

Ornamentation Design of Al- Raba'a Al-Maghribia Manuscript at the Islamic Museum in Jerusalem

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Abstract

Islamic civilization has many archaeologies and manuscripts that have not been revealed yet, or less recognized or studied. Al-Raba'a Al Magibia manuscript is one of those manuscripts, which is available at the Islamic Museum in Jerusalem. In it, the geometry craft of the Islamic civilizations is used in the structure of ornamentation. As in Islamic art, ornamentations is considered the simplified structure for all the visual elements in the Islamic visual heritage.

Ornamentations are found in Manuscripts as well as in architecture. This study aims to introduce and to reveal the beauty of ornamentations found in Al-Raba'a Al- Magiribia. It's objective is to explore the geometrical structure of Islamic ornamentation in Al-Raba'a Magribia,

This paper proposes a theory that ornamentations which are located in the frontispieces of each volume in the manuscript are structured based on one of the four classifications. In order to explore this theory, the study uses the geometrical analysis method based on visual detection usually used for a photographed manuscript or an archeological item. The paper presents the manuscript and its' ornamentations.

Keywords: Al-Raba'a, Frontispiece, Geometry, Manuscript, Ornamentation.

Introduction: Al-Raba'a Al Magribia manuscript

According to Ibrahim al Jarmi (2001), Al-Raba'a refers to the sheets that were written during the era of Abu Bakr as-Siddiq and then passed on to Umar after him. It is also called the square, which in Arabic means *Muraba'a*. This indicates the shape of the folios in the manuscript. That is why the word Al-Rab'a became applied to this Qur'anic manuscript.

The Moroccan Sultan Abu Al-Hasan Ali bin Othman Al-Marini who ruled Morocco between 1297-1351 (Al-Zarkali,2002) excelled in transcribing the Qur'an, as he copied five Qur'anic Raba'a (Muhammad Al-Jarmi,2001) himself. The first Raba'a was dedicated as an endowment for the city of Chellah (Thanoun,2004) and the second is dedicated as an endowment for the Prophet's Mosque in Madinah in the year 740 AH. The third Raba'a was

dedicated as an endowment for the Al-Haram Mosque in Makkah in the year 742 AH, and the fourth Raba'a was dedicated as an endowment for the Al-Aqsa Mosque in the year 745 AH. While he began writing the fifth Raba'a with the drawing of the Ibrahimi Mosque (Hebron), he did not complete it. Then some of it was completed by his two sons, Sultan Abu Al-Anan Faris and after him Sultan Abu Faris Abdul Aziz I. It seems that the sole Raba'a that has survived is the Jerusalemite Raba'a which is preserved in the Islamic Museum in Al-Aqsa Mosque and listed under number: 0152.

Al-Raba'a Al-Magribiya manuscript (MS Quran,0152) which is the subject of this study is currently deposited in the Islamic Museum at Al-Aqsa Mosque, it consists of thirty parts written in Moroccan calligraphy. Moroccan calligraphy is derived from the old Kufic calligraphy, and this writing face was called Al-Qayrawani writing (Al-Kurdi,1939). Moreover, according to Khader Salamah (2022) there are Only 24 volumes remaining from the original Raba'a; five volumes were lost nearly two centuries ago, they are 5,10,16,18,26 and were replaced by newer volumes written by Haj Mubarak bin Abdul Rahman Al-Mashwashi Al-Maliki in 1221AH/1806 AD. His name is also stipulated in the endowment that was written at the end of each page of the replaced volumes, while the last volume, which is the thirty, was stolen from the museum between the years 1349/1350 AH / 1931/1932 AD. It contains the shortest surahs from Surat Amma to Surat An-Nas, which is the last Surahs of the Holy Qur'an. It also contains gilded headers, in addition to the name of the scribe and the decorator of this honorable Raba'a (Salamah,2001). On the last two pages of each Raba', the endowment text appears in seven lines written in gilded Kufic script inside a square with a gilded ornamental frame (Fig.1).



Fig. 1: Endowment of part seven of Al-Raba'a Al-Magribiya (MS Quran, 0152.vol.7, pp.1- 2,2022)
Source: Arafat Amr, Director of the Islamic Museum at Al-Aqsa Mosque,

The seventh volume of this divided Holy Qur'an completed thirty volumes and all of them have been written in the handwriting of Abdullah Ali, the leader of the Muslims in Morocco, and Abi Saeed Othman, also, Abi Youssef Yaqoub bin Abdul Haq, the King of Morocco. He dedicated it as an endowment for the Al-Aqsa Mosque.

There is also an endowment for the Raba'a, which is now preserved in the records of the Sharia court in the city of Jerusalem. It stipulates that the fifteen religious Moroccans committed to the doctrine of Imam Anas bin Malik, to read the honorable Rab'a that he wrote in his handwriting entirely inside the Dome of the Rock, gathered after sunrise every day, whereas at the end of that reading, they pray for the Endowment provider, his parents, and his successors and to all Muslims. It is stipulated that each of the reciters be good Moroccan Maliki and memorizers of the Holy Quran.

Al- Raba'a Al- Magribia manuscript was written by Sultan Abu Al-Hasan Ali bin Othman Al-Marini and is also dedicated to many holy places like the Kabaa, Bait al Haram Mosque and the Al-Aqsa Mosque. Indeed, the ornamentation inside the manuscript has been made carefully and accurately compared to any other decorated manuscript. Therefore, the aim of this paper is to explore the structure of the ornamentations. The concept of geometric ornamentation is recognized in this manuscript and the most important geometric

ornamentation designs employed in Al-Raba'a are clarified along with their meanings of beauty through a visual reading of the designs. The elements of the geometric ornamentations in the manuscript are also classified according to the system of proportions. It establishes the importance of geometry in finding spatial frameworks for artwork, and how to distribute them in the manuscript.

In fact, this manuscript is an actual example of the power of the visual arts to create a common platform among nations. The need is to focus and pay attention to studying the artistic and cultural heritage in and around the Al-Aqsa Mosque for the purposes of documenting and preparing for revival of it due to the security instability of the area. It is noted that the previous studies of this manuscript have dealt with the historical and the visual descriptive aspects.

The objective of this study comes to classify the branches of Islamic art in the Islamic manuscript (Al-Nashar,1997) and sheds light on the tradition of geometry as one of the three basic branches of Islamic art. On the other hand, considering that geometry is the formative basis for all visual elements in Islamic arts, and visual arts in general, it argues that it is also the tool of logic. Everything beautiful is logical, and everything logical is geometry.

Literature review

Despite the importance of Al-Raba'a Al-Magribiya (MS Quran,0152) for the Islamic visual heritage and culture, this manuscript has been studied only once by Samar Bakiratm (2018) and entitled with Al-Raba'a al Magribia, which is preserved in Jerusalem: Historical and Artistic Study. In her research, Samar Bakirat focuses on the study centered around its historical significance, artistic elements, relocation, and preservation within the city of Jerusalem. By delving into the decorative designs of the Raba'a, the research provides a comprehensive visual documentation of the manuscript's initial pages which is the frontispiece from all the sections, as well as the intricate decorative divisions found within its folds.

According to the researcher, the main objective of this study was to raise awareness regarding Qur'anic manuscripts and foster a better understanding of the connection between the Raba'a and the Islamic heritage present in Jerusalem. As a recommendation, Bakiratm (2018) suggests the strengthening of academic research efforts and heritage initiatives specifically directed towards Quranic manuscripts in Jerusalem. Based on the findings, she concludes that Al-Rab'a al Magribia holds immense significance as an Islamic heritage item, symbolizing the cultural and ideological bonds within Jerusalem. Moreover, the research emphasizes the manuscript's exterior design, which presents a wide array of geometrical, botanical, and epigraphic motifs. These motifs serve as a testament to the progression of decorative art in the Maghreb region, while also demonstrating their meticulous attention to intricate details. (Bakiratm,2018).

Al-Raba'a Al-Magribiya has thirty volumes; five volumes are replaced and thus the rest of the volumes have been made carefully by the Sultan himself. It has been articulated with ornamentations. Each volume has a frontispiece *Sir Lawha*, which usually is the first page of the manuscript or any volume of the manuscript and must have an ornamentation designed and made with high skill. The specialty role of geometry in the ornamentation of Islamic manuscript is to study macro and micro relationships in the artistic work in terms of the general framework of the artwork and its various details, whether in terms of design frameworks or geometric ornamentations according to the traditional patterns recognized by the geometric proportions of the case, as mentioned above.

However, Beside the lack study of Al-Raba'a Al-Magribiya, the structure of ornamentation in Islamic manuscript studies have been also limited to two studies. The ornamentations in Islamic manuscripts has been studied first by Jahameh (2018), who has explored ornamentations by using the geometric analysis method. She has found that all the visual graphic elements in Islamic manuscripts are designed based on the square grid or the hexagon grid (Jahameh,2018).

The second study is by Hana Hijazi (2019). She has explored the structure of ornamentation in the Islamic manuscript. The aim of this study has been to shed light on the significance of Geometry in Sultan Oljaito's Qur'an manuscript and its relevance to the broader

context of Islamic arts. By conducting an analytical examination of the manuscript, Hijazi (2019) has aimed to establish the connection between the sciences of form and creation and their interpretation within Islamic artistic expressions, with a particular focus on the art of the Holy Qur'an. She has employed a visual scientific methodology to categorize the different branches of Islamic art based on the priority given to applied design in Islamic manuscripts. Furthermore, it has emphasized the importance of virtuous geometry as one of the fundamental branches of Islamic art, alongside Arabic calligraphy, and gilding (Hijazi,2019).

This paper considers the second research that study the Al-Raba'a Al- Magribia manuscript, and the third study that explores the geometric analysis of ornamentation in Islamic manuscript. The craft of making books in Islamic civilization hides many techniques that need to reveal creativity in the Islamic visual craft.

Theoretical Background of Geometric Analysis

Islamic art contains many visual graphic elements such as illustrations, Arabic calligraphy and ornamentations. The best way to explore these visual elements is using geometric analysis. It provides new information about the structure of these visual elements, and tells us more about the craft of beauty in the Islamic civilizations. For example, geometric analysis has been used in Arabic calligraphy (Jahameh,2023) and in Islamic illustrations (Papadopoulo,1976).

The early recognition of Islamic visual elements in Islamic art is seen in the Islamic ornamentations (Creswell,1924). They are found in Islamic architecture and Islamic manuscripts. Geometric analysis is a favorable method to understand the structure of ornamentations.

Geometric analysis is a method used in many situations based on the intentions of research. For example, Jones (1868) produced the first research in ornamentation. He has explored Moresque, Persian, Turkish and Arabic architecture. He has found two general principal structures for the way that patterns are organized in a grid. Bourgoin (1973) also has suggested two basic types of patterns: one based on a hexagon grid, and the other structured on circles.

Paccard (1980) has studied Islamic craftsmen in Morocco and has documented the process of making Islamic geometric patterns, beginning with the design stages of geometric pattern products. He has discovered that the masters used both the square and rhomboid grids in their designs. The craftsmen of ornamentations had shown that this design process has been used for over a thousand years, the techniques and knowledge being passed down by the craftsmen.

Moreover, Critchlow (1983) who developed a theory relating to Islamic pattern design in general has related the Islamic doctrine to the process of producing patterns. Critchlow had two main insights; first that the circle is fundamental to Islamic design and second, that every Islamic pattern also contains a rectangle of proportionate dimensions. His theory was set on the circle to identify the proportion of the rectangles. According to him, root two and root four rectangles can be detected by dividing the circle into four. Similar to the root three, a rectangle can be obtained by splitting the circle in to six, and finally, a root five rectangle plus, the golden section by dividing the circle to five sections.

Islamic ornamentations have also been studied and explained by Islamic–Arabic philosophers like Abu Al-Wafa Al- Buzjani (940- 998) who introduced the basic shapes of geometrical drawings, to craftsman, like the square and the rectangle. He explains the sequences which are now known as the proportion rectangles. He explains the stages of dividing circles into seven sections, and also to five equal sections. He shows the process to set the hexagon to grid circles. All these geometric explanations still have relevance for Islamic geometric pattern design (Raynaud,2012) as the work of Critchlow and Brogue shows (2013).

Thus, many have studied ornamentations in Islamic manuscripts, like Safaa Jahameh (2018), who has explored ornamentations by using the geometric analysis method. She has found that all the visual graphic elements in Islamic manuscripts are designed based on the square grid or the hexagon grid (Jahameh,2018).

Al-raba'a Al-Magribiah, manuscript is one of the few Quranic manuscripts divided into thirty volumes: each volume has a cover and the first folio: the frontispiece Sir lawha contains a unique ornamentation designed and colored carefully. Thus, the best way to explore the ornamentation of frontispiece is using the geometric analysis method. This method will explain the reasons behind the structure of each design.

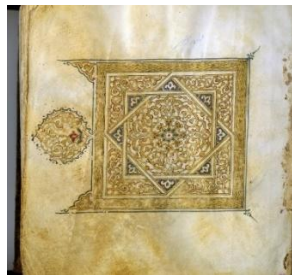
Methodology

This paper proposes a theory that the geometrical structures of ornamentations at the frontispiece Sir Lawha which is the beginning page of each volume in Al-Raba'a Al-Magribiah manuscript share the same geometric structure. There are four main classifications of ornamentations. This study examines a classification of Islamic ornamentations in a previous study by Franz Sales Meyer in 1849. He identified three different classifications. The first type of design had a continuous bar structure. The second ornamentation consisted of an enclosed board structure and the third type of ornamentation could be used on any size and shape of surfaces to reach this main structure. Meanwhile, this study examines the four types of structure used to design the ornamentations inside the Al-Raba'a Al-Magribia, and these structures have been repeated multiple times.

This study uses geometric analysis method based on visual detections, which is usually used for any photographed archologist item. This method is used by Minwer Mhid research, the minbar of Saladin (Singer,2008).

The Case Study

The case studies are selected based on the structure of the repeated ornamentations in the volumes of Al-raba'a Al-Magribia manuscript. The selected case study is presented in the Table.1. This research proposes a theory that four types of structures have been used to design the ornamentations found in the frontispiece of each volume. The size of all the ornamentations is similar, based on the square and the dimensions of both the length and the width are 11.5 cm (Fig.2).



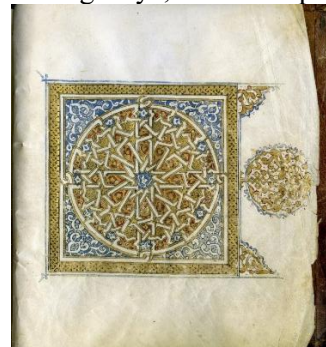
Case 01: it is selected from volume 11 of Al-Raba'a Al-Magribiya, the frontispiece.



Case 02: it is selected from volume 17 Al-Raba'a Al-Magribiya, the frontispiece.



Case 03: it is selected from volume 1 of Al-Raba'a Al-Magribiya, the frontispiece.



Case 04: it is selected from volume 3 of Al-Raba'a Al-Magribiya, the frontispiece.

Table 1: The case studies

Source: Authors.

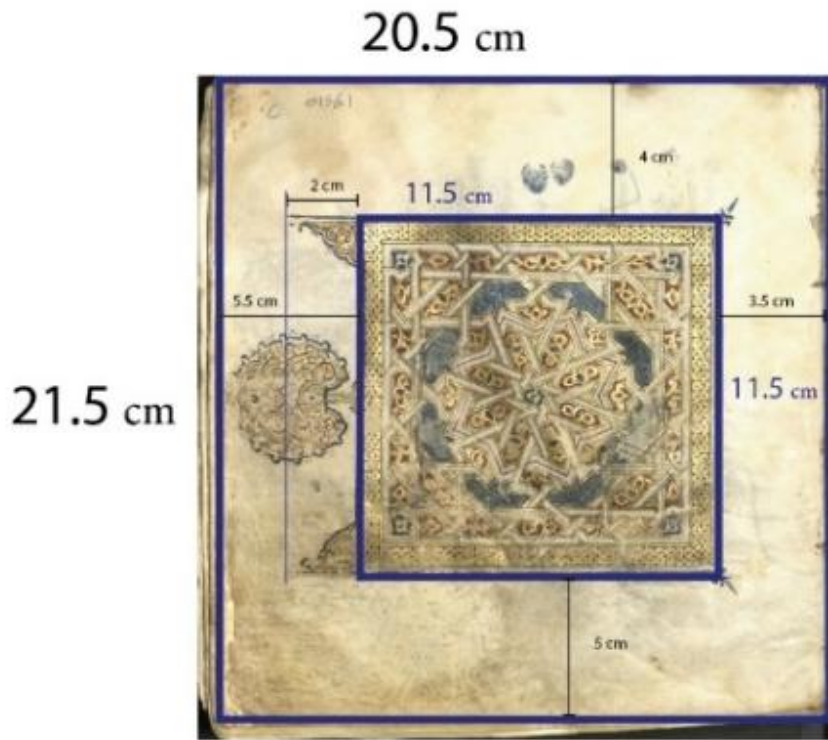


Fig. 2: Measurements of the page and margins in the outset page of Al-Raba'a Al-Magribiya (MS Quran 0152, vol. 1, p. 1,2022).

Source: Photo by Arafat Amr, the Islamic Museum at Al-Aqsa Mosque.

Geometric Analysis of the Ornamentations in Al-Raba'a Al-Magribiya: The Classifications:

1. Simple geometric ornamentations.

Case 01: Volume 11



Fig. 5: Volume 11 of Al-Raba'a Al-Magribiya

Source: Photo by Arafat Amr, Director of the Islamic Museum at Al-Aqsa Mosque, (MS Quran, 0152. vol. 11, p.1, 2022)

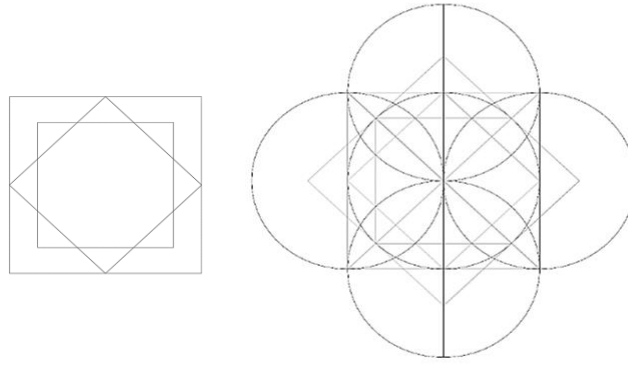


Fig. 6: Geometric Analysis of volume 11

Source: Authors.

Analysis result: Simple geometric ornamentation is derived directly from the repetition of the mother circle on the horizon line and the main axes of the layout. This was specifically in the outskirts of the eleventh, twenty-one and twenty-five volumes. This classification is found in the first case study (Fig. 6).

2. Intermediate geometric ornamentations.

Case 02: Volume 17



Fig. 7: Volume 17 Al-Raba'a Al-Magribiya,

Source: Photo by Arafat Amr, Director of the Islamic Museum at Al-Aqsa Mosque (MS Quran, 0152.vol:17, p. 1,2022).

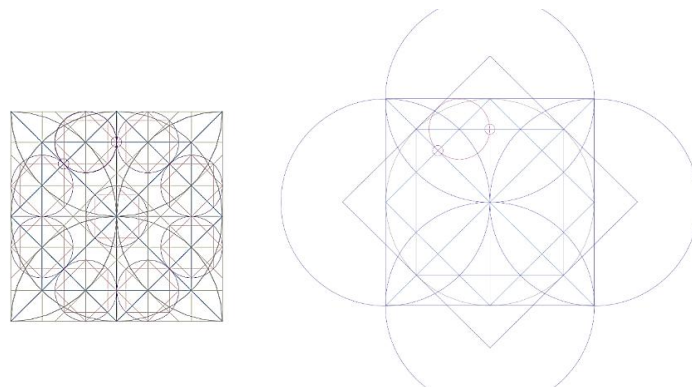


Fig. 8: Geometric Analysis of Volume 17

Source: Authors.

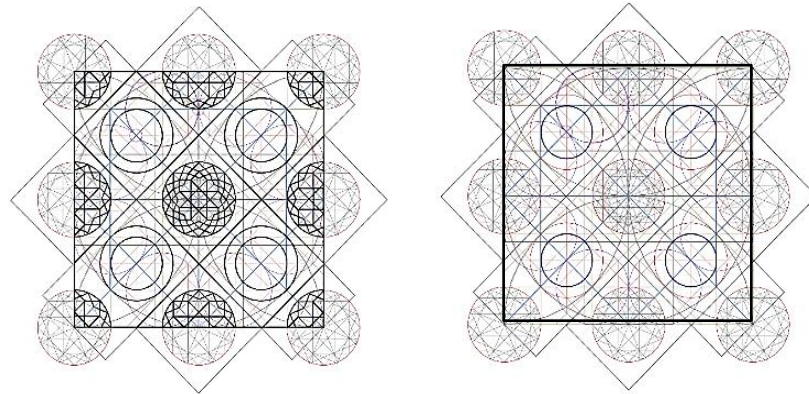


Fig. 9: Geometric Analysis of Volume 17
Source: Authors.

Analysis result: Intermediate geometric ornamentation is elicited by repeating the mother circle and the other circles of which the radii are taken from the data of the mother pattern. It is noticed that in the Raba'a of the Marinite sultan, there are more than five outlets with direct geometric ornamentations, either in a circular shape in the middle of the Raba'a, or in the direct indentations of the square shape, especially in the outlets of the volumes four, six, seven, eight, thirteen, fifteen, seventeen, nineteen, and twenty-two. The second classification is found in Figs 8 and 9.

3. Semi-complex geometric ornamentations.

Case 03: Volume 01



Fig. 10: Volume 1 of Al-Raba'a Al-Magribiya
Source: Photo by Arafat Amr, Director of the Islamic Museum at Al-Aqsa Mosque.
(MS Quran, 0152.vol: 1, p. 1, 2022).

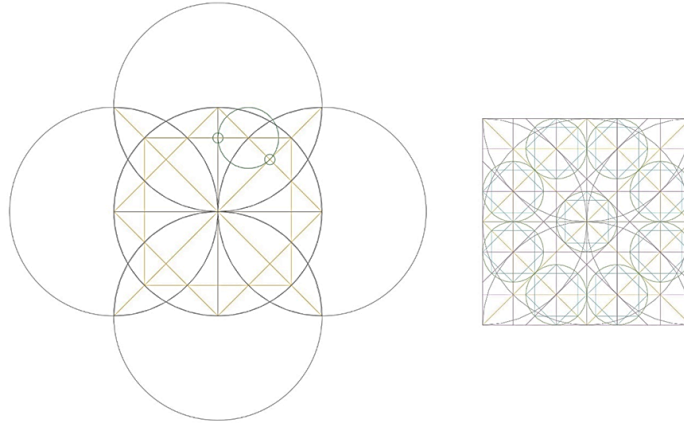


Fig. 11: Geometric Analysis of volume 1
Source: Authors.

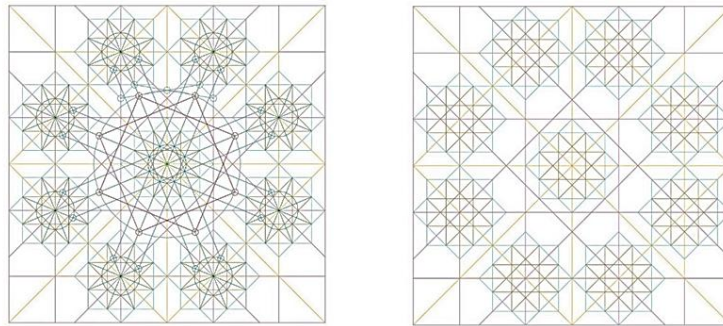


Fig. 12: Geometric Analysis of volume 1
Source: Authors.

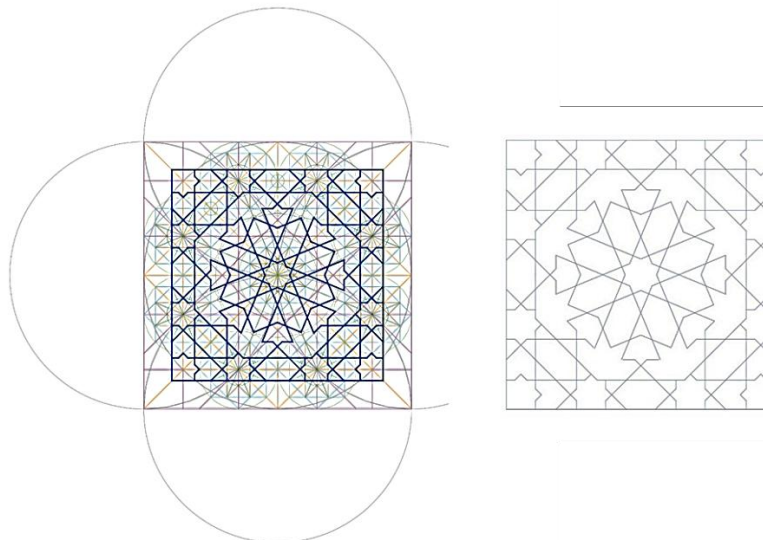


Fig. 13: Geometric Analysis of volume 1
Source: Authors.

Analysis result: Semi-complex geometric ornamentation is the one that is deduced by the method of repeating the mother circle and the other circles called key circles, of which the radii are taken from the data of the mother pattern, to be used in determining the necessary data in the pattern circles. These are the circles through which the geometric pattern is shown. The

semi-composite geometric networks are considered as mother networks; in the sense that more than one pattern is derived from the same shape, and this was specifically in the outskirts of the volumes first, second, ninth, twelfth, twentieth, twenty-fourth, twenty-seventh, and twenty-ninth. The third classifications are found in the Figs 11, 12 and 13.

4. Complex geometric ornamentations.

Case 04: Volume 03

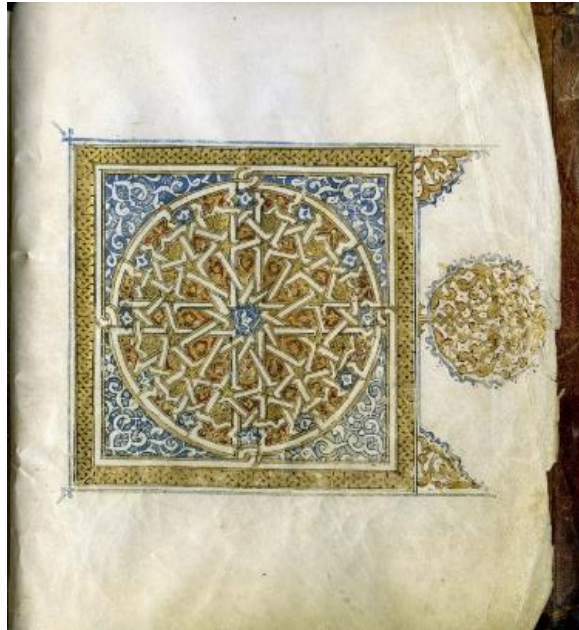


Fig. 14: Volume 3 of Al-Raba'a Al-Magribiya

Source: Photo by Arafat Amr, Director of the Islamic Museum at Al-Aqsa Mosque, (MS Quran, 0152. vol. 3, p 1, 2022).

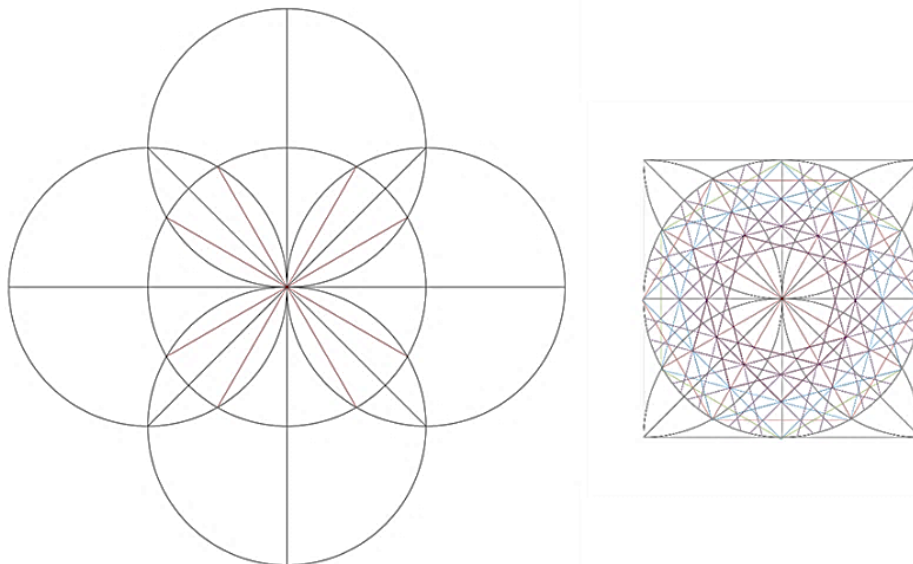


Fig. 15: Geometric Analysis of volume 3

Source: Authors.

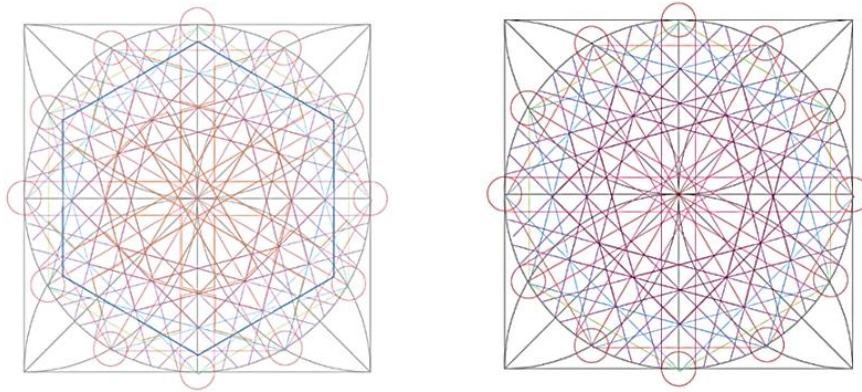


Fig. 16: Geometric Analysis of volume 3

Source: Author.

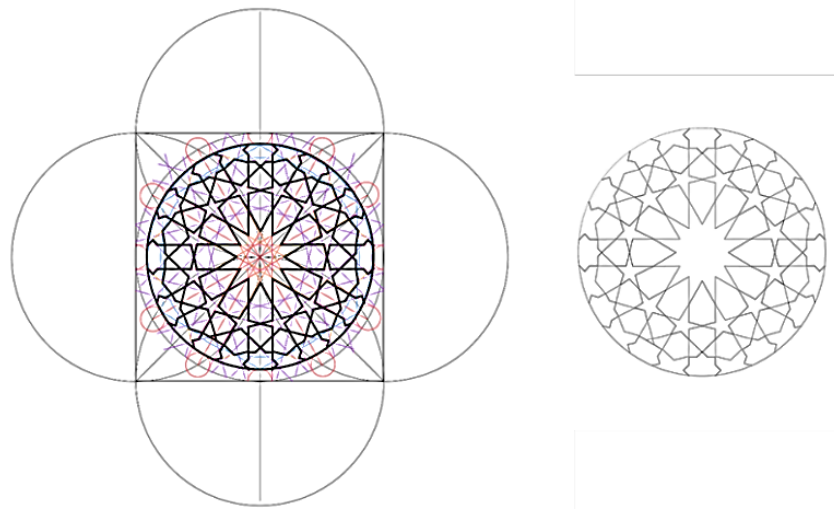


Fig. 17: Geometric Analysis of volume 3

Source: Authors.

Analysis result: Complex geometric ornamentalations and complex geometric motifs are the ornamentalations that are deduced by the method of repeating the mother circle and the other circles called key circles, of which the radii are taken from the data of the mother pattern, to be used in determining the necessary data in the pattern circles. These are the circles through which the geometric pattern is shown, and often there is more than one radius through which the final shape of the pattern was elicited and shown. That was in limited cases in the Raba'a under study, which may be summed up by the outlets of the volumes third, fourteenth, twenty-third, and the twenty-eighth. The fourth classification is found in the (Fig.17).

Discussions

There are three main discussions as a result of the geometric analysis of the ornamentalations in Al-Rab'a Al-Magribia. They are as follows.

1. The classification of ornamentalations has led to the process of geometric analysis that is different in each ornamentalation. The analysis is aimed to detect the details of the structure of the ornamentalations and to know if the ornamentalations share the main structure or not. As a result of the analysis, each ornamentalation is structured on a square, and the last step of analysis

ended and led towards the classified ornamentation. However, the finding is that these structures have been repeated in the other volumes.

2. The theory finds many reasons behind the similarity of the main structure on each analyzed ornamentation which is a square.

- A) The sultan wrote five Quranic manuscripts to be devoted in the holy Islamic places, and the architecture of the holy places are mainly structured on a square. This shape is linked to meanings that are visible to the Muslims, as the Kaaba is based on a square in the middle of rotating rings for the Muslims from all over the world to gather around it, whether in the movement of circumambulation during Hajj and Umrah or heading towards it when praying from any place on earth. Similar other holy architecture is the dome of the rock in Jerusalem. As for the presence of this shape in Nature, it is found that it is often associated with the octagonal shape, from which the same geometric derivation arises. Thus, it is natural to see it in visual unity in Nature.
- B) The octagonal shape is one of the common geometric shapes in Islamic decoration. The first Islamic building of the octagonal shape was the Dome of the Rock. The octagonal shape carries many meanings and symbols, whereas in Islamic art, it symbolizes the bearers of the Throne of the Most Merciful, as in the Almighty's verse: ﴿وَيَحْمِلُ عَرْشَ رَبِّكَ فَوْقَهُمْ يَوْمَئِذٍ تَمَائِيَةً﴾. Both Critchlow and Marchant, (1997) have presented the symbolism of the octagon as a traditional picture of the directions: North, South, East and the West, and the four elements: earth, air, fire, water, and physical factors: heat, cold, moisture and drought.
- C) The square shape is a favorable structure for Al- Marini Sultan, who used the square structure in his palaces and the mosques and the schools as well, built during his ruling in Morocco.
- D) When thinking about the fourness, the structure of square, and their presence in our lives, we find them in the directions: North - South - East and West, in the Four Seasons: Spring - Summer - Autumn and Winter, and in the Four Substances: Water - Fire - Air and Earth. By contemplating the relationship of these quatrains with the symbol attributed to the square, we find that there is a basic cosmic link, whereas the quatrains previously mentioned are the components of material existence (Banani,1974).
- E) The theory of the four humors is that the human body is filled with four basic substances, called temperaments, which when they are in equilibrium; the person is in good health. All illnesses and disabilities are assumed to result from an excess or deficiency in one or more of these four temperaments: yellow, black, phlegm, and blood. The Greeks and Romans were the first to pay attention to the body humors, and then Muslims took care of them, and later in the European medical schools-which focused on body humors-relied on the classical medical philosophy. It is believed that each of these temperaments suffers from the ebb and flow in the body, depending on the food and activity system.

Conclusions

Beside introducing AL-Raba'a Al-Magribia manuscript as Islamic valuable heritage, this study took the opportunity to explore the visual element of Islamic culture. The aim of the study is to examine the geometrical structure of the ornamentations. The examinations were based on a theory that the ornamentations in the rontispiece of the Al-Raba'a Al-Magribiah's volumes share the same geometrical structures, confirmed by the geometrical analysis. Four structures are detected geometrically, and each structure is found multiple times on other volume's frontispiece of this manuscript.

Finding a repetitive structure in different volumes of the same manuscript is not a coincidence, but it is a result of many suggestions that discussed the theory. For example, the reason behind this geometrical structure is related to the dedication of this manuscript to a holy

places. Another reason behind the structure is related to the natural environment of creations, or these structures is a result of the craftsman's artistic environment, which is Morocco in this case.

However, similar conclusions of the repetitive structures in Islamic manuscript were found in other studies, but with different geometrical analysis methods, such as in the studies of Safaa Jahameh (2018). These studies support this theory and its results.

Finally, it is proposed that there are specific structures that are repeated in Islamic ornamentation and in the Islamic manuscripts. That raises questions of beauty in Islamic civilizations that need to be answered. It is necessary to reveal more about the understanding of beauty as conceptualized in the Islamic civilization and the craft of ornamentation design.

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