
THE MOST FAMOUS STRUCTURAL AND DECORATIVE ARCHES IN COPTIC BUILDINGS, AN ARCHAEOLOGICAL AND ARCHITECTURAL STUDY

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Abstract

The arches represent one of the most important architectural elements in all the buildings of ancient civilizations, their forms varied, their uses varied, and their locations differed within the same facility. For themselves, they took him by his right and paid what he deserved. This was evident in the element of the arch, which made their hands a long way of development, the worst of those who tried after them to catch up with them or imitate them in what they reached, and all this was reflected in the Coptic buildings in Egypt, those that had direct contact with the ancient Egyptian, Roman and Islamic civilizations, as they were contemporary. For a number of great civilizations that rolled on the land of ancient Iraq.

Due to the specificity of Coptic architecture and its association more than others with events that affected all its components, the arch in Coptic architecture had a special status, which necessitated us to single it out by studying, researching and rooting. And due to the clear manifestations of the arch in the previous buildings, it was reflected in turn on the same element in Coptic architecture, and even increased it in terms of its close connection with the Coptic religious buildings. This connection made the arch a special position that distinguishes it from others in other places and buildings, hence the idea of preparing a detailed study on the status of this element in Coptic buildings.

There were many reasons for choosing the subject of the research: the most famous architectural and decorative arches in Coptic buildings, an archaeological and architectural study, including: the importance of this element with the absence of any specialized scientific reference that singles it out for the study. It is the structural dimension, the decorative dimension, and finally the symbolic aspect. One of the reasons also is that the Coptic buildings were contemporary with previous and later ones that had their cultural weight in the architectural aspect, and they had a prominent role in the development of the

arch element; I mean by that the Roman and Islamic buildings, and they also had a greater role in Impact on Coptic buildings.

The background of the research depends primarily on the location of Coptic architecture with its various components and elements of influence and mutual influence between it and the Roman and Islamic buildings, taking into account the place of this element in the buildings of the three civilizations, in addition to what the Coptic architecture added to this element in what distinguishes it from others. .

The research was carried out according to a plan that includes: defining the arch and its components, the origin of the arches and their most famous models in Coptic buildings, and the symbolism of the arches in Coptic buildings.

Keywords: arch, pointed arch, semicircular arch, solid arch, Coptic architecture, decorative, symbolic.

First: the definition of the arch and its components

the arch by opening the eye and the sukoon of the qaf singular, the arches and knots, which are knotted from the building in the form of an arch, in the archaeological and architectural terminology, it is a structural architectural unit with a curved shape of any kind, and this unit has taken many forms that have branched out of two basic types: the semicircular arch and the pointed arch¹.

As for the components of the arch) figs. 1-2) are:

- Voussoirs of the arch: These are the parts from which the arch is built, whether of brick or stone.
- Key of the arch: (middle of the arch) or is the middle voussoir in the arch.
- The arch crown: the upper part of the arch key.
- Neighbors: They are the two voussoirs between which the key of the arch is enclosed.
- The waist the arch: it is the first voussoirs with which the arch begins.
- The arch leg: is the part on which the waist the arch rests.
- Belly of arch or trace curve: It is the lower part of the curve of the arch (abdominal belly of the arch).
- Coronation: is the outer surface of the arch (abstraction).

¹Rizk, Asim Muhammad (2000). Dictionary of Islamic Architecture and Arts Terms, Cairo: Madbouly Bookshop, p. 190.

- Arrow: is the height of the arch.
- Chord: the breadth of the arch, the sea of the arch, or the opening of the arch.
- The two points of contact: they are the two points of rotation of the arch.
- Communication line: It is the horizontal line connecting the two points of contact.
- Track: It is your course, the arch, whether it is a monastery, a curve, or a straight one.
- The waist (sambuksa): it is the part that is sandwiched between two adjacent arches and is called the arch spandrel².

Second: the emergence of the arches and their most famous models in Coptic buildings

The arches were invented and used by the ancient Egyptians and Iraqis, and their earliest appearance was in the Egyptian tombs in the tombs of Nagaa Al-Deir (4400 BC). The early prosperity of Egyptian civilization and its superiority over other ancient regions had a chronological superiority in terms of civilizational precedence. Objective superiority in terms of the level of civilization itself³, its clear impact on the various civilizations that succeeded in its land, where the arch element developed during the subsequent eras such as the Roman era and then the Islamic era, and this was reflected in the Coptic architecture of the Christians of Egypt in both eras.

This is what the remaining buildings under study reflect to us, in which a large group of the arches appeared that combine originality, modernity and development, the most important of which are:

1. The semicircular arch (fig. 3):

It is the archer who used to draw his arch in the form of a semi-circle, without pointing at its top or elongating its legs or limbs⁴. Scientists were not able to identify the first ancient example of this arch, and therefore they were not fortunate in knowing the era of its appearance, nor the country responsible for its design and construction⁵, except that it was

²Naguib, Gamal Saad (2012-2013). Lectures on Coptic Architecture and Arts, Faculty of Arts, Minia University, pp. 100-101.

³Sameh, Kamal El-Din (1986). Glimpses in the History of Egyptian Architecture from Ancient Times to Modern Times, Ministry of Culture: Egyptian Antiquities Authority, p.1.

⁴Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 194.

⁵Al-Bakhshounji, Ashraf (2007-2008). Introduction to Christian Architecture, Faculty of Arts, Sohag University, p. 286.

known during the Roman days⁶ and in all architectural styles in the ancient and medieval world, and it was more common in the Byzantine era⁷, and it was used In Armenian architecture, especially in the buildings of forts, and from it moved to Islamic architecture, where the oldest examples of it were found in the Dome of the Rock (72 AH / 691 AD)⁸, and it was used in Egypt in many openings, especially in ordinary window openings and the neck(Drum)windows in the dome, and it was widely used in the architecture of the Ottoman era in Egypt⁹.

This arch was used extensively in the Christian buildings of Egypt, as we see it in the apse of the structure in the church of Abu Sarga, and it decorates the windows of the dome of the structure in this church (pl. 1). The apse of the Church of the Virgin in Qasriyat al-Rayhan (pl. 2) is crowned. We also find the arches bearing the dome of the nave of the church in the manors' monastery in Fayoum with semicircular arches (pl. 3), and the same is true of the Church of the Virgin in Jabal al-Tair in Samalout, where we find the dome supported by semicircular arches. (pl.4), in the churches of Mallawi, we find it spread out in the Church of St. Fana, crowning the entrances below the five arches located in the azimuth of the circular wall of the structure of the church itself (pl. 5), and crowning the western entrance with the Church of the Angel in Hor, and in the churches of Sohag, we find it with white and red monasteries carrying the dome amidst a group of columns (pl. 6), it also appeared in the church of the monastery of Anba Tadros in the silos, and all the arches extending into the nave of this church are semi-circular, and also all the arches located in the upper church of St. George are semi-circular¹⁰.

It was also used in the architecture of the entrances to the churches of Cairo. For example, we find it crowning the entrance to the Church of the Virgin Mary of Relief, and the entrance to the courtyard at the Church of Abakir and John¹¹, in the buildings of deserts

⁶Mostafa, Salih Lamei (1984). *The Islamic Architectural Heritage in Egypt*, Beirut: Arab Renaissance House, p. 97.

⁷Al-Bakhshunji, Ashraf. *Introduction to Christian Architecture*, p. 286.

⁸Rizk, Asim Muhammad. *Dictionary of Islamic Architecture and Arts Terms*, p. 195.

⁹ Mostafa, Salih Lamei. *The Islamic Architectural Heritage in Egypt*, p. 97.

¹⁰ Al-Bakhshunji, Ashraf. *Introduction to Christian Architecture*, pp. 287-288.

¹¹See: Ali, Manal Mahmoud. *Units and architectural elements used in the architecture of church entrances in Cairo*, p. 473.

and oases, we also find a distinguished presence for him, and the clearest example of this is the shrines of the necropolis of Al-Bajawat in Al-Kharga Oasis¹².

2. The pointed arch: It is the arch that consists of two straight lines inclined at a certain angle at which they meet at the top, and its legs consist of straight vertical lines, and it is distinguished that it is more suitable than others for many buildings because of its relative capacity. This type of the arches was known in Persia, and moved from there to Iraq and then to the Mediterranean region¹³.

Opinions differed about its oldest models in Egypt, as there are those who see that its oldest models are those that appeared in the Nilometer in Al-Rawdah dated B (247 AH / 861 AD), which dates back to the time of the Abbasid Caliph Al-Mutawakkil, while Farid Shafi'i mentions that his oldest appearance was in the Amr Ibn Al-Aas Mosque¹⁴, In the increase that he made to the caliph al-Ma'mun over Egypt, Abdullah bin Taher in the year (212 AH / 827 AD)¹⁵ (fig. 4), about (35) years before its appearance in the Nilometer, as it appeared in the small windows in the wall of the qiblah, and was also used for the decorative caps of the curves that It was placed between the windows at the top of the wall in the southwestern facade of the mosque¹⁶.

There is another opinion - which I consider very important - that mentions that the oldest appearance of this arch in Egypt is found in the structure of Benjamin in the Monastery of Abi Makar, which dates back to (830 AD)¹⁷ (fig. 5). The importance of this opinion lies in two things, the first is that it is not intended to be the oldest appearance of it in Egypt in general, but rather the oldest appearance of it in Egypt in Coptic buildings, as it was preceded by, as I showed above, the decades of the Amr Ibn Al-Aas Mosque, and the

¹²See: Fakhry, Ahmed. *The Egyptian Desert, the Begawat Cemetery in the Kharga Oasis*, pp. 62 et seq.

¹³See: Youssef, Wajih Fawzy. *The Evolution of the Design of Coptic Orthodox Churches in Egypt, Churches and Monasteries of Wadi El-Natrun*, Master Thesis, Faculty of Engineering, Ain Shams University, 1974, pp. 161-162

¹⁴See: Shafei, Farid (1994). *Arab Architecture in Islamic Egypt (The Age of Rulers)*, 1, Cairo: The Egyptian General Book Organization, p. 283.

¹⁵See: Ahmed, Mahmoud (1938), *the Mosque of Amr Ibn al-Aas in Fustat from the historical and archaeological perspectives*: Cairo: The Amiri Press in Bulaq, pp. 10-14.

¹⁶See: Shafei, Farid (1994). *Arab Architecture in Islamic Egypt (The Age of Rulers)*, 1, p. 382.

¹⁷Youssef, Wajih Fawzy. *The Evolution of the Design of Coptic Orthodox Churches in Egypt, Wadi El-Natrun Churches and Monasteries*, p. 130, margin.

second is that the period between its appearance for the first time in architecture Islamic then Coptic architecture in Egypt does not exceed two years, which indicates the activity of the construction and reconstruction movement and the speed of mutual vulnerability between both architectures, this arch has spread in its different styles and types in many important archaeological churches, including:

1. The traditional pointed arch:

We find it appearing in many Coptic models, including its appearance crowning the three entrances to the Hanging Church (pl. 7), and it also appeared resting on the pillars of the nave in the same church (pl. 8), and it also appeared decorating the southern entrance to St. George's Church in ancient Egypt (pl. 9), and the highest of the three entrances in the Church of St. Joseph, and the highest windows of the western side in the Church of St. Mark in Heliopolis, and the highest windows of the Church of St. Anthony al-Badwani in Al-Zahir¹⁸.

The pointed arch with multiple arches:

Although the pointed arch moved from Arab Islamic architecture to Western Christian architecture, it developed there greatly, until it became a distinctive element of architecture in the Gothic style¹⁹. That style that was associated with the era of the establishment of the church in Eastern Europe, and was characterized by certain construction methods such as prominent arches, the pointed arches, and pillars.

The Europeans were aware of the advantages of the pointed arch, and they used it extensively since the end of the 12th century AD, and it became the apparent feature of the grace and beauty of Gothic architecture. It also helped them find a structural solution to the problem of the narrow side paths of the church, and also helped them to give the building stability without increasing the weight, and confining the support to the pillars, which allowed the presence of longitudinal windows in the walls, so it was possible to introduce sunlight into the church and illuminate it for the altar and its icon with the heavenly light that was not had accessed it before²⁰.

¹⁸Ali, Manal Mahmoud. Units and architectural elements used in the architecture of church entrances in Cairo, p. 474.

¹⁹Fikri, Ahmed (1967). Islamic Artistic Influences on European Arts: Bifdad: Sumer Magazine, p. 75.

²⁰Hassan, Nevin Nahas. Islamic Architectural Influences on European Architecture in the Middle Ages (The Pointed Arch as a Model) An Archaeological Civilizational Study, p. 12 et seq.

This would not have been possible without the developments they introduced to this arch, the most important of which is that the single arch became multi-arched, that very quality had an impact on Coptic buildings in Egypt during the subsequent periods, so we find the pointed arch with multiple arches adorning the entrance of the Church of St. Anthony al-Badwani in Al-Zahir (pl. 10).

Although the church dates back to later periods, as the foundation stone was laid in the year (1913 AD), the appearance of this type of arches in Egypt dates back to an earlier period than that, as it was found adorning the entrance to the school of Al-Nasir Muhammad Ibn Qalawun (695-715 AH / 1295- 1703 AD) (pl.11), and the entire entrance is made of marble, which was actually brought from the Church of Saint Hanna in Acre when it was forcibly opened by King Al-Ashraf Khalil in the year (960 AH),

This was evidence of the victory achieved by the Muslims over the Crusaders in the Levant, and this entrance was not placed in its current position from the beginning, but rather when "Katbugha" assumed power, and the entrance block consists of a base, columns and a crown made entirely of marble²¹.

The extended pointed arch (fig. 6):

This arch is known by three names: the extended arch, the extended pointed arch, and the extended circular arch. This arch developed from the circular arch at the hands of the people of Egypt, after they made the pointed arch out of on the one hand, and long limbs on the other²².

This type of the arches was used to crown some of the openings of the small side iwans and some of the flaps in the buildings of the Mamluk and Ottoman eras²³, such as the arches of the side iwans (southwest and northeastern) in the Madrasa of Umm al-Sultan Shaaban (770 AH / 1368 AD) (pl. 12), and the arches of the two side flaps (southwest and northeastern) in the Yusuf al-Hin Mosque (1035 AH/1625 CE) (pl. 13).

This type of the arches had a presence in church architecture, the clearest examples of which are the models that adorn the entrance of the Evangelical church in the Dubara

²¹See: Al-Meligy, Ali Mahmoud Suleiman. Al-Nasser Muhammad Religious Buildings in Egypt, Master Thesis, Faculty of Arts, Cairo University, 1975, p. 181 and beyond.

²²See: Rizk, Asim Muhammad. Glossary of Islamic Architecture and Arts Terms, pp. 194-195.

²³See: Al-Haddad, Muhammad Hamza Ismail (1998), Encyclopedia of Islamic Architecture in Egypt from the Ottoman Conquest until the era of Muhammad Ali (923-1265 AH / 1517-1848 AD), 1, Cairo: Zahraa Al-Sharq Library, pp. 172-173.

palace²⁴ (pl. 14), and those that occupy the western wall of the structure of the same church (pl. 15).

The pointed arch with two centers (fig. 7): It is that type of the arches whose beginning extends beyond the shoulder line of the arch²⁵, or that the arch in which the two straight lines end downwards with two arcs having two centers that complete the legs of the arch with straight vertical lines. It is distinguished by being more suitable than others for many buildings because of its relative capacity, because its two sides are built on different centers, in which the distance between each center and another is taken into account²⁶.

Scientists have disagreed about the origin of this arch, did it exist before Islam?²⁷, Or is it an Islamic innovation?²⁸, whatever the case, what concerns us is that it was widespread in Islamic buildings, and the most obvious examples of it are those in the Ahmed Ibn Tulun Mosque (pl. 16).

The Coptic buildings were influenced by it, so we find it appearing in many churches, as in the arches of the Abu Sefein church overlooking the courtyard, (pl. 17), and the arches that bear the domes in the Church of Anba Shenouda in the Cross Monastery in Naqada, (pl. 18), and the arch that decorates the façade of the structure in the northern church in Qasr Ibrim²⁹ (pl. 19).

2. The Pentagonal pointed arch (fig. 8): It is an arch consisting of two circular arcs, and its extension recedes from below from the line of extension of his shoulders, like the quadruple arch³⁰. This description is the same as the horse pointed shoe arch³¹ (fig. 9). This is all due to the closeness of the two arches, and I am inclined to the opinion that he made a

²⁴Ali, Manal Mahmoud. Units and architectural elements used in the architecture of church entrances in Cairo, p. 475.

²⁵Sameh, Kamal El-Din (1991). Islamic Architecture in Egypt, fourth edition, Cairo: The Egyptian General Book Organization, p. 185.

²⁶Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 197.

²⁷Shafei, Farid. Arab Islamic architecture in its early ages, p. 201.

²⁸See: Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 197.

²⁹Awad, Atef. The development of Coptic architecture from the fourth century until the eighth century and from the eighth century until the eighteenth century, Department of Antiquities: Institute of Coptic Studies, Coptic Pamphlets Series, p. 86.

³⁰Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 197

³¹Al-Haddad, Muhammad Hamza Ismail. Encyclopedia of Islamic architecture in Egypt from the Ottoman conquest until the era of Muhammad Ali, pp. 174-175.

fine point of distinction between the pentagonal pointed arch and the horse pointed shoe arch, for it is exactly like the arch of a horseshoe, except that it is pointed in head and of good proportions, and works by dividing the distance between its arches into Five equal sections, the central section of which forms the central arch³² (fig. 10).

This the arch spread widely in the countries of Morocco and Andalusia, as it had a presence in the mosques of Egypt, especially the Ottoman mosques, and the clearest examples of it are the pentagonal pointed arch that crowns the façade of the qibla iwan in the Mohib al-Din al-Tayyib Mosque in Cairo (931-941 AH / 1525-1535 AD)³³(pl. 20), as well as the arch that crowns the cavity of the mihrab in the same mosque.

As for the Coptic buildings, its clearest examples are evident in some of the arches of the suspended church, as in the arches of the entrance shed, (pl. 21), and the arches that bear the gabled ceiling in the same church, (pl. 22).

3.the horse pointed shoe arch: is a half-round arch that narrows the space left between his legs, or it is a round arch whose circumference exceeds half the circumference of the circle, it is called the Maghreb arch and keyhole arch, it comes in three types, the round shoe arch and the pointed horse shoe arch and shoe and the lobed arch, and here we mean the round and the pointed, as they are the most common and widespread.

For the pointed horse shoe arch (fig. 9) It is an arch that combines a pointed one with two centers and a horseshoe³⁴, as it consists of two circular arcs with a pointed head, and its beginning recedes from the line extending from its shoulders³⁵. The arch (fig. 11), it is an arch whose circumference exceeds half the circumference of the circle and its center is raised above its legs, and it consists of a sector of a circle that is greater than half of it³⁶, and does not have a point at its top.

This arch arose in early Christian art during the era of the Roman Empire, and it was at its inception developed from the half-round arch, and its earliest known appearance so far

³²Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 197

³³Duqil, Hussein (2021). Ancient Minarets from Ottoman Egypt: Plumania for Publishing and Distribution, Alexandria, p.9.

³⁴ Al-Jaabani, Aseel (19-4-2021). Arches and Arches in Islamic Architecture, Arabic website: <https://e3arabi.com>

³⁵Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 193.

³⁶Al-Qaisi, Samer Qahtan (17-8-2017). Decades of Rehab of Light, the official website of the Holy Hussain Shrine.

dates back to the (4th century AD) in the baptism of Saint Jacob (St. Jacob) in Nusaybin, Syria³⁷, and then it was His first appearance in the Islamic buildings in the Umayyad Mosque in Damascus (88-96 AH / 707-714 AD), influenced by his presence in the Syrian buildings at the time. As for his earliest appearance in Egypt, it was in the Fatimid Mosque of Al-Hakim (380-403 AH / 990-1013 AD), and after that it appeared clearly in the collection of Sultan Qalawun (683-684 AH / 1284-1285 AD)³⁸.

As for the Coptic buildings, this arch played a role in them, and we find it widespread in many of them, including the three arches that crown the entrances to the Archangel Gabriel Church in Abdeen³⁹ (pl. 23), and the arch that crowns the northern entrance opening with the Baramous Monastery, (pl. 24).

We also find it crowning two niches on the northern wall of the church of Abu Seifin in the Anba Paula monastery in the Red Sea, (pl. 25). We also find it crowning the openings of the bell tower of the same church (pl. 26). The wooden veil of the structure of this church also contains a wonderful rounded arch, which clearly reflects the type of arches that were used in Coptic architecture at that time (pl. 27).

In the oases, we find it appeared on a large scale in churches and monasteries, including its appearance in the remaining ruins of St. George's Church in the oasis of al-Haiz in the Bahariya Oasis (pl. 28), and its presence among the archaeological remains in the Umm al-Dabbab area in the Kharga Oasis (pl. 29).

4. The lobulated arch: It is the arch whose interior consists of a series of small arches or successive semi-circular arcs, each of which is called a lobe, or the arch whose inner edges are cut in the form of a series of semi-circles, or in the form of an arch of semi-lobes. The earliest appearance of this arch was in the Sasanian architecture, in Taq Khosrau, who is attributed to Shapur I (271-272 AD)⁴⁰, and there are those who believe that it dates back to ancient Indian architecture, and that it is derived from the famous three-leafed papyal in India, and that its oldest models appeared in Buildings dated to the era of Buddha⁴¹.

³⁷Petersen, Andrew (1999). Dictionary of Islamic Architecture, USA: Routledge, p. 24.

³⁸Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 194.

³⁹Ali, Manal Mahmoud. Units and architectural elements used in the architecture of church entrances in Cairo, p. 475.

⁴⁰Rizk, Asim Muhammad. Glossary of Islamic Architecture and Arts Terms, p. 200.

⁴¹ Al-Jaabani, Aseel (12-12-1021). The lobed arch in Indian architecture: an Arabic website, <https://e3arabi.com/>.

Whatever the difference is about the origin of its origin, it is agreed that its first appearance in the Islamic era was in Iraq at the end of the 2nd century AH, then its complete engineering features became clear in the construction of the dome of the Great Mosque in Kairouan (221 AH / 836 AD)⁴², and from it to the rest of the Islamic world, then to global architecture⁴³.

As for Egypt, the use of this arch was not known before the two centuries (8-9 AH / 14-15 AD), and its examples were rare⁴⁴, and among the most famous examples of it is the arch that crowns the entrance cap of Pashtak al-Nasiri (736-737 AH), and the arch that crowns the entrance to a palace Qusun (738 AH / 1337 AD)⁴⁵.

The lobed arch retained its geometric appearance in its later development, despite its multiplicity of shapes. Then, in the following centuries, the lobed arches became intertwined, the number of lobes increased, and rosettes and rosettes intertwined in them, and their shape became an attractive ornament, adorned with minarets and mihrabs⁴⁶.

As for the Coptic buildings, this arch had a commendable presence in it, and it was executed in an attractive style that reflects clear elegance on the part of the architect. One of the most famous examples of it is the arches that adorn some of the entrances to the Hanging Church (pls 30-31). In addition to that, what distinguishes the arch in (pl. 31) is that it is surrounded by player's peat and a meme.

5. The deaf arch: its edges always protrude from the azimuth of the wall. It does not perform an architectural function in the building⁴⁷, but rather a decorative function in the first place, and then an indicative one in the second place. As for its decorative function, we define it through its location, as it is used in the decoration of facades and entrances, wooden ties inside structures, marble floors, and on minarets and church towers, as it was used to decorate and crown entrances or similarities between windows with these two

⁴²Ragheb Al-Sirjani: Architecture in Islamic Civilization: The Story of Islam website: (17-5-2010).

⁴³ See: Al-Jabani, Aseel (12-12-1021). The lobed arch in Indian architecture: an Arabic website, <https://e3arabi.com/>.

⁴⁴Rizk, Asim Muhammad. Glossary of Islamic Architecture and Arts Terms, p. 200.

⁴⁵ Abdel Hamid, Heba Hamed (2018). Aesthetic values in the entrances of the Bahri and Circassian Mamluk era (648-923 AH / 1250-1517 AD) in the cities of Tripoli, the Levant and Cairo, a comparative study, Journal of Architecture and Arts, 13, p. 597.

⁴⁶Al-Sirjani, Ragheb (17-5-2010). Architecture in Islamic Civilization, The Story of Islam website.

⁴⁷Rizk, Asim Muhammad. Dictionary of Islamic Architecture and Arts Terms, p. 191.

elements, and it was also used in decorating the insides of domes⁴⁸, too. It appeared on the expanding spaces to alleviate its monotony and to beautify it⁴⁹.

As for its guiding function, it differs from one place to another as well, if it is associated with the mihrab or the eastern area, then the arches are executed in the form of gates that extend on both sides of the mihrab along the length of the qibla wall, which means that they indicate the direction of the qiblah and perform the function of guiding the worshipers to it⁵⁰, while in other places it was used This is the arch as a niche, cabinet, or shelf to perform other functional services in addition to adding beauty and displaying skills⁵¹.

In Coptic architecture, the solid arch had a great deal of appearance, so we find it frequently appearing in the Begawat area in the Kharga Oasis, adorning the external facades of the shrines with (pls. 32-33), and these arches are distinguished by the diversity of their shapes between solid semicircular arches and solid horseshoe arches, and they are also distinguished by their Distributed on the façades in a symmetrical manner in which the symmetry is perfectly evident, as most of these façades have a structural arch in the middle that crowns the entrance to the shrine, and on both sides of it the solid arches are distributed evenly. It decorates the entrance opening, and thus the single façade bears one form of the arches, no matter how many.

Third: the symbolism of the arches in Coptic buildings

Although symbolism in architecture takes a semi-different approach from other arts, in the sense that the shape of the building is not shaped according to the desire to express meanings, but rather according to the need for benefit, according to functional, material and economic influences, and according to the social heritage of architecture, and thus we can consider it not a symbol. For an emotion, inasmuch as it is an expression of its truth,

⁴⁸ See: Abdel Dayem, Nader Mahmoud (October 2007). *Decorative Contracts on Islamic Arts and Architecture in Egypt until the End of the Mamluk Era*, The First International Conference on Islamic Architecture and Arts, Past, Present and Future, Association of Islamic Universities, Cairo.

⁴⁹ Ghaleb, Abdul Rahim (1988). *Encyclopedia of Islamic Architecture*, Beirut: Jaras Press, p. 285.

⁵⁰ Abdel Dayem, Nader Mahmoud. *Decorative contracts on Islamic arts and architecture in Egypt until the end of the Mamluk era*, p. 160.

⁵¹ Ghalib, Abdul Rahim. *Encyclopedia of Islamic Architecture*, p. 285.



and of the causes and principles that resulted from the architectural forms, and thus symbolism in architecture is not a goal, but rather a result and outcome of an action⁵².

However, this matter was never in line with the Christian religion and its architecture, in terms of religion, as the emergence of Christianity had the greatest impact on Christian religious symbols acquiring its own character, which derived its ingredients from the Christian experience and ritual repetition of important events in the life of Christ.

As for the architecture, the church building is a sacred work based on the authentic sacred faith truth under the leadership of the Holy Spirit himself⁵³. The construction of Christian buildings was one of the most religious symbols expressing the beginning of a new era and the victory of Christianity. Constantine built a new city that he called the New Rome, and it was named from After Constantinople, he made it his capital in (330 AD), and built many churches there as religious symbols that express - as I mentioned - the beginning of a new era, and those buildings and the cross became the first Christian religious symbols. From here, the Christian world began to build its world and its symbols, and to clothe it with its sacred character acquired from the religious and cultural ideas with which these symbols were charged⁵⁴.

Hence, the great symbolic role of Christian architectural elements, especially those that reappear with a growing and developed continuity, reflects a real desire to consolidate its true meaning behind the symbol, and the arch was one of the most important of those elements through which the artist sought to achieve this goal.

The Christian architect linked the element of the arch with other architectural elements, such as doors, domes, vaults, structures, and niches. The Christian is able to link the symbolism of the arch with other elements that appear to be associated with it. Thus, we have compound individual, private and collective symbolic meanings that do not contradict each other, but complement each other, which increase the clarity of the idea and consolidates it more and more in the souls and minds.

⁵²Ali Thuwaini: Symbolism in Art and Architecture: p.6.

⁵³Malti, Tadros Yacoub (2018). *Katechism of the Coptic Orthodox Church*, 3, The Church is the Kingdom of God on Earth, Alexandria: Church of Martyr George Sporting, introductory edition, p. 117.

⁵⁴See: Musa, Bilal (2011-2012). *The story of the religious symbol, a study on religious symbols and their implications in the ancient Near East, Christianity, Islam, and before*, Ras al-Khaimah: Center for Studies and Documents, p. 71 and beyond.

The arch was a symbol of the arch of the sky or the curvature of the horizon, as it symbolized the rebirth and the renunciation of the old nature⁵⁵, thus it represents a crossing from one stage to another, a transition from one place to another, the end of a miserable time with its events and the beginning of a time of eternity, stillness and comfort, a transition from earthly hell to bliss Eschatological, migration from earth to heaven, leaving misery and misery to bliss and happiness, as the arch symbolizes the heavenly paradise⁵⁶.

The semi-circular arch associated with the circle was one of the most visible arches in Christian architecture, crowning the entrances with quadrilateral facades. Perhaps the strange connection between the circle (represented in the arch) and the square (represented in the facade) was a reference to the relationship of heaven and earth in terms of solidarity and integration, and symbolized that relationship to the ecclesiastical world in which the earth is linked to the sky, the church historian Eusebius says: "The visible church is built on the image of the invisible church... it is heaven on earth"⁵⁷, Perhaps the round arch that crowns the entrances to churches symbolizes the church itself, which is a precious pearl to them, as the circle is one of the images of the expensive pearl. And if the circular arch includes a cross, then it symbolizes paradise and the four rivers that flow from the center⁵⁸. The knotted door also symbolizes the power embodied in the Church in front of her enemies, and in that Christ says to Peter: "...on this rock I will build my Church, and the gates of hell will not prevail against it"⁵⁹.

Also, the arches were associated with the elements of domes, vaults, and columns inside church buildings, and with each element of them the symbolism varied and became clearer. Or painted in a heavenly color and decorated with pictures of angels and stars. And if it is covered with three domes, then the reference here is to the Holy Trinity, and if it is covered with five domes, then the huge main dome in the center represents the Lord, and the four

⁵⁵Cooper, J. C (2014). *Illustrated Encyclopedia of Traditional Symbols*, translated by Mostafa Mahmoud, Cairo: National Center for Translation, p. 29.

⁵⁶Syring, Philip (1992). *Symbols in Art - Religions - Life*, translated by Abd al-Hadi Abbas, Syria: Dar Damascus, p. 415.

⁵⁷Malti, Tadros Yacoub. *Catechism of the Coptic Orthodox Church*, p. 118.

⁵⁸See: Cooper, J. C. *The Illustrated Encyclopedia of Traditional Symbols*, p. 111 et seq.

⁵⁹The Bible: The New Testament: The Gospel of Matthew: Chapter (16): Verse (18).

small ones around it represent the four evangelists⁶⁰, as if the arches carrying those domes and vaults are the mounts and good deeds, by which man rises to this upper kingdom.

And this meaning is confirmed when we know that the columns in the old structure referred to the tribes, and in the Church of the New Testament they refer to the twelve disciples who, when victorious, were crowned in heaven, each one having a special crown. outside, and I will write on it the name of my God, and the name of the city of my God, the new Jerusalem that comes down from heaven from my God..."⁶¹.

In fact, they will not be victorious and crowned; unless they do good deeds and carry on their heads the acceptance of those deeds, to reach through them the upper kingdom that is in the heavenly Jerusalem. Hence, the symbolic role of the arches becomes clear to us, as an important mediator through which the disciples (pillars) reach the upper kingdom (domes and vaults).

As for the arches in structures and niches, the arch resting on two columns on the eastern sides of the structure symbolizes the heavenly dome resting on earthly pillars, and a sign of the presence of the Lord in his temple⁶², and a guide to the direction of the east and the associated ideological implications.

Christ was called in the East, that is, the one who shines without interruption to dispel the darkness, "And to you, who fear My name, the Sun of Righteousness will rise, with healing in its wings..."⁶³ And in the direction of the East, too, remember Paradise Lost, and anticipate Parousia, meaning "the coming of the Lord," and the symbol of the new birth, hope and light, and the aspiration towards Cross⁶⁴.

Conclusions

- The earliest appearance of contracts in Egyptian tombs was in the tombs of the monastery of Naga in the year (4400 BC).
- The semi-circular arch was used extensively in the apse of the structures, as in the apse of the structure in the churches of Abu Serga and the Virgin in Qusryat al-Rihan, and in

⁶⁰Malti, Tadros Yacoub (2018). Catechism of the Coptic Orthodox Church, p. 153.

⁶¹The Bible: The New Testament: The Book of Revelation: Chapter 3: Verse 12.

⁶²See: Syring, Philip. Symbols in Art - Religions - Life, p. 415 and beyond.

⁶³The Bible: The Old Testament: Book of Malachi: Chapter 4: Verse 2.

⁶⁴See: Malti, Tadros Yacoub (2018). Catechism of the Coptic Orthodox Church, p. 122.

carrying the domes that cover the naves, as in the monastery church of the singles in Fayoum and the Church of the Virgin in Jabal al-Tair in Samalut, and in crowning the entrances as in the entrance to the Church of the Virgin of Relief and the entrance to the courtyard In the church of Abakir and John, and the entrance to many of the shrines of the Bejawat necropolis in the Kharga Oasis.

- The earliest appearance of the pointed arch in Coptic buildings in Egypt was found in the structure of Benjamin in the Monastery of Abi Makar, which dates back to (830 AD).
- The period between the appearance of the pointed arch for the first time in Islamic architecture in Egypt and then Coptic architecture did not exceed two years, which indicates the activity of the building and reconstruction movement and the speed of mutual vulnerability between both architectures.
- The pointed arch, with its different styles and types, spread in many important ancient churches. We find the pointed arch with multiple arches crowning the entrance to the Church of St. Anthony al-Badwani in Al-Zahir, and the extended pointed arch crowns the entrance to the Evangelical Church in the Dohara Palace, and the pointed arch with two centers carries the domes in the Church of Anba Shenouda in the Cross Monastery, and the pentagonal pointed arch carries the gable roof in the Hanging Church.
- Coptic churches and monasteries were known as the horseshoe arch of both types, the half-monastery and the pointed one, and appeared in many of them, including the arch of the horseshoe arch that crowns the entrances to the Archangel Gabriel in Abdeen, and the pointed horse shoe arch crowns the northern entrance opening with the Baramous monastery.
- The lobed arch was executed in Coptic architecture in an attractive style that reflects clear elegance on the part of the architect. One of its most famous models is the arches that decorate some of the entrances to the Hanging Church.
- The solid arch had a good chance of appearing in Coptic architecture, so we find it frequently appearing in the Begawat area in the Kharga Oasis, decorating the outer facades of the shrines.
- The solid arches were characterized by the diversity of their forms between solid semi-circular arches and solid horseshoe arches, which indicates the mastery of Coptic architecture in its implementation of this type of arches on one façade, identical in

shape, size and type with the crown that adorns the entrance opening, one of the arches, no matter how many times it is repeated.

- Although symbolism in architecture takes a semi-different approach from other arts, this matter was never in line with the Christian religion and its architecture. The church building is a sacred act based on the authentic sacred faith truth, so the construction of Christian buildings was one of the most expressive religious symbols. On the beginning of a new era and the victory of Christianity, hence the great symbolic role of Christian architectural elements, especially those that reappear with a growing and developed continuity, reflect a real desire to consolidate their true meaning behind the symbol, and the arch was one of the most important of those elements that he sought artist through which to achieve this goal.
- The Christian architect linked the element of the arch with other architectural elements, just as he linked the symbolism of the arch with the symbolism of those elements that appeared to be associated with it, and thus we have complex individual and collective symbolic meanings that do not conflict with each other, but complement each other, which increases the clarity of the idea and entrenches it more and more in the souls and minds.

References

- Abdel Dayem, Nader Mahmoud (October 2007). Decorative Contracts on Islamic Arts and Architecture in Egypt until the End of the Mamluk Era, The First International Conference on Islamic Architecture and Arts, Past, Present and Future, Association of Islamic Universities, Cairo.
- Abdel Dayem, Nader Mahmoud. Decorative contracts on Islamic arts and architecture in Egypt until the end of the Mamluk era.
- Abdel Hamid, Heba Hamed (2018). Aesthetic values in the entrances of the Bahri and Circassian Mamluk era (648-923 AH / 1250-1517 AD) in the cities of Tripoli, the Levant and Cairo, a comparative study, Journal of Architecture and Arts, 13.
- Ahmed, Mahmoud (1938), the Mosque of Amr Ibn al-Aas in Fustat from the historical and archaeological perspectives: Cairo: The Amiri Press in Bulaq.
- Al-Bakhshounji, Ashraf (2007-2008). Introduction to Christian Architecture, Faculty of Arts, Sohag University.

- Al-Bakhshunji, Ashraf. Introduction to Christian Architecture.
- Al-Haddad, Muhammad Hamza Ismail (1998), Encyclopedia of Islamic Architecture in Egypt from the Ottoman Conquest until the era of Muhammad Ali (923-1265 AH / 1517-1848 AD), 1, Cairo: Zahraa Al-Sharq Library.
- Al-Haddad, Muhammad Hamza Ismail. Encyclopedia of Islamic architecture in Egypt from the Ottoman conquest until the era of Muhammad Ali.
- Ali Thuwaini: Symbolism in Art and Architecture.
- Ali, Manal Mahmoud. Units and architectural elements used in the architecture of church entrances in Cairo.
- Al-Jaabani, Aseel (12-12-1021). The lobed arch in Indian architecture: an Arabic website, <https://e3arabi.com/>.
- Al-Jaabani, Aseel (19-4-2021). Arches and Arches in Islamic Architecture, Arabic website: <https://e3arabi.com>
- Al-Jabani, Aseel (12-12-1021). The lobed arch in Indian architecture: an Arabic website, <https://e3arabi.com/>. Rizk, Asim Muhammad. Glossary of Islamic Architecture and Arts Terms.
- Al-Meligy, Ali Mahmoud Suleiman. Al-Nasser Muhammad Religious Buildings in Egypt, Master Thesis, Faculty of Arts, Cairo University, 1975.
- Al-Qaisi, Samer Qahtan (17-8-2017). Decades of Rehab of Light, the official website of the Holy Hussain Shrine.
- Al-Sirjani, Ragheb (17-5-2010). Architecture in Islamic Civilization, The Story of Islam website.
- Awad, Atef. The development of Coptic architecture from the fourth century until the eighth century and from the eighth century until the eighteenth century, Department of Antiquities: Institute of Coptic Studies, Coptic Pamphlets Series, p. 86.
- Cooper, J. C (2014). Illustrated Encyclopedia of Traditional Symbols, translated by Mostafa Mahmoud, Cairo: National Center for Translation.
- Duqil, Hussein (2021). Ancient Minarets from Ottoman Egypt: Plumania for Publishing and Distribution, Alexandria, p.9.
- Fakhry, Ahmed. The Egyptian Desert, the Begawat Cemetery in the Kharga Oasis.
- Fikri, Ahmed (1967). Islamic Artistic Influences on European Arts: Bifdad: Sumer Magazine.

- Ghaleb, Abdul Rahim (1988). *Encyclopedia of Islamic Architecture*, Beirut: Jaras Press.
- Hassan, Nevin Nahas. *Islamic Architectural Influences on European Architecture in the Middle Ages (The Pointed Arch as a Model) An Archaeological Civilizational Study*.
- Malti, Tadros Yacoub (2018). *Catechism of the Coptic Orthodox Church*, p. 153.
- Malti, Tadros Yacoub (2018). *Katechism of the Coptic Orthodox Church*, 3, *The Church is the Kingdom of God on Earth*, Alexandria: Church of Martyr George Sporting, introductory edition.
- Mostafa, Salih Lamei (1984). *The Islamic Architectural Heritage in Egypt*, Beirut: Arab Renaissance House.
- Musa, Bilal (2011-2012). *The story of the religious symbol, a study on religious symbols and their implications in the ancient Near East, Christianity, Islam, and before*, Ras al-Khaimah: Center for Studies and Documents.
- Naguib, Gamal Saad (2012-2013). *Lectures on Coptic Architecture and Arts*, Faculty of Arts, Minia University.
- Petersen, Andrew (1999). *Dictionary of Islamic Architecture*, USA: Routledge.
- Ragheb Al-Sirjani: *Architecture in Islamic Civilization: The Story of Islam* website: (17-5-2010).
- Rizk, Asim Muhammad (2000). *Dictionary of Islamic Architecture and Arts Terms*, Cairo: Madbouly Bookshop.
- Sameh, Kamal El-Din (1986). *Glimpses in the History of Egyptian Architecture from Ancient Times to Modern Times*, Ministry of Culture: Egyptian Antiquities Authority, p.1.
- Sameh, Kamal El-Din (1991). *Islamic Architecture in Egypt*, fourth edition, Cairo: The Egyptian General Book Organization, p. 185.
- Shafei, Farid (1994). *Arab Architecture in Islamic Egypt (The Age of Rulers)*, 1, Cairo: The Egyptian General Book Organization.
- Shafei, Farid. *Arab Islamic architecture in its early ages*.
- Syring, Philip (1992). *Symbols in Art - Religions - Life*, translated by Abd al-Hadi Abbas, Syria: Dar Damascus.
- The Bible: The New Testament: The Book of Revelation, the Gospel of Matthew, the Old Testament.

Youssef, Wajih Fawzy. The Evolution of the Design of Coptic Orthodox Churches in Egypt, Churches and Monasteryies of Wadi El-Natrun, Master Thesis, Faculty of Engineering, Ain Shams University, 1974.

Youssef, Wajih Fawzy. The Evolution of the Design of Coptic Orthodox Churches in Egypt, Wadi El-Natrun Churches and Monasteryies.

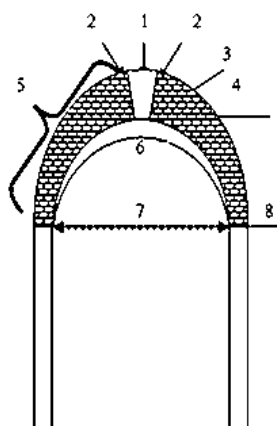


fig. 1. Components of the arch

1. crown of the arch
2. neighbors
3. Arch key
4. the waist of the arch
5. arch Voussoirs
6. arrow
7. tendon
8. legs of the arch
9. Belly of arch or trace curve

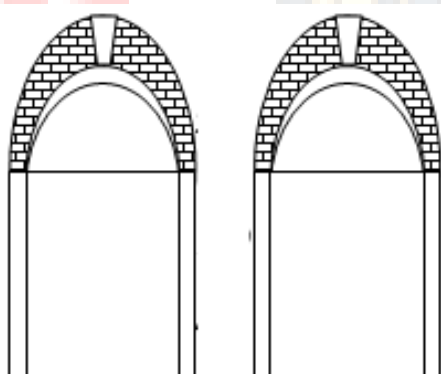


fig. 2. The waist of the arch (the sambuksa), which is the area between two arches

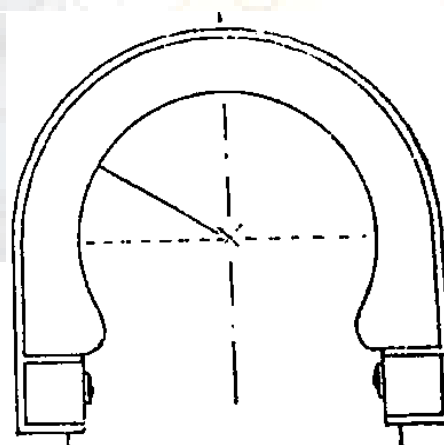


fig. 3. semicircular arch

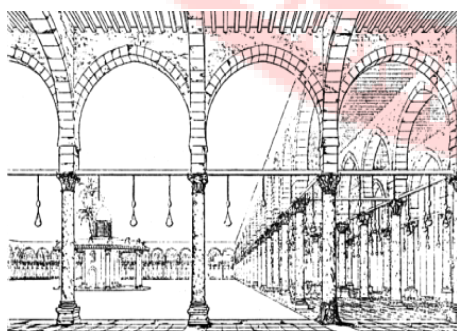


fig. 4. Samples of window arches at Amr Ibn Al-Aas Mosque

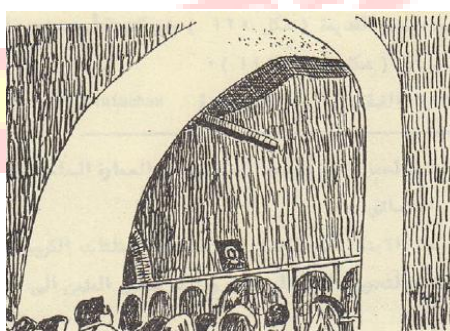


fig. 5. The pointed arch of Benjamin structure in the church of Deir Abi Makar

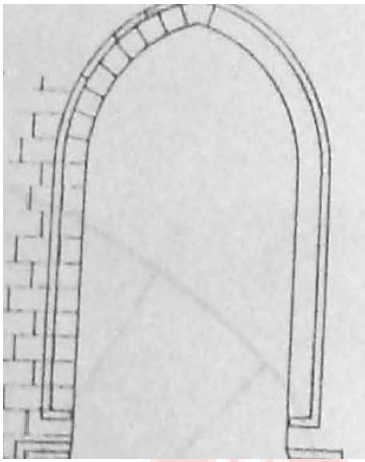


fig. 6. the extended pointed arch

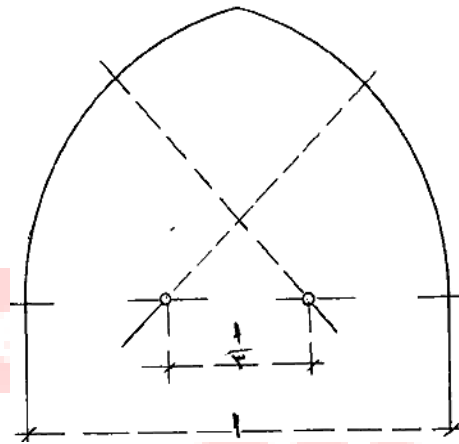


fig. 7. the pointed arch with two centers

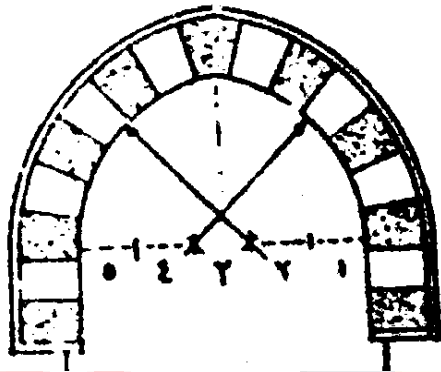


fig. 8. Pentagonal pointed arch

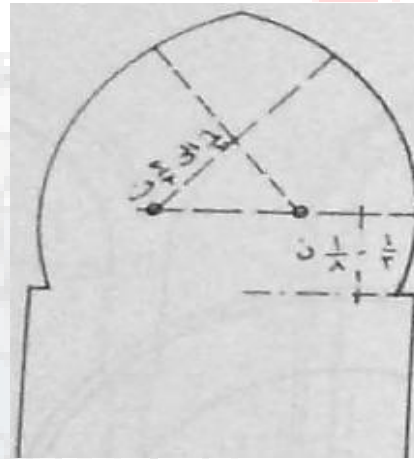


fig. 9. The pointed horse shoe arch

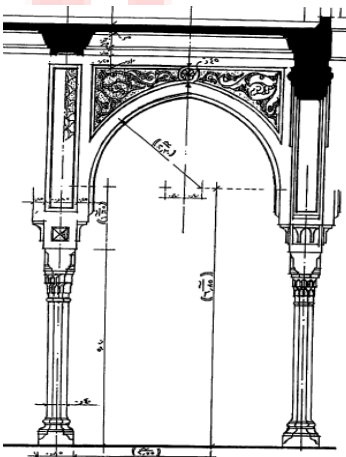


fig. 10. drawing the pentagonal pointed arch

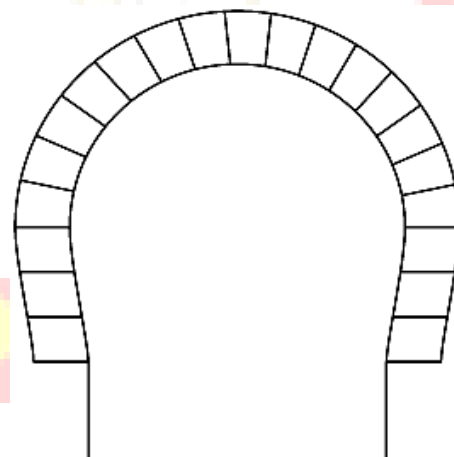


fig. 11. Round horseshoe arch



pl. 1. The semi-circular arch adorns the windows of the structure dome in the church of Abu Serga



pl. 2. The semi-circular arch crowning the apse of the structure of the Church of the Virgin, Qasriyat Al-Rayhan



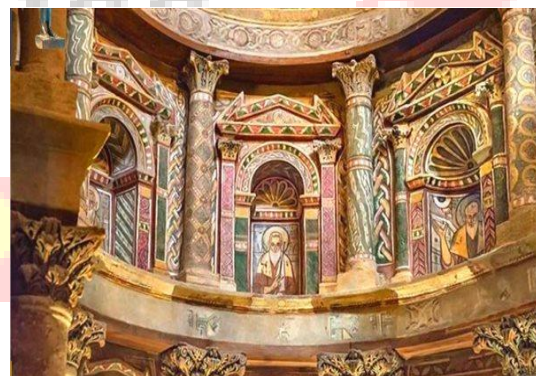
Pl. 3. the semi-circular arches supporting the dome of the nave in the monastery of al-Azab church



Pl. 4. Models of the semi-circular arches supporting the upper floor and the dome in the Church of the Virgin in Jabal Al-Tair



pl. 5. models of the circular arches in the Abu Fana Church in Mallawi



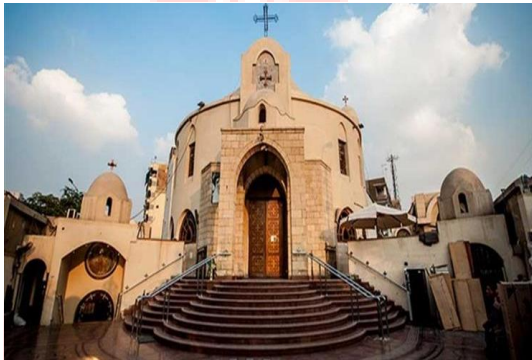
pl. 6. The semicircular arches bearing the dome of the church in red monastery



pl. 7. the traditional pointed arches that adorn the entrances to the Hanging Church



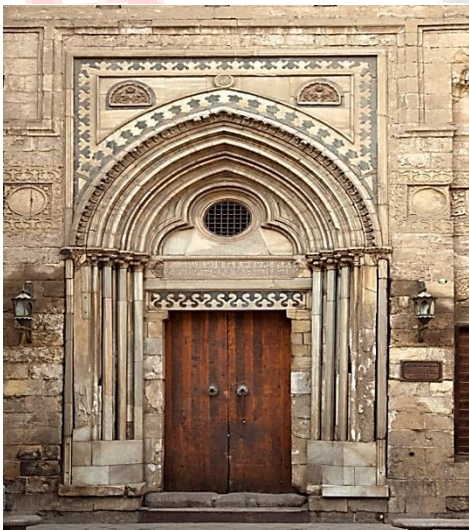
pl. 8. Models of the pointed arches of the Hanging Church



pl. 9. the pointed arch that adorns the southern entrance to St. George's Church



pl. 10. the pointed arch with multiple arches at the entrance to the Church of St. Anthony al-Badwani in Al-Zahir



pl. 11. the pointed arch with multiple arches at the entrance to Al-Nasir Muhammad Ibn Qalawun School



pl. 12. The two arches of the side iwans of Umm al-Sultan Sha'ban Madrasa



pl. 13. One arch of the two side flaps in Yusuf al-Hin Mosque



Pl. 14. the extended arch that adorns the entrance to the Evangelical Church in the Dubara Palace



Pl. 15. The extended arches that adorn the western wall of the Anglican church structure



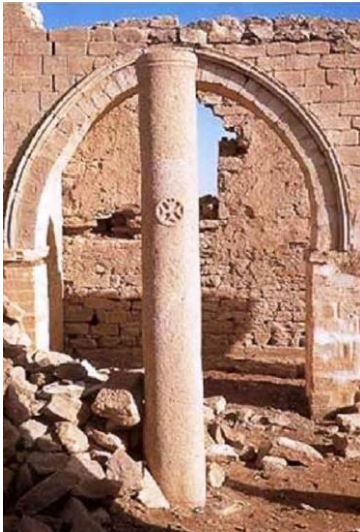
Pl. 16. models of the pointed arches with two centers in the Ahmed Ibn Tulun Mosque



pl. 17. the pointed arches with two centers overlooking the courtyard in the church of Abu Sefein



Pl. 18. the pointed arches with two centers that bear the domes in the Church of Anba Shenouda in the Monastery of the Cross



pl. 19. the pointed arch with two centers that adorns the façade of the structure in the northern church in Qasr Ibrim



pl. 20. the Pentagonal pointed arch that decorates the facade of the entrance to the qibla iwan in Mohib al-Din al-Tayyib Mosque



pl. 21. Models of the Pentagonal pointed arches of the Hanging Church



pl. 22. Models of the Pentagonal pointed arches supporting the gabled roof of the Hanging Church



Pl. 23. A flat arch that crowns one of the entrances to the monastery of Angel Gabriel in Abdeen



pl. 24. The pointed horse shoe arch crowns the northern entrance opening with the Baramous Monastery



pl. 25. two horse shoe arches crowning two flags in the Church of Abu Sefein in the Anba Paula Monastery in the Red Sea



pl. 26. horse shoe arch crowning one of the openings of the bell tower in the Church of Abu Sefein in the Monastery of Anba Paula



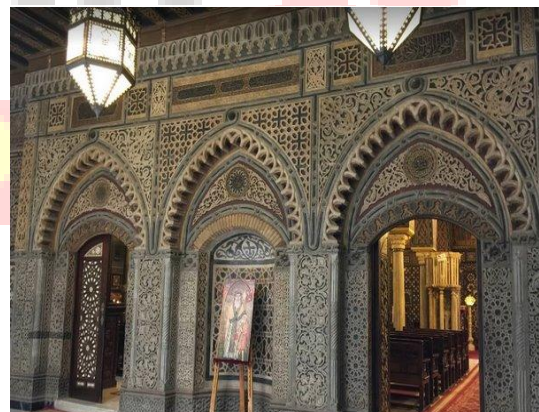
pl. 27. horse shoe arch attached to the monastery of the wooden veil of the structure of the church of Abu Sefein in the monastery of Anba Paula



pl. 28. one of the horseshoe arches in St. George's Church, Wahat al-Haiz



pl. 29. horse shoe arches among the archaeological remains in Umm al-Dabbab in the Kharga Oasis



pl. 30. Three lobed arches crowning three entrances to the Hanging Church



pl. 31. The lobed arch decorates the stone entrance of the Hanging Church



pl. 32. A group of semi-circular solid arches adorning the facade of one of the Begawat shrines



pl. 33. A group of shrines adorning their facades with solid horse shoe arches