Al-Tropah Haj al-Shami. Building materials (local limestone and gypsum), constructive techniques, and technical capabilities used at that time also did not allow the construction of mosques with large areas, but they were in sufficient quantity, and simple for their extraction and processing. When erecting walls, columns, and roofs, additional stone, clay, straw, wooden beams, and decorative plaster were used.

The spread of mosques in the region was aided by the predominant lifestyle of the Jordanians, which since ancient times has been based on migration, associated with the instability of grazing and livestock breeding practices, as well as the movement and location of groups of warriors. Most of these mosques have a prayer house (main volume), which necessarily had a mihrab (a niche in the center of the wall in the form of an arch, indicating the direction to Mecca, facing which the imam prayed) and a minbar (a small elevation, and later a pulpit from which the imam read the Friday sermon) (Ali-zade, 2007).. Few mosques had a courtyard and a minaret (a tower from which the muezzin called the faithful to prayer.

The mihrab in Arabic architecture appeared at the end of the 7th century, had the outlines of a rectangle or arch (lancet or horseshoe-shaped), was located in the middle of the wall, it was often distinguished by columns on the sides. The shapes and sizes of the mihrab varied depending on the materials used and the method of construction. The mihrab was decorated with geometric or floral ornaments carved in stone, and ayats ("revelations" - poetic phrases from the Koran) were placed in its upper part (picture 1). To indicate the qibla (direction towards the sacred Kaaba in Mecca), stones with distinctive signs were installed in mosques, or such signs were placed on the wall. Later, mihrabs began to be faced with glazed tiles, smalt, and precious stones. A burning lamp was hung inside the mihrab, which symbolized the light of Allah, the Light of heaven and earth in the soul of the believer (Quran, 24:35) AL-Nur (Light). During the field survey, it was observed that in some historical mosques, such as the Al-Fudain Mosque and the Rehab Mosque, there are slight deviations in the orientation of the mihrab in the direction of the Qibla.



Figure 1. Decorative inscriptions on the qibla and mihrab wall in the Al-Fudain Mosque,[photograph]. (n.d).

Illustration source: research materials of the group of Abdul Qader Al-Hussan [3].

Until now, none of the discovered ancient mosques have found parts of the ancient minbar. Scientists believe that the minbar was made of wood (a light, durable, but short-lived material) material evidence was found testifying to this. In some mosques, the remains of rotten or petrified wood, and rusty nails were found.

The researcher on the architect, Rasem Badran, said in this regard: "Despite the variation in the plastic elements that make up the mosque from one civilization to another, there are some main parts throughout history, such as the prayer house, the portico, the courtyard, the minaret, and the view of the dome." Al-Tal, R. S. (n.d).

The main entrance to the mosques is located opposite the qibla wall and along the central axis, some of them had additional doors on the sides of the mihrab. This may be due to the need to

serve the imam and muezzin when they enter the mosque, prepare and pray. Prayers are held in most ancient mosques to this day, as they retain the original layout, which makes them very important for identifying the features of early mosques and helping researchers visualize their architectural forms Helms S., Lancaster F., Betts A. W.(Lenzen ,1990) (pictures 2, 3).



Figure 2. Plan of the archaeological excavations of Al-Fudain: the location of the mosque and its relationship with neighboring architectural spaces ,[photograph]. (n.d). Image source: Al Mafraq Antiquities Authority.

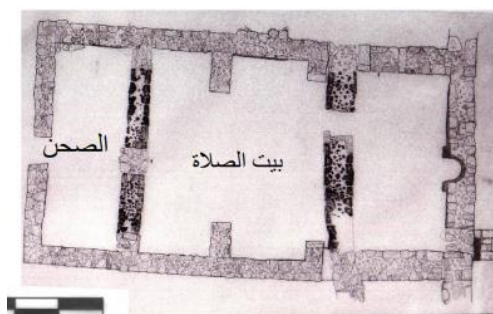


Figure 3. Plan of the Al-Fudain Mosque,[photograph]. (n.d). Area 30 sq.m. Image source: Al Mafraq Antiquities Authority.

Based on the analysis of the remains of ancient mosques, it was established that the vaults were made in two ways. The first is in the form of arches (supported by walls and stone columns), along which wooden beams and tree branches were laid. This technique was widespread in the mosques of the Umayyads, Al-Zaniya, and Al-Mudawar. The second way is that semi-cylindrical vaults were made of stone, which was common in the mosques of the Ayyubid Mamluks, in the mosques of Rehab, Asad al-Shamali, and Hayyan.

Some mosques in Jordan have a distinctive design, both internally and externally, and become of social value, and their visitors have grown in popularity among the people, such as the Abu Isha mosque on the airport road, the Hamshari Mosque in the Khalda area, the Kalouti Mosque in Rabieh, the Khalil al-Salem mosque in the Zuhour neighborhood, and the Kalouti mosque in Aqaba. These mosques stood out either for their size, geographical location, and distinctive architectural design, or for their social role and the quality of the preacher. But what the researchers are interested in here is to review the plan and learn about the methods of forming the spaces of the mosque. The abundance of mosque projects in Jordan requires conducting more studies on mosque

projects to become multi-purpose and socially fruitful orderly projects. Therefore, this study will select a group of well-known local mosques to study their spatial composition and measure their success as architectural projects, not only as a place for prayer. Naser Thabet, Al-Mughrabi, A., Badawi, M. A., AL-Karablieh., Hussein, M. F., (AL-ayash, 2021).

The facades of the prayer house (main volume) in all mosques have a square or rectangular shape, not entirely irregular due to the inaccuracy of the design, which is associated with its construction by hand and simple stone processing technologies. The laconic form of the

façades reflects a functional approach to architecture that provides for the basic needs of the worshipers, by following what is said in the Qur'an and the Sunnah.

The northern façade of the Lower Amman Mosque in 1913 (picture 4) is free from any decorations but contains a square minaret at the end of the western side of the northern façade. This is an Islamic building, but there is a version that its facades were built on the walls of a large church of the late Roman era Al-Dagmi, Rakan Muhammad. (1998). The scholar Alastair Norhej dates the mosque to three eras, the first of which is the Umayyad portico, the courtyard, and the first mihrab, which refers to the period (705-724 AD). The second period is represented by the expansion of the mosque and the addition of premises, which could have happened during the period of the Abbasid, Tulunid, or Fatimid empires (picture 5). In the third period, possibly Mamluk - during the reign of Prince Sargmah al-Nasiri (the 1360s) – a tower was built (Al-Dagmi, 1998).

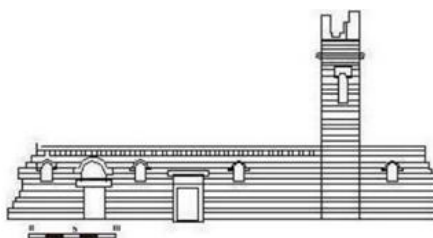


Figure 4. The northern facade of the Lower Amman Mosque, [photograph].(1913), Image source: Al Mafraq Antiquities Authority.

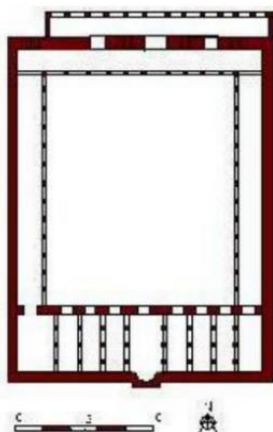


Figure 5. Plan of the Lower Amman Mosque according to Northedge ,[photograph].(1987) Image source: Al Mafraq Antiquities Authority.

The features of archaeological mosques - the fundamental planning decisions, the structure and decor of the façades - are preserved in modern buildings, some of which are completely built on the ruins of ancient churches, for example, the mosque in the city of Rehab.

Therefore, there is no direct religious relationship between the architectural formation and its function in the mosque. Rather, the formation comes as a result of the physical and behavioral environmental influences so that they do not conflict with the principles and teachings of the Islamic religion. Such as the effect of climate sometimes on the roofs of

mosques. For example, we find the roofs of some mosques in areas where snow falls, taking the gable shape (Al-Tal, n.d).

New features of the architecture of modern mosques in Jordan

In modern Jordan, architecture is given great attention. In the capital of the state, Amman, there is a ban on standard construction, each project is approved by the relevant department of the city hall. At the initiative of King Hussein, the Royal Commission for the Preservation of the Architectural Heritage (not only of Amman but also of other Jordanian cities) was created. For projects of significant buildings (mosques, churches, hotels, banks, shopping, and cultural centers), municipalities issue separate permits. Buildings should fit into the architectural style of the city - no more than four floors with traditional white stone cladding. Due to the lack of standard buildings in Jordan, a large number of architectural and design bureaus have appeared, and architectural thought is developing dynamically, interaction with European architects, for more than ten years Jordanian civil engineers have been designing not only for their country but also for neighboring Arab countries (Aganin & Solovieva , 2003).

Many mosques are currently being built in Jordan, and their design and spatial solutions contain innovations. For example, the mosque of the founding king martyr Abdullah ibn al-Hussein in Amman (architect Jan Cheka) was built in 1982-1989. in the traditional Islamic style, but has a design that ignores the limitations of the canonical ancient temples, and contains new functional areas (pictures 6, 7). The diameter of the octagonal massive dome covered with mosaics is about 35 meters, and the total area of the premises is 18,000 square meters. m., the temple can accommodate up to 7,000 believers, and another 3,000 people can pray on the territory of the complex. The mosque has a prayer house, an adjacent veranda, a prayer hall for women, an Islamic center, a museum, a library, an exhibition, an imam's dwelling, administrative premises, underground parking lots, etc. The decor of the facade and interior is based on geometric ornaments and inscriptions, along the perimeter of the dome are written 99 names of Allah, as well as verses of the Qur'an.

Architect use regular octagonal layout in all parts of complex in order to continue with the Dome of the Rock, but in prayer hall the octagon transformed to hexadecimal dome which cover the whole hall to give another dimension in designing affected by monumental style of Ottoman masjid where one central dome roofed one space. In this project the designer has tried to find a contemporary Islamic architectural style by making an approach and combination between the different Islamic styles, so the design became mixed but in Jordanian pure flavour by using of traditional Jordanian stone in facades, mosaic instead of ceramic tiles and faience (Ali, 2013), and the use of Islamic motifs engraved on marble and Arabic calligraphy on the interior and exterior walls as a sign of Islamic Art and its aesthetic features. (Rjoub, 2016).



Figure 6, 7. Mosque of the founder of the martyr Abdullah ibn al-Hussein, Amman[photograph].(1989).Opened in Architect: Jan Cheka .Retrieved from : <https://universes.art/en/art-destinations/jordan/amman/tours/04>

The architect, Khaled Azzam, spoke about the nature of the performance of the Al-Hussein Bin Talal Mosque. The design of this building is quite a simple structure of a square plan with a minaret in each corner. Yet although the initial impression is that of a solid and robust structure; The character of the project is one of a contemporary expression of the architectural and cultural heritage of the region. Masjid in Jordan and built to reflect the Islamic architecture prevalent in many historic sites in Jordan and around it (Bilad al-Sham). The four-minaret and one large dome masjid has a primary praying area which can accommodate 3,000 worshippers and characterized by vaulted ceilings and Umayyad-style ornamentation carved in Jordanian stone. Meanwhile, a covered 2,000sq.m outdoor praying area with a similar 10 m high vaulted ceiling can accommodate 2,500 worshippers. All materials used for the building of the mosque are local, so inside, is very serene with soothing colours with beautifully, finely constructed: floors, ceilings and arches. There is a women's prayer area above part of the indoor and outdoor halls, All the walls outside are covered with the classic white and brown stone that makes the mosque blend very well with the city. The Mihrab made of rare types of wood. The many chandeliers inside, carefully chosen and well placed - blend very well with the aesthetic beauty of the Masjid. Within, there is the Hashemite History Museum, which displays Islamic artefacts; and belongings related to Prophet Mohammed. (Azzam, 2011). (picture 15).

The Abu Dervish Mosque in Amman (built by order of King Hussein of Jordan in 1961) stands on a high platform, brightly decorated with black and white stone, the prayer hall can accommodate 7,000 Muslims, and there is a museum in the upper tier of the pavilion (picture 8).



Figure 8. Abu Dervish Mosque. Built-in [photograph].(1961).

Retrieved from: https://www.tripadvisor.ru/Attraction_Review-g293986-d1980260-Reviews-Abu_Darwish_Mosque-Amman_Amman_Governorate.html

Outside the capital of Jordan, the type of small mosque with one minaret is common, the structures are diverse in style but more focused on the traditional Islamic character of architectural forms. In Amman, however, small mosques more vividly reflect modern experiments with shaping. The minaret often has a square or rectangular shape in the plan (there are also circles and octahedrons). Often there is no dome over the prayer hall and a flat roof is used, which can be functional - water tanks are placed on it, as is customary in residential buildings, or solar panels are installed. For example, the Al-Rawda Mosque, located in the Badr Al-Jadida district of Amman (opened in 2011), was formed as a result of a study by the group of Amman architects Uraiqt Architects of the possibilities of modern computer technology to modernize traditional Islamic forms and patterns. The decorative motifs used in

the geometric structures of the Al-Rawda Mosque are a re-design of the Seljuk decoration that prevailed in the Islamic East in antiquity. The movements of the sun's rays impose a "grid of displacements" on the traditional ornament, enhancing the effect of a multi-layered, complex space (pictures 9, 10).



Figure 9. Al-Rawda Mosque in Amman [photograph]. (2011).
Retrieved from: <https://mosqpedia.org/en/mosque/118>



Figure 10. Al-Rawda Mosque in Amman. Interior [photograph]. (2011).
Retrieved from: <https://mosqpedia.org/en/mosque/118>

The architects are opening up new possibilities for mosque typology while maintaining the identity and spirituality of such an important building. Based on the principles of triangulation by L. Danzer, the architects from Uraiqt Architects organize the space of the Al-Rawda Mosque in such a way as to reveal the nature of the material, building technologies, mesh structures, natural lighting and turn the temple into an “interactive space that connects with the

person entering this space, creating an architecture of light, tradition and modernity ("Al Rawda Mosque,"2011). (picture 11).



Figure 11. Al-Rawda Mosque in Amman [photograph]. (2011).1st-floor plan
 Retrieved from: <https://mosqopedia.org/en/mosque/118#&gid=1&pid=1>

The Al Hamshari Mosque was designed by the architectural group Atelier White from Dubai in 2011 under the supervision of engineer Sameer Magrabi from Amman representing Balad Engineering Consulting. Built at the expense of businessman Naji Al-Hamshari, the mosque is located in the quiet central area of Khalda, predominantly with private buildings in the form of mansions of wealthy residents of the capital. This distinguishes it from other modern mosques in Amman: against the backdrop of the large and majestic state mosques of King Abdullah I (1986) and King Hussein (2005), this mosque looks more intimate, even "democratic" and at the same time modern. The Al-Hamshari Mosque is similar in many ways to the Al-Rawda Mosque. In addition to a single minaret (a technique typical of Jordan) in the form of a prismatic dominant pillar, they are united by the main shaping principle of volume-spatial and planning composition - the principle of displacement, shifts, overlays, spatial "slots" (picture 12, 13).



Figure 12, 13. Al-Hamshari Mosque in Amman. Exterior. Designed [photograph] .(2011).
 Retrieved from: <http://www.atelier-white.com/ar/services/2-مسجد-الهمشري/>

On the one hand, the Al-Hamshari Mosque demonstrates the elegant eclecticism of the diverse styles of Western architecture of the 20th century. Echoes of minimalism, hi-tech, deconstructivism, eco-design, and even elements of non-linear architecture can be traced in the building. On the other hand, this mosque takes an approach that draws on modern "Western" architectural forms to create new interpretations that enrich the familiar meanings of Islamic architecture. The inclusion in the real space of the mosque of "islands" of greenery, urban street life, earth, trees, water, and stones emphasize the multidimensionality of space (multi-level, multilayer) and works on the metaphor of the Garden of Eden (picture

14). This metaphor is supported by the image of the Sun, expressed by the pattern of sharp and direct sunlight. The lines of rays, "cutting" the space of the temple, are visible in the interior of the mosque, in the processing of the walls, in the decorative elements, and in the transparent partition that replaced the mihrab niche. The living "solar matter" is so active that it not only builds a play of chiaroscuro but fills the temple with "weighty", changeable, independent "figures" of light

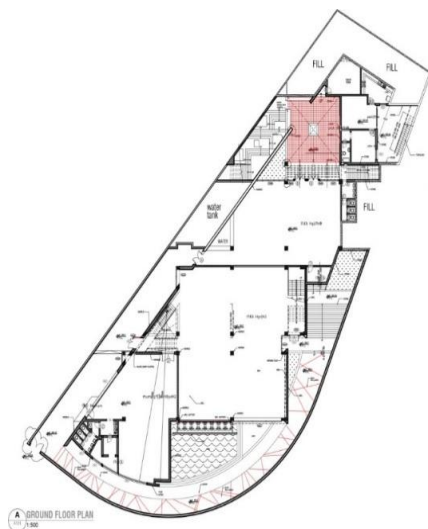


Figure 14. Al-Hamshari Mosque in Amman [photograph]. (2011).1st-floor plan. Designed in <http://www.atelier-white.com/ar/services/2-مسجد-الهمشري-ي/>

The minaret of Al-Hamshari Mosque is predominantly a symbolic form. This is a four-sided pillar without a cavity inside, with loudspeakers located at the top and decorated with texts from the Koran. The reduction of a modern mosque to the simplest prismatic volume without a dome with a decorative and symbolic pillar of a minaret is one of the typical solutions for small mosques in Europe, for example, the mosque in Penzberg, Germany. In combination with the verticals of the fountains and the moving surface of a small reservoir, the minaret acquires the sound of an "aquatic theologeme" (Shukurov,2014). Water in Jordan has special semantic connotations: in a country experiencing an acute shortage of water, even a small pool or fountain is perceived as a jewel and is felt by the viewer as a sacred Source of Life, an element of ritual washing. Religious sacralization reveals itself in earthly life as if merging with it.

Texts with fragments from the Koran form an additional level of "planes" that cut through the space of the city with the "sound" of prayer. Sacred texts can be found everywhere in the building: in separate squares, a border along the windows, and plaster ornaments on the walls. Thus, a building that formally corresponds more to a residential building (for example, a large villa) or a public complex (and its functions, for example, a library, are present in the building), still retains the recognition of a religious object. Thanks to new formal possibilities, the mosque expands the semantic diversity of interpretations, blurring the boundaries between the religious and the ordinary, the sacred and the everyday. Thus, everyday life can take on the features of rituality, ritualism, and religious life and can move away from some kind of abstraction, and abstraction towards the natural habitation of sacred values, regardless of the space in which a person is located.

Another small mosque in Amman was built in the 2000s. and similar in style to the previous two, the Abu-Shakra Mosque. Architects I. Takhkhan and Z. Bushnak sought to create a clean,

clear, simple, modern image that reflects the times and respects the nature of use. Modesty in faith, work, and lifestyle is reflected in their projects (Abu Shaqra Mosque, n.d). This temple, through the modern language of architecture, deliberately simplified, and cleared of decoration, seeks to convey the warmth and charm of everyday life. The rectangular planes of the walls are sometimes slightly inclined, sometimes cut, sometimes deaf, sometimes transparent, but always concise, stable, and at the same time mobile, demonstrating the maximum consonance of an ordinary urban residential building and the sacred space of a mosque.



Figure 15, The King Hussein bin Talal Grand Masjid [photograph].(2011).
Retrieved from: <http://www.khaledazzam.net/projects/king-hussein-mosque/>

Conclusions

A comparative analysis of archaeological and modern mosques showed that in the planning solution of the mosque, the relative position of its main elements is preserved. The increase in the size of the areas of historical mosques was due to their location not inside residential areas, but on the outskirts of the main trade roads, where more people passed. The increase in modern mosques is associated with new technical capabilities and constructive techniques, with additional functions and services for visitors, with a large flow of tourists who are also allowed into the temple. New functional spaces appear in mosques and adjacent squares (for example, a museum, an exhibition, a library, or an underground parking lot). Building materials in ancient times were natural and available in the region. In modern mosques, reinforced concrete and metal are used for construction, the decor is deliberately simplified, the facades are laconic, and the expressive possibilities of artificial lighting are used.

In the architecture of modern Amman mosques, one can single out the type of a small temple, the volumetric-plastic composition of which is solved innovatively, not on the model of historical temples, but based on the principles of displacement, movement, and superposition of rectangular and square planes. The aesthetics of Western styles (minimalism, hi-tech, deconstructivism, etc.) organically integrates small mosques into the space of residential areas with their modern prismatic volumes, which are layered on top of each other due to the location of houses on the steep slopes of the city. The geometrization, laconism of the image and composition do not "erasure" the typological recognition of the Islamic temple. The influence of European architecture makes it possible to find new expressive semantic nuances in cult architecture, and to update the modern interpretation of the traditional metaphors of the temple as a Garden of Eden through the visualization of the principle of a multi-layered, multi-level Universe.

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