

The most important geometric motifs in mosques of the city of Sana'a during centuries (11-12 A.H /17-18 A.D)



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ABSTRACT

Yemen, like other countries of the Islamic world, has seen a big boom for the Arts architectural and decoration evidenced by the remainings that spread in most Yemeni cities dating back to different periods of time, It was assisted by its heritage of civilization, as the old Yemeni artist has own creations in architecture and related Fine Arts as Sculpture, Painting and engraving. All architectural installations, especially the mosques, in Yemen replete with crowd of stucco, wood and stone decoration, Which is clear evidence of the high skill in the art of decoration, Where these materials were used on a large scale in construction and carpentry works during the Islamic era, on which all sorts of Islamic decoration has been carried out, and geometric decoration comes in the forefront. We will try in this research to review some of the most important geometric decorations carried out on the mosques of centuries (11-12 A.H / 17-18 A.D) in Sana'a, and to know the basic units of its, the kind of materials on which it implemented, the methods of implementation and the first beginnings of its appearance. Eleven Mosques are the number of targeted mosques, four of which (Bakeereya, Talha, Al- Galaa and Al-Elmi Mosque) were built in the century (11 A.H / 17 A.D), and another seven (Al-Haimi, Noseer, the Dome of the Mehdi Abbas, Taqwaa, Muammar, AL-Radwan Mosque and Faye Mosques) were built in the century (12 A.H / 18 A.D).

Keywords:

Decorations; architecture; Mosques; Sana'a; Geometric motifs

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Introduction

Islamic art is distinguished from other arts with its decorative character which can be viewed in all its products, this character was due to the hatred of empty space, where the Muslim artist tends to cover those spaces with decorative units and colors, he always flee of the empty space and considered it as the biggest problems to be faced.

A large share of this decorative art was for decoration Geometric as a result of the development of mathematics in the Islamic civilization and spreading of its knowledge as for its forms and structures of cosmic and symbolic and philosophical

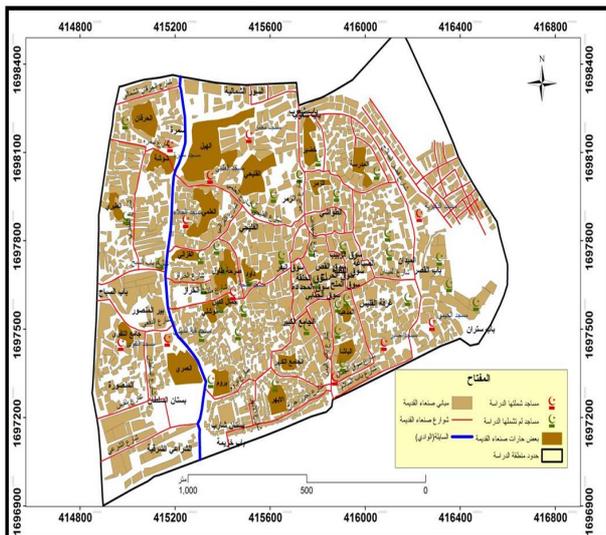
overlaps, in addition to the hard-line attitude of the jurists toward prohibition and hate imaging living things. Several types of geometric shapes have been used in Yemen which do not go out of the framework of those existing in the rest of the world as Asterisks, Octoploid or Hexagon shapes which is one of the most important features of Islamic art that the Muslim artist excelled in innovation many forms of them. Double Braid Twist, Pluteaceae forms, Shields, Boukarriet and variety of geometric forms as diamonds, circles and triangles were used.

Commonly, the straight lines used as narrow frameworks and bands surround the plant

decorative elements and the inscriptions, and it acted a key role in designing of the decorations because its movement in any direction was working on demonstrating the geometric models properties which consists of its intersections, and what is the more showing using of such straight lines and sharp broken angles up and down in the niches of mosques and integrated pillars.

Mosques

The mosques of Sana'a is considered to be the most of its important monuments, which spread out in the streets and lanes of the city to confirm possession of the city for all Islamic city properties⁽¹⁾. Al-San'aani in his manuscript "history of Sana'a " Stated that there were about 106 mosques until Century (4 A.H / 10 A.D) ⁽²⁾.while AL-hajry in his book " Sana'a Mosques" counted of approximately 138 Mosque until the second half of the fourteenth century AH, including (12) mosque outside the city of Sana'a⁽³⁾,and (7) unknown Mosques⁽⁴⁾,and (30) forgotten Mosques⁽⁵⁾, (24) Extinguished Mosques.⁽⁶⁾, the styles and methods of architectural and artistic for the mosques differ from time to time. However, this difference does not miss the Yemeni General character in terms of building materials and style of decoration.⁽⁷⁾Only forty six of the ancient mosques of Sana'a still opened for worship except a mosque and twenty-one of them with minarets and five with domes ⁽⁸⁾,eleven of them were built during the period of study in the centuries (11-12 A. H / 17-18 A.D), which is the targeted mosques, (Map 1).



Map (1) the distribution of mosques in Sana'a

Geometric Decorations

Those decorations was known in all previous arts of the of Islam, However, it did not have a big regard only by the Muslims, where the Muslim artist worked on to develop it significantly ⁽⁹⁾.He innovated many different decorative units and what helped

him hatred of imaging the living things in Islam.⁽¹⁰⁾ Geometric decorations have become as one of the main basic Islamic decorative elements were used clearly since the Umayyad period, and was with high degree of accuracy and creativity, although the basic forms stem from simple shapes such as Straights, squares, circles, triangles and, intersecting tangentially circles and other shapes.⁽¹¹⁾

Here are some of Geometric units carried out in mosques of the search :

Astrocytes plate⁽¹²⁾

It was one Of the most important geometric decorations, which excelled by Islamic art and adorned with monuments and artifacts surfaces of different materials, and began appearing since the Umayyad period, and spread widely in late Fatimid era and during the Ayyubid, also commonly used in the Mamluk era⁽¹³⁾, and we find strongly in the artistic style in Morocco and Al-Andalus.⁽¹⁴⁾

While In Yemen, like the rest of the countries of the Islamic world, this type of decoration was found, the oldest work arrived to us back to the Abbasid which was in the diverse decorations in wooden ceilings in the Mosque of Sana'a and Kawkaban Shibam Mosque at the time of al-yafar (265 AH / 878 AD).As well as in the decorations of mosque AL-saidah Bint Ahmed in the city of Jableh (480 AH / 1087 AD)⁽¹⁵⁾ also it was continued to be used in the buildings of Apostolic Age in Taiz such as Al-Ashrafieh school and Muzaffar mosque⁽¹⁶⁾, the most beautiful examples of the era of Al-Taheri were found in Radaa School ⁽¹⁷⁾.

some examples of astral plate in the mosques of the research, are found on the upper square filling of the door of the pulpit inside the house of prayer in the mosque of Demo Al-Mahdi-Ledin Allah Abbas, and on the wooden coffin in a mausoleum next to the mosque from the west, and it was carried out specifically on the central filling of the second-level in North and south facades of the tomb of Demo Al-Mahdi-LedinAbbas, (Figure 1).

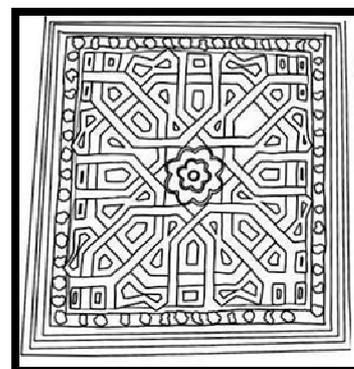


Fig (1) Astral plate Double Braid Twist Decorations:

It is a decorative unit formed from the twist two lines around each other to constitute oval forms ⁽¹⁸⁾, the forms and models of them were found in the ancient civilization of Yemen, specifically on Othtr temple pillars in Al-Sawdaa city which dates back to the fifth century BC⁽¹⁹⁾, and in the Islamic era Yemeni architecture used these decorative unit heavily on the facades of houses and minarets of mosques, it can be seen in the Minarets' bases of the Mosques of AL-madrasah, Al-Zomar, Salahuddin and Moses⁽²⁰⁾, minarets of research mosques in which this decoration was found are the Minarets' bases of Bakeereya Dome and Dome of the Mehdi Abbas Mosque, and on the upper hull of the minaret of AL-Alami Mosque, the plaster material and prominent drill style used in the implementation .(Figure 2).

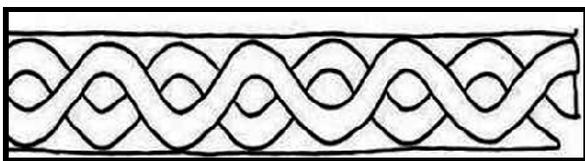


Fig (2) Double Braid Twist Decorations

Zigzagging Decoration

A unit geometric motifs consists of contiguous zigzagging geometric lines surrounded by a row of triangles on both sides. It was found in ancient Yemeni architecture in the form of decorative frames to frame other decorative modules as it was in Athtr Temple⁽²¹⁾, this type of decoration reached a high degree of perfection where the length of descending and ascending lines to be equal which indicates the skill of the Yemeni artist and his knowledge of the science of geometry, It spread on buildings, both civil and religious, where we find it to decorate the facades of houses of Sana'a and other cities as belts Separating each floor and next ⁽²²⁾, it can be seen adorning some parts of the minarets of mosques in Sana'a such as Salahuddin and Al-madrasah Mosques, also decorating the top of the minaret of AL-ALMI mosque, one of the research mosques, and the plaster and prominent drill style was used in implementation (Figure 3).

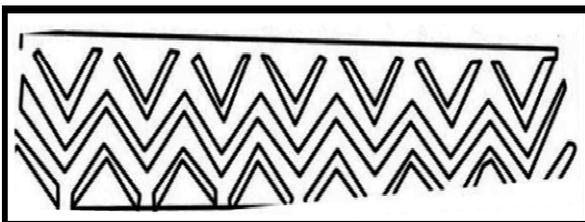


Fig (3) Zigzagging Decoration

Lozenges Decoration

Like its predecessors of finishes its origins back to a period of pre-Islam where we find it on the Othtr temple pillars ⁽²³⁾, and it continued to be used in various Islamic eras to become the most prevalent types of **geometric** motifs on the facades of religious and civic buildings in Sana'a , Zabid, Taiz and other cities ⁽²⁴⁾, it was implemented on the plaster with the ways of interna and prominent drilling and in other various forms either solid or hollow, upright or upside down or to be implemented by brick substance, it can be seen in the hull bottom motifs of the minaret of AL-almi Mosque, and In the decorative ribbon which culminates the interfaces of the structure in both Takwa , Radwan, AL-noor and Naseer Mosques, In decorative ribbons that surround of Solid Hanaya in the bottom recess of niche in AL-haimi Mosque. we find it in the dome of Bakeereya mosque in the decorative ribbon around the windows, Eastern hallway, and in the motifs of the lower body of the minaret, and in the bottom of the minaret of the Dome of the Mehdi Abbas Mosque, As well as in the sides of minaret Josag, (Figure. 4).

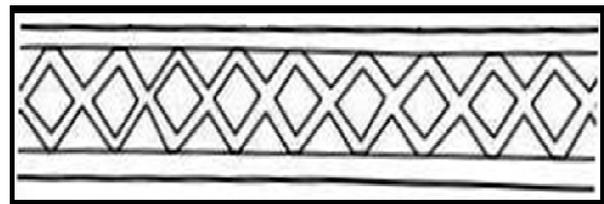


Fig (4) Lozenges Decoration

Alboukarriet Decoration

It is a decorative unit with an oval or round shape often associated from the top and bottom of decorative botanical identical trinket composed of triple leaf or five-lobed, usually the inside is decorated with motifs of a written, geometric or plant content⁽²⁵⁾. It spread out in the most mosques and schools in Apostolic and Tahiri eras ⁽²⁶⁾, as we find many models of them in religious facilities in Dhamar city ⁽²⁷⁾, for the study mosques, its presence confined in mosque of Bakeereya Dome where we find it to adorn the three domes of South a penthouse and it carried out of the plaster in a way of prominent drilling, there are two different models of it, the first with Oval from inside and decorated by Floral and geometric motifs and its ends come with five-lobed leaf. and the second with Square shape its inward decorated with motifs of Arabic securitization and its ends come with Trilobites leaf (Figure. 5 a - b).



Fig (5 – a) Boukarrieh

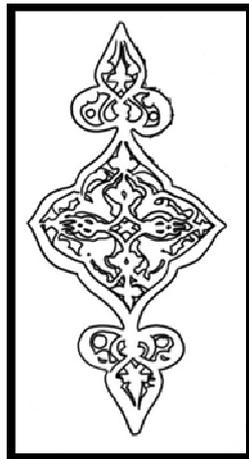


Fig (5 – b) Boukarrieh

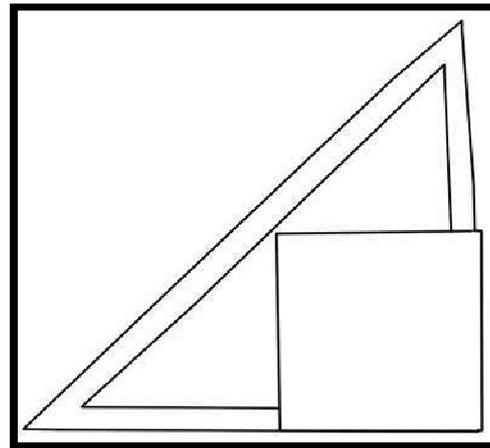


Fig (6) triangular decoration – plume tribune of Bakeereya

Decoration of Triangles:

The triangles element is one of the oldest decorative elements where it has been found on the antique pottery dating back to the seventh century BC in both ancient Samarra site, Mesopotamia and Stahl Hyuk in Anatolia ⁽²⁸⁾. It appeared in several ways and on different products such as wall paintings and frescoes, rock paintings, and the inner decoration of homes, as well as wooden doors, ornaments and others of decorative objects. In the sense that it is common use element In terms of the spatial spreading and temporal continuity ⁽²⁹⁾.

The triangular decoration is a result of the intersect of geometric lines in three angles, the number of triangles depends on the amount permitted by the movement of those lines, for example, the meandering line with sharp angles can produce a range of triangles in the form of a horizontal or vertical bar after drawing a straight line touching the ends of the wall strip⁽³⁰⁾, the oldest date of the emergence of triangular decoration in Yemen back to the eighth century BC, where it was found on a fragment of pottery vase at Hajar bin Humaid site Showing triangles-tipped decoration flying up and regular horizontally⁽³¹⁾of its examples in the mosques of the study, what was found in the marble plume tribune of Bakeereya mosque, and it was carried out in a manner relief drilling, as it can be found in the inner of the solid arch, which is above the eastern window, In the transition areas in the corners of South Penthouse domes and Al-mtahir domes, And we can find it in the decorative ribbon which crowned the interface AL-mtahir in AL-Alami Mosque, and it appears in AL-Haimi Mosque in the soles flat niches where each of them mediates of plaster shelf, its base Shaped in the form of an inverted triangle and the previous examples were carried out of the way of prominent drilling (figure 6).

Circle Decoration:

One of decorative elements that the human inspired of his surroundings like other elements, many of cosmic phenomena such as sunrise, sunset, waves, sea, meteorites and what found in nature are considered one of the sources from which some decorative elements were taken ⁽³²⁾.we find that the **Circle** is representative of rotate the sun or the moon or the tree fruits of **Circle** shaped. It also represents morally a lot of things as permanency, continuity, lack of interruptions and a symbol for productive and renewable energy ⁽³³⁾.it is considered to be The more kinds of geometric motifs prevalent where there are in all mosques or in different places, and it is often come in the Shape of frame surrounds the floral or written decorative geometric and permeate the decorative Stripes carried out on the inner walls of Mosques or to frame decorations in insider of domes and niches within hollow and flat Niches.

there are many examples of it, among them what found in the mosque of Bakeereya Dome, In the soles of sunken Solid Hanaya down the Tribune, it carried out on the material marble, we can find it also in the decorative ribbon surrounding written strip on the top of southern entrances to the structure in the inner of tapered arc on the top of Northern window in the west wall, and in AL-Haimi mosque permeate the written frescoes Stripes in the western and eastern walls, and mediates the second level of the stucco mass located on the top of the southern entrance of Takwa mosque, its inner has been decorated with What looks like eight Star (Figure 7 a - b).

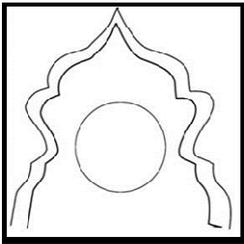


Fig (7 - a) Circle Decoration plume tribune of Bakeereya Down

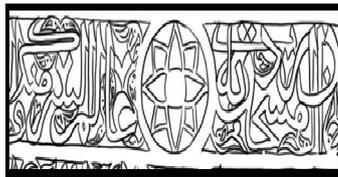


Fig (7 - b) Takwa mosque - the circle in the middle of the stucco mass

Six-pointed star decoration ⁽³⁴⁾

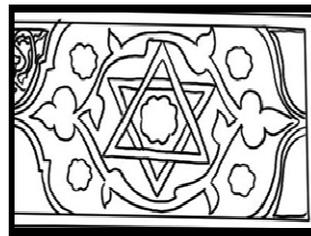
Six-pointed star did not exceed in the Arab Islamic art as a symbol expressive decorative free of any meaning or significance⁽³⁵⁾, Muslim artist used to implement geometric decoration with its diverse forms of squares, rectangles, lozenges and multiple warheads stars up to twelve head just to have only one meaning that fill blanks by the Islamic manner,⁽³⁶⁾ to realize the known Islamic artistic principle (Unity and Diversity).⁽³⁷⁾

And we found it in Hisham's Palace in Jericho, Palestine It represents one of the windows of the second floor of the palace, as well as in Mushatta Palace in Jordan, and it's found in the palace and Mustansiriya school and the Mosque of Ahmad Ibn Toulon in the Abbasid era , In the Fatimid era found in the Al-Azhar mosque in Cairo , As we find in the ancient wall of the city of Jerusalem, which dates back to the Ottoman era⁽³⁸⁾.

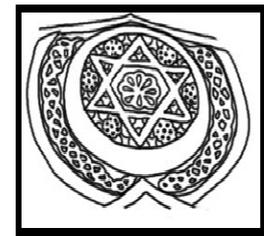
In Yemen, The oldest appearance for it back to the Islamic Umayyad period and the time of al-yafar (262 AH / 875 AD).Where we find in three and five Al-oscob of the roof of the al-kaber Mosque two big boxes their decoration consist of Star hexagonal on the shape of rose ⁽³⁹⁾and then continued to use in subsequent periods at various architectural installations, especially religious ones.

According to the mosques of study there are only three of them found the Six-pointed star decoration the first Bakeereya Dome Mosque,Where we find it adorn the inner side of the arc of Western window , it decorates the soles of cartridges also adorn the top of the rectangular region of north window in the western wall, and those that mediate the circle in the middle of decorative ribbon South arc for the Central Dome, was implemented on the plaster in a drilling prominent manner, while in The dome of the Mehdi Abbas Mosque it is found in the windows of the structure where soles of the Upper Stuffing of the windows shutters with Geometric motifs consist of starlets hexagonal contiguous composed through them Hexagonal sides,

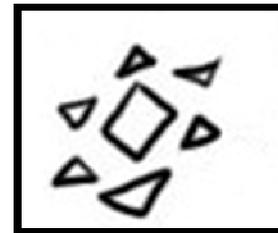
At the interface of the lower Stuffing of the eastern entrance to the main structure where was decorated with a connection of hexagons small and large sides through which stars generate heads hexagonal painted in gold, And mediates a series of boxes that adorn Jawsaq sides in the minaret of the mosque,also it's found in the tomb of al-alami mosque where the center of the top Stuffing of the southern entrance shutters of the shrine door decorated with hexagonal star carried out by a narrow strip of metal, (Figure. 8 a - b - c).



Fig(8-a) Six-pointed star Bakeereya



Fig(8-b) Six-pointed star Bakeereya



Fig(8-c) Six-pointed star The dome of the Mehdi Mosque

Conclusion

- Develop a map identified the target mosques sites.
- All kinds of geometric decorations in all the mosques of the search were found.
- Most of these decorations found in the arts of ancient civilizations.
- Using relief & prominent drilling methods in the implementation of those decorations.
- These decorations were carried out on four types of materials (marble - Plaster – Wood- metal).

Most of these decorations have not had in the Islamic art of any substance or significance other than being decorative abstract form.

Notes:

- (1) البناء: محمد محمود، **دراسة ترميم وصيانة مدينة صنعاء القديمة**، رسالة دكتوراه، قسم ترميم الآثار، كلية الآثار، جامعة القاهرة، ١٩٩٣، ص ١٩٩.
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- (3) Abu Shamlah mosque, a mosque Albulala, a mosque Rahbi, Saadi Mosque, Ahariqh mosque, and Elk Mosque, the original offer Mosque, the new offer Mosque, scalp mosque, let's mosque, Masjid donation, the cemetery chapel.
- الحجري: محمد بن أحمد (ت. ١٣٧٩هـ / ١٩٦٠م) **مساجد صنعاء، عمارها وموفيهها**، وزارة الثقافة والسياحة، ٢٠٠٤، ص ١١ – ٢٤ – ٥٧ – ٥٩ – ٦٤ – ٧٣ – ٩٠ – ٩١ – ٩٨ – ١٣٣ – ١٣٨.
- (4) Najjar Mosque, mosque hind bintqatran , yaeesh Mosque , Zurayk Mosque, Mosque of Ibnzead, al-Baghdadi, mosque, mosque Mohammed bin Khalid Barmaki, al-amir mosque, mosque Ali bin AbiBakr, Maan Bin zaedah Mosque,
- الحجري، المصدر نفسه، ص ١٤٨ – ١٤٩.
- (5) Forgotten Mosques are small mosques lacked special Mtahir" bathrooms" and for the rest of the secondary and supplementary services, that was due to it has been established without endowments devoted to its service serve, they are very small in terms of size and area, including Bqlan Mosque, Al-rgima mosque, women Mosque, AL-Taqwa Mosque, Hemiar Mosque, Al-chabah mosque, AL-rasas mosque and others,
- الحجري، المصدر نفسه، ص ١٤٦ – ١٥٢؛ مركز الطاهر، **صنعاء أسس التصميم المعماري والتخطيط الحضري في العصور الإسلامية المختلفة، دراسة تحليلية على العاصمة صنعاء**، منظمة العواصم والمدن الإسلامية، ٢٠٠٥، ص ٢٩٨.
- (6) Extinguished Mosques are; Noah's mosque, Al-Mokadam mosque, Al-Montakem Mosque, Muawiya Mosque, Moaidh mosque, al-Kaabi mosque, Kuteib Mosque, Al-kalab Mosque, Ayadh Mosque, okasha mosque, Al-taq mosque, Al-sofah mosque, AL-shahed mosque, Zubair Mosque, AL-romanah Mosque, Aldhanh mosque, AL-khawi mosque , AL-jareah mosque, al-Badawi mosque, Abe Sahl mosque , Abe Alrajaa mosque, AL-abyadh mosque, AL-wadhi mosque, AL-kab mosque, - ١٠ - مصدر سابق، ص ١٠٣-١٠٤-١٠٥-١٢٣-١٢٤-١٣٥-١٣٩-١٤٩-١٣٩.

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- (10) Received an honorable sayings of the Prophet in the books of the main talking accredited described hatred of photography, see Sahih Muslim, Book dress and decorations, parts, 98.99, and SahihBukhari
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- (12) Are polygonal decorations mounted to each other so that make up the semi-dish strikethrough form of astral from which other parts of the dish,
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- (١٨) سيف، مرجع سابق، ص ١٦٩.
- (19) Grohmen,A. Kulturgeschichte Des Alten Orients Germany, 1963,p 160-163.
- (٢٠) سيف، مرجع سابق، ص ١٦٩.
- (٢١) سيف، مأذن صنعاء، مرجع سابق، ص ١٦٩.

ملخص الدراسة:

اليمن كغيرها من بلدان العالم الإسلامي شهدت ازدهاراً كبيراً للفنون المعمارية والزخرفية بدليل الآثار الباقية التي تنتشر في أغلب المدن اليمنية التي يعود تأريخها إلى فترات زمنية مختلفة، وقد ساعدها على ذلك ميراثها الحضاري، إذ كان للفنان اليمني القديم إبداعاته في فن العمارة وما يتصل بها من فنون تشكيلية كالنحت والرسم والنقش. وتزخر جميع المنشآت المعمارية في اليمن، وخاصةً المساجد بحشد من الزخارف الجصية والخشبية والحجرية التي تُعدّ دليل واضح على المهارة الفائقة في فن الزخرفة، حيث جرى استخدام تلك المواد على نطاق واسع في أعمال البناء والنجارة خلال العصر الإسلامي، ونفذت عليها كل أنواع الزخارف الإسلامية وتأتي في مقدمتها الزخرفة الهندسية. وسنحاول في هذا البحث استعراض بعض أهم الزخارف الهندسية التي نفذت على مساجد القرنين (١١ - ١٢ / ١١٢٠ - ١١٨٠م) بمدينة صنعاء، ومعرفة الوحدات الأساسية لها ونوع المواد المنفذة عليها وطرق تنفيذها والبدائيات الأولى لظهورها. ويبلغ عدد المساجد المستهدفة أحد عشر مسجداً أربعة منها (مسجد قبة البكيرية، مسجد قبة طلحة، مسجد الجلاء، مسجد العلمي) شيدت في القرن (١١ / ١١١٠م)، وسبعة أخرى (مسجد الحيمي، مسجد نصير، مسجد قبة المهدي عباس، مسجد التقوى، مسجد النور، مسجد معمر، مسجد الرضوان، مسجد فايع) شيدت في القرن (١٢ / ١١٨٠م).

- (٢٢) سيف، المرجع نفسه، ص ١٧٠.
- (23) Geohman, opcit, p 160.
- (٢٤) الكوماني، مرجع سابق، ص ٢١٠.
- (٢٥) رزق، مرجع سابق، ص ٣٣.
- (26) Where we find in both domes Ashrafieh school and a mosque in Taiz apostolic Muzaffar, the school Mansuriyah in cheese, a school Radaa Tahirid and implemented a color, المرجع سابق، ص ٢٣٩.
- (27) We find in both Imad al-Din mosque and ama Shams al-Din, a mosque, a prince, and the shrine of Imam Yahya bin Hamza, and Zain soles those Alboukarriet floral motifs and geometric and written, الكوماني، المرجع نفسه، ص ٢٣٩.
- (٢٨) الغزي: عبد العزيز بن سعود، **زخرفة المثلثات المتقابلة الملونة على الأواني الفخارية في عصور ما قبل الإسلام ودلالاتها الرمزية**، قسم الآثار، كلية السياحة والآثار، جامعة الملك سعود، الرياض، ١٤٣١هـ / ٢٠١٠م، ص ٦٧.
- (29) الغزي، المرجع نفسه، ص ٢٤.
- (30) الغزي، مرجع سابق، ص ٦٣.
- (31) Beek. Gus van. Hajar Bin Humeid: Investigations at a pre – Islamic Site in South Arabia. Baltimore: the Johns Hopkins press, 1969.
- (٣٢) الغزي، مرجع سابق، ص ١٧.
- (٣٣) الغزي، المرجع نفسه، ص ١٨.
- (34) Found in ancient Egyptian inscriptions and Hinduism, and Chinese, as in the inscriptions of South America, also found on the seal of the Hebraic dates back to the seventh century BC, and was used in the previous examples as a form decorative and have no substance or significance,
- أبو دية: عدنان أحمد، "القيم الرمزية للنجمة السادسة"، مجلة جامعة القدس المفتوحة للأبحاث والدراسات، العدد الحادي والثلاثون، تشرين الأول، ٢٠١٣، ص ٣٤١.
- (٣٥) أبو دية، مرجع سابق، ص ٣٤٩.
- (٣٦) طالو: محيي الدين، **الفنون الزخرفية (زخارف عبر التاريخ)**، ج٥، دمشق، دار دمشق للطباعة والنشر والتوزيع، ١٩٩٥، ص ٢٧.
- (٣٧) أيضا ويلسون، **الزخارف والرسوم الإسلامية**، ترجمة أمال مريود، دار قابس للطباعة والنشر والتوزيع، بيروت، دن، دون رقم الصفحات.
- (٣٨) أبودية، مرجع سابق، ص ٣٥٠-٣٥١.
- (٣٩) غيلان، مرجع سابق، ص ٩.