

Comparative study of bordering and girih in the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini Shirazi

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Abstract: Book designing is one of the original and important Iranian arts and the art of bordering and girih is one of the important branches of book designing that artists in the field of book designing have used special techniques and principles in these arts. The two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini and Shirazi are among the important manuscripts that have a very beautiful and interesting border drawing and girih. The research questions are: ١- What are the qualities and characteristics of bordering and girih in the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini? ٢- What are the commonalities and differences in the bordering and girih of the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini Shirazi? The purpose of this study is to identify the characteristics of bordering and girih in the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini Shirazi and also to identify the commonalities and differences in bordering and girih of the two Codex. In this research, a descriptive-analytical method with a comparative approach has been used. For data collection, a combined library-field method is used and data collection tools include identification, imaging and viewing of works. The research samples include ٧ samples from a total of two versions, including the first, final and middle pages, which have been chosen selectively and purposefully and have been analyzed and adapted qualitatively through deductive and inductive reasoning. The results show that the pages of Mir Abdul Qader Hosseini Shirazi Codex have more delicate and complex border designing, motifs, and more color variety and are more influenced by the book designing of Timuri period with more complexities rather than the Osman bin Waraq Ghaznavi Codex.

Keywords: Bordering, Girih, Osman bin Waraq Ghaznavi, Mir Abdul Qader Hosseini Shirazi and Quran.

I: INTRODUCTION AND THE PROBLEM STATEMENT

The Quran is the word of divine revelation and the holy book of Muslims for all ages. The special attention of Muslims to the Holy Quran has led to the change and transformation of the book designing in the book of revelation, these changes can be clearly seen in the fields of calligraphy, the art of illustration and etc. In addition to calligraphy, the scribes of the Quran also contributed to the arrangement of the components and elements of the papers, and in this way, they also practiced the foundations of contemporary page layout. Book designing has been more or less common in all cultures that have had religious texts; which was itself a way of propagating religion. In the religion of Islam, the tradition of designing of the Quran has been gradually and periodically got popular and completed. In Iran, one of the traditional arts is bordering and girih. Artists use geometric patterns to design girihs, and order in performing this art is the first thing that attracts the viewer's attention. Among the unique examples in the Islamic period, the ۱۰۶ bordered Quran, known as the Codex of Mir Abdul Qader Hosseini Shirazi, and the ۳۰۰۳ bordered Quran, known as the Codex of Osman bin Waraq of Ghaznavi, are in the Astan Quds Razavi Museum, which date back to the ۱۰th and ۱۰th AH centuries. These two versions are valuable and significant works of Islamic art in terms of visual and content features.

This study has been done to identify the characteristics of bordering and girih in the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini Shirazi and also to identify the commonalities and differences in the bordering and girih of the two Codex. Therefore, the present study is to answer these questions: ۱- What are the qualities and characteristics of bordering and girih in the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini? ۲- What are the commonalities and differences in the bordering and girih of the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini Shirazi?

In order to answer the research questions, in the first step, the book designing and illustration in Iran, and then the definition of bordering and its history are discussed, then the two Codex of the research are introduced and bordering is analyzed. Finally, the desired analysis is presented in the form of table.

II: RESEACH BACKGROUND

In the history of Iranian art in the Islamic period, the traditional term has been used to describe the art of Iranian book designing. And the book designing is considered as a set of various actions in the field of form and content, which includes bordering, calligraphy, color, designing and page layout. (Rahnavard, ۲۰۰۷).

Book designing has been analyzed in various works. Some works have been classified books and they have tried to study and analyze the process of designing and its changes, such as an article by Soraya Ghaffarpour that examines the process of illustration and the amount of changes in the use of gold in the Quran during the Islamic centuries (Ghaffarpour, ۲۰۱۶). Zahra Khansalar deals with folk illustrations and book designing in the Qajar period and in the meantime tries to study and analyze the relationship between bordered texts and images of books (Khansalar, ۲۰۰۵).

Addressing the method of stratification and page layout in bordered Qurans and the actions that scribes have taken to diversify the lines in the pages (Sahragard et al. ۲۰۱۲) Addressing bordered documents and the evolution of the forms of bordered calendars in the Islamic period are among the subjects which have been dealt with in this field (Abeddoost et al., ۲۰۱۴).

In addition to page layout, bordering in book designing, its methods, girih in bordering and its types in different historical periods have been researched in an article entitled bordering in book designing in ۲۰۱۴ and general and historical information has been provided about it (Rajabi ۲۰۱۴). In addition to this general history, in another study, the borders of Golchin Eskandari's book belonging to the Lisbon Portugal Golbenkian Foundation have been studied and analyzed and some of its visual features and characteristics have been described (Ahmadpanah et al., ۲۰۱۶).

Regarding girih, a case study has categorized the girihs used in the buildings of Masouleh (Poullamar, ۲۰۱۳) and has also examined the factors affecting the designing of these buildings.

In fact, it can be said that all the researches have been done on the generality, what it is and general definition of girih borders or even some case analyzes that make it possible to study and research on the leading works.

III: RESEARCH METHODS

In this research, a descriptive-analytical method with a comparative approach has been used. For data collection, a combined library-field method is used and data collection tools include identification, imaging and viewing of works. The research samples include ۷ samples from a total of two versions, including the first, final and middle pages, which have been chosen selectively and purposefully and have been analyzed and adapted qualitatively through deductive and inductive reasoning.

IV: BOOK DESIGNING AND ILLUSTRATION IN IRAN

Iranian book designing has a long history and the origins of this art can be traced to the pre-Islamic period and Manichaean works. (Farrokhfar, ۲۰۱۷: ۳۸) In Islamic civilization, the book designing has a direct relationship with the religion of Islam and has been formed in connection with the Quran. The book designing includes four bases of calligraphy, illustration, imitation and image and the first three of them have been formed directly in connection with the Holy Quran (Sarikhani, Hashemi Zarjaabad and Tavousi, ۲۰۱۴: ۷). After the advent of Islam, one of the branches of abstract- designed art is illustration, which has been considered for designing manuscripts, especially Quranic manuscripts.

Rhythm, balance, symmetry, repetition, entanglement, coordination of forms and staticity on the page are some of the characteristics of this art. (Ghafourifar and Shamili, ۲۰۱۷: ۳۰) At the beginning of the Islamic era, this art was mostly used to design and adorn the Quranic manuscripts. (Sarikhani, Hashemi Zarjabad and Tavousi, ۲۰۱۴: ۷) But illustration is the term used to beautify and design the means of living and from the past until now, human beings have paid attention to it and have constantly tried throughout history to reach perfection in such a way that this art has been influential in all aspects of life.

(Mojarad Takestani, ۲۰۱۶: ۶) Zaki believes that in illustration of the Quran, first, in order to determine the beginning of surahs, chapters, and the place of prostration, and ... after completing the line, the dots on the letters and the signs at the end of the verses, they wrote gold and it has evolved in later periods. (Zaki, ۱۹۸۴: ۷۰) It should be mentioned that illustration in the Quran was mostly used in the cover, identity card, the name of God page, list page and parts of Hamd Surah and was used in the margins in the rest of the pages and has never been an independent art and used to design lines as a complement of the work. (Sarikhani, Hashemi Zarjaabad and Tavousi, ۲۰۱۴: ۱۱).

Other important components that are important in book designing and are very important beside the illustration art are bordering and girih, which are described below.

V: DEFINITION OF BORDERING AND ITS HISTORY

The bordering of books and manuscripts dates back to the Abbasi period (Rajabi, ۲۰۱۴: ۲۲) and it has been done for more elegance and accuracy. Border literally means water stream, and in traditional orthographic terms, it is said to lines which are drawn on all four sides of the page, so that the outcomes of these lines intersect and are generally the boundary between the text and the margins of the page." (Mayel Heravi, ۲۰۰۰: ۳۲) Borders are parallel lines that are drawn around the work and the purpose of using the border is to determine and create space for the image, and in fact, the framing and bordering of the work leads viewer's eye to the text of the work. (Rajabi, ۲۰۱۴).

Around the illustrated or patterned pages, there are lines that are called borders and come in many forms. (Mojarad Takestani, ۲۰۰۹: ۲۷) In the book of words and terms of the bookmaking art, it is also stated: The border is the lines that are drawn around the bordered pages. (Takestani, ۱۹۹۳: ۶۹)

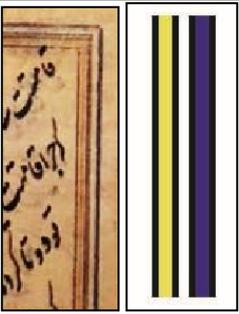
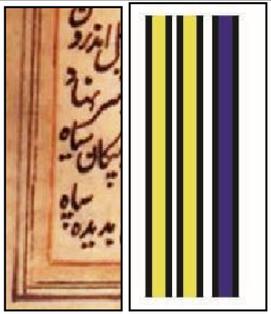
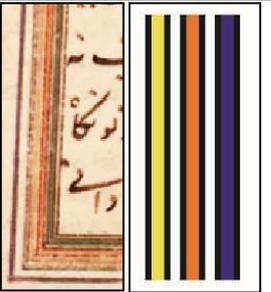
Regarding the history of bordering, it should be noted that the first borders around the Quranic texts were drawn in simple parallel lines and only in gold color. Around the third century, the borders were drawn in the form of a few simple specific lines to the Surah inscription, reminiscent of the Coptic^۱ style. In the fourth and fifth centuries, inscriptions and framings were created and the place and importance of bordering in the art of book designing were considered. In the Seljuk period, drawing borders using geometric patterns became common, and in the

^۱ Coptic art is a term used to describe works of art made in Egypt from the ۳rd to the ۷th century AD, which is a combination of indigenous Egyptian and Hellenistic art Designing the edges of the paper in a frame around the paper is one of the features of this art. (Rajabi, ۲۰۱۴: ۲۳).

patriarchal and Timurid periods, Khataei and Arabesque motifs were added, and bordering evolved. (Rajabi, ۲۰۱۴: ۲۳).

Drawing borders has certain principles and orders. In the past, it was dyed after making paper. Generally, the surface of the made paper was not very smooth and in order to eliminate these ruggedness and to polish the paper and increase the strength and durability of the paper, it was scraped with materials such as starch and mallow. After the beads were dried, the paper was pulled on flat bead boards to be polished and the beads penetrated the paper core. (Rajabi, ۲۰۱۴: ۲۴) After preparing the paper and performing the above steps, the paper was lined and paginated. "Drawing on paper defines the framework of the text and allows the writer and scribe to write regularly and draw lines in parallel. The size of this line drawing depends on the size of the book itself." (Daroush, ۲۰۰۱: ۱۷۹) Then the page layout or the place of calligraphy is done in illustration and images. First the borders are designed and thus the exact location of the lines is determined and prepared for coloring. At the beginning and end of the range of borders, thicknesses of one millimeter are used, and between them, thicknesses of two, three, four millimeters or higher are used, and the distance between two large thicknesses is separated by a border of one millimeter to be separated from each other. After determining the location of the lines, the borders on both sides of them are bordered in black. (Rajabi, ۲۰۱۴: ۲۵-۲۶) In the words of Mayel Heravi, "bordering in the custom of the manuscript is called a very thin line, usually in black and rarely in other colors, around the golden and colorful borders or around the lines that are bordered by Colorful ink, or drawn on the sides of figures and maps, to make the text of the border or words and lines better." (Mayel Heravi, ۱۹۹۳: ۵۹۲) bordering or engraving is done with a tool called trailing and in black. Trailing is a French word and has been used by artists since the Safavi period and is used in drawing borders to draw straight lines and color between them. It should be noted that in millimeter borders, a motif is usually not drawn and the borders are filled only with color. Patterns and designs are placed in thicknesses of two millimeters and above, more designed line and dot elements are used, and the thicker the borders, the more prolific and complex the motifs are. After painting the background, the designs and designed elements are painted on the body of the border with a brush. (Rajabi, ۲۰۱۴: ۲۵) and thus borders were designed in versions. It is worth mentioning that different types of borders are designed by artists, which are discussed in Table (۱).

Table (1), The way of drawing the most common types of layout border. Source: (Authors)

Chain	Treble border	Double border	Rope border
 <p>Taken from the version of Mir Abdul Qader Shirazi. Source: (Sabetnia, ۲۰۱۴: ۵۸)</p>	 <p>Source: (Authors)</p>	 <p>Source: (Authors)</p>	 <p>Source: (Authors)</p>
<ol style="list-style-type: none"> ۱. Drawing several wide lines ۲. Drawing chain-like rings at certain distances ۳. Providing a chain-like string on each side of the border (girihi) (Mayel Heravi, ۱۹۷۴: ۶۹-۶۸) 	<ol style="list-style-type: none"> ۱. Drawing the first line ۲. being the border in gold ۳. Drawing two lines on either sides of the line ۴. drawing an small line ۵. designing the outer side of the line with the third line (Mayel Heravi, ۱۹۷۴: ۶۹-۶۸) 	<ol style="list-style-type: none"> ۱. Drawing two prominent parallel and equal lines ۲. Drawing the nut on lines ۳. Enclose two lines of gold with two lines of bordering in black ۴. Drawing the small line around it (Mayel Heravi, ۱۹۷۴: ۶۹-۶۸) 	<ol style="list-style-type: none"> ۱. Drawing a narrow line ۲. Drawing a larger line behind a narrow line ۳. Putting the nut on the line ۴. Bordering (black) on each side of the large line but very narrow ۵. small on the border (Mayel Heravi, ۱۹۷۴: ۶۹-۶۸)

VI: DEFINITION OF GIRIH AND ITS HISTORY

Girih in Iran is called to geometric designed patterns and "is usually a combination of parts and polygonal pieces that are placed in a harmonious combination with each other (Hasanpour Lamar ۲۰۱۶: ۲۶).

A girih is an integrated combination of a variety of geometric patterns that are coordinated and complemented within a specific framework. (Anbari Yazdi, ۲۰۱۳: ۴۱) Another definition states that "girihs are various textures of regular geometric shapes, complex textures that all have a regular and homogeneous composition and can be extended from all sides without changing their harmonious composition." (Sharif, Habibi, Jamalabadi, ۲۰۱۶: ۶۱) the girih is used on the sides of the illustration instead of the border, which is an interconnected chain design. Sometimes, the junction of different parts of a design is also called a girih (Mojarad Takestani, ۲۰۰۹: ۲۷).

The background and peak of the tradition of girih -making dates back to the period of the Turks and especially the Seljuks; Due to the Seljuks' access to the lands of Eastern Rome, they were called Roman Seljuks, and the girih later became known as "Bandrum" or Roman girih. In Iranian art, observing the principles and rules of geometry was like a bridge between the material world and the world of meaning. The colorful geometric shapes and the appropriate texture of the girih could have a tasteful effect on the viewers. In the girih, which is full of the motifs of stars, a kind of celestialism is evident, and this also arises from the strong tendencies of Islamic art and architecture. (Shadqazvini, ۲۰۱۴: ۵۸) From the seventh century AH, in Iranian painting, the most beautiful girihs or Roman girihs can be seen in the illustration of manuscripts, especially in the title of their single and double sheets. In the title of the Qurans and literary and scientific versions of the seventh to eleventh centuries AH, examples of girih, the seventh principle has been assigned to the seven designed principles of Iran; and the illustrators have drawn them with the most beautiful designed style and created attractive and beautiful

combinations of them. In addition to book designing, girih has been used in other art media as well, such as architecture, bedding, tiling, pottery and metalware, carving, textile weaving, carpet weaving, and other industrial arts, and today it is one of the most important designed elements of various arts. (Shadghazvini, ۲۰۱۴: ۵۸) Considering the importance and important place that girih and bordering has had in the book of Iran; In this research, these two cases have been studied in two Codex of the ۱۰۶ bordered Quran known as the Codex of Mir Abdul Qader Hosseini Shirazi and ۳۰۵۳ known as the Codex of Osman bin Waraq Ghaznavi in the Astan Quds Razavi Museum. In the following, two versions will be introduced.

VII: CODEX NO. ۱۰۶ IN MIR ABDUL QADER HOSSEINI SHIRAZI SCRIPT

One of the Quranic Codex in the Astan Quds Razavi Museum is Codex No. ۱۰۶ bordered by Mir Abdul Qader Hosseini Shirazi, a calligrapher of the late tenth and early eleventh centuries AH. Among the features of the pages of this Quran we can notice the first page of two inscriptions and the illustrated bergamot, the next two pages for bordering Hamd Surah, the margins of the gemmed illustrated border and the golden and smalt bergamots and pages five and six of the beginning of Al-Baqarah Surah with the headline of the supreme gemmed border, the illustrated inscription on the head of Surah and the forehead adorned with the bordering pigeon wing bergamot. For this Codex, the golden basil line is used as a line between the canvas of gold and smalt in twelve-line pages. The gold and white pen has been used for the first pages of each component and the Reqa line (Arabic calligraphy) has also been used for the illustrated and gemmed border headlines and the names of the surahs. The pages of the prayer for the end of the Quran and the fortune-telling of all the illustrations are bordered in the Nastaliq script (Persian calligraphy) at the end of the Quran. The scribe has used star golden circles in the distances of the verses. The method of performing the cover of the mentioned Codex is hard and multiplicative, and the inscription containing the verse of Al-Kursi is written on it with a prominent golden sol's line, and a bergamot has been added in the middle of it. The golden multiplicative black cup with the bergamot and the margins of Arabesque inscriptions and motifs are also drawn on the cover. This exquisite Codex was dedicated to Astan Quds Razavi in ۹۷۰ AH by Sultan Ibrahim Qutbshah, King of Golkandeh. (Sabetunia, ۲۰۱۴: ۵۲).

VIII: CODEX NO. ۳۰۵۳ IN THE SCRIPT OF OSMAN BIN WARAG GAZNAVI

One of the calligraphers and illustrators of the ۱۰th century AH was "Abu Othman bin Hussein bin Abu Sahl Waraq Ghaznavi" who was contemporary with Alb Arsalan and the Seljuk emperor and wrote and illustrated the Quran in ۴۶۶ AH in the Iranian (old) Kufic script. This Codex has been ordered by "Sheikh Al-Ra'is Al-Sayyid Abu Ja'far Muhammad bin Ahmad Abdusi" and his name is mentioned in two four-line pages bordered in the calligraphy of Reqa and gold at the beginning of part ۳۸. It is designed with a girih and a golden bergamot attached to the surrounding. The time they spent bordering and illustration this Quran was five years, but the remarkable point in this Codex is that the date of bordering each part is not in order to the Quranic parts, respectively, so that parts ۴, ۵ and ۳۰ were bordered and illustrated in ۴۶۴ AH and Parts ۱, ۲۲, ۲۸ and ۳۵ in ۴۶۶ AH. Among other features of this Quran, it can be said that the thirty parts, in addition to the same calligraphy and the material of the paper and cover, have different illustration with each other. For example, the motif of two bergamots or two headings are not the same, which shows the taste and creativity of illustration artists in that period. The thirtieth part of this piece is the most prolific part of this Codex, which includes two titles, ۳۶ surahs, ۴۰ bergamots and two pages of all illustrations. It is also important to note that there is not even a single repetition in its implementation. The Quran has ۲۱۳۱ pages. (Sabunia, ۲۰۱۲: ۸۶-۸۵).

There are two pages of all illustrations with the design of the golden inscription at the beginning of this Qur'an. These inscriptions are illustrated with Arabesque motifs and embroidered motifs, all of which are done with a gold pen. In the middle of these inscriptions, the titles of the surahs are written in bold with a bordered gold pen. The borders around the golden text are designed with different girihs that have fine and coherent patterns and details, and lead to a large and illustrated bergamot in the margin. The symbols in the text are also made of gold and the background of the pages of the text is made of spiral circles, and some of the pages of the girih borders are made of gold and silver, which are attached to the illustration and colorful bergamot in the margins. (Ghaffarpuri, ۲۰۱۷: ۱۳).

IX: BORDING IN THE TWO CODEX OF OSMAN BIN WARAQ GHAZNAVI AND MIR ABDUL QADER HOSSEINI SHIRAZI

According to the mentioned contents of the characteristics and features of the two Codex presented in Table (۲), the types of borders drawn by the artists in the two Codex of Osman bin Waraq Ghaznavi and Mir Abdul Qader Hosseini Shirazi; has been studied.

According to the information presented in Table (۲), regarding figures ۱, ۲ and ۳ which belong to Quran ۱۰۶, known as the Codex of Mir Abdul Qader Hosseini Shirazi, it should be said that in all three cases, there are rope border (Davaleh)*^۲, double border and treble border and the chain border is seen in Figures ۱ and ۲ but no in case ۳. In general, the complexity of the borders in the Codex of Osman bin Waraq Ghaznavi is more than the Codex of Mir Abdul Qader Hosseini Shirazi. In figures ۴, ۵ and ۶, which is known as Quran ۳۰۵۳ and the Codex of Osman bin Waraq Ghaznavi; the rope border is drawn and the chain border is shown in Figures (۱) and (۲). While there are no text and borders in any of the three pages of this version.

X: COMPARISON OF THE TWO CODEX OF OSMAN BIN WARAQ GHAZVINI AND MIR ABDUL QADER HOSSEINI SHIRAZI

For a more accurate comparison of the examples in Table (۲), the characteristics of the two Codex are analyzed as well as their comparison with each other:

Observations and studies show that in the Safavi period, bordering and girih were at the peak of art, and the high number of borders and the complexity of bordering can be seen in the Codex version No. ۱۰۶. In this work, four types of borders are evident, which have the greatest variety of colors, and the girih is drawn in the most regular way, with line and dot designing.

It can also be said about the Codex No. ۳۰۵۳ that in the Seljuk period, which is the beginning of the geometry of patterns and its application in book designing; girih has a basic structure and does not follow a specific order. The delicacies in this version are less than the Safavi period, and also in this work, a colorful border can be seen. In general, observations and studies show that in the Safavi period, bordering and girih were at the peak of art, and a high number of borders and the complexity of bordering can be seen in this version. On the first page of Codex ۱۰۶, there are four types of borders that have the greatest variety of colors, and the girih is drawn in the most regular way and designed with lines and dots.

As in the Seljuk period, which is the beginning of the geometry of patterns and its application in book designing; girih has a basic structure and does not follow a specific order. The delicacies in this are less than the Safavi period in the first page of the Codex No. ۳۰۵۳, and also in this work a colorful border can be seen. In a total comparison done in the opening page of the Codex ۱۰۶, the delicacies of the designed motifs and the variety in the bordering and color combinations are more than in the beginning page of the Codex ۳۰۵۳. The predominant color is also blue in sample ۱۰۶, while blue is not used in sample ۳۰۵۳. In the middle page of Codex ۱۰۶, you can see all types of borders, not just the chain or girih.

It is worth noting that the color borders include gold, smalt, verdigris, red lead and vermilion. While in the middle page of the Quran ۳۰۵۳, the girih are irregular and only one type of border is seen, which includes the rope border. During this period, the wall of the border was attached to the symbol, which was made of smalt. Comparing these two Codex, it should be noted that in the middle page of the Codex, ۱۰۶ smaller lines and Khataei designed motifs and a smaller and more delicate border can be seen, while in the middle page of the Codex, ۳۰۵۳ larger lines in larger borders can be seen.

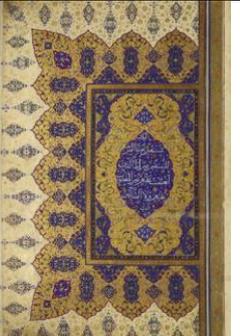
In the review of the final pages, color borders have been drawn in Codex ۱۰۶, which includes the color borders of smalt, verdigris, vermilion, red lead and gold, the chain border of which has two methods of "+_." and "_.".

In contrast, in Codex ۳۰۵۳, there is a calligraphy that is drawn without color and with a single golden line, which is designed with two black borders and there is an address that is drawn only around the smalt pattern. In comparison, what is clear is that the final page of Codex ۱۰۶ has more designs and more color variation with the

^۲ Davaleh: Rope border is called Davaleh in Persian language and visual culture.

predominant color of gold and smalt, while the final image of Codex ۳۰۵۳ has less designed elegance. Also, the lines used in Codex ۱۰۶ are smaller and its borders has sections such as heading, which was not prepared by the artist in Codex ۳۰۵۳.

The information in Table (۲) shows the elegance, variety of motifs and designs, and variety of borders and color combinations on the beginning page of Codex ۱۰۶ is more in comparison with the beginning page of Codex ۳۰۵۳. On the middle page of the Codex ۱۰۶, smaller lines and designs motifs of Khataei and a small and delicate borders are drawn, while on the middle page of the Codex ۳۰۵۳, larger lines can be seen in a larger border. Also, the designs and color variation of the end page of Codex ۱۰۶ are more than the sample of ۳۰۵۳ and the lines used in Codex ۱۰۶ are smaller. It should be noted that the predominant color in the designs of the Codex ۱۰۶ is mostly gold and smalt, while the smalt blue color is not seen in the designs of the ۳۰۵۳ sample.

Codex No. ۱۰۶			
The final left page (۴)	The final right page (۳)	The middle page (۲)	The beginning page (۱)
Rope border(davaleh)/ Double border / Chain Treble border	Treble border	Rope border(davaleh) / Double border / Treble border	Rope border(davaleh) / Chain
			
Source: (Sabetnia:۲۰۱۴:۵۶-۵۷)	Source: (Sabetnia:۲۰۱۴:۵۶-۵۷)	Source: (Sabetnia:۲۰۱۲:۸۹)	Source: (Sabetnia:۲۰۱۴:۵۲)

Codex No. ۳۰۵۳		
The final page (۷)	The middle page (۶)	The beginning page (۵)
Rope border (davaleh)	Rope border(davaleh) / chain	Rope border(davaleh) / chain
		
Source: (Sabetnia:۲۰۱۲:۹۱)	Source: (Sabetnia:۲۰۱۲:۹۰)	Source: (Sabetnia:۲۰۱۲:۸۸)

Table ۲. Types of borders in different pages of codx No. ۱۰۶ and codex No. ۳۰۵۳

XI: CONCLUSION

Images ۱, ۲, ۳ and ۴ belong to Quran ۱۰۶ and are famous for the Codex of Mir Abdul Qader Hosseini Shirazi. In this group of images, a rope border was seen and in figures ۱ and ۴, a chain border was seen. On all the pages, the rope border (Davaleh), double border and treble border are drawn, and the chain border was also seen in Figures

١ and ٤. About figures ٥, ٦ and ٧, which belong to Quran ٣٠٥٣ and are known as the Codex of Osman bin Waraq Ghaznavi, the double border and treble border were not seen in any of the three pages of this version, which are important features and differences of the borders of these two versions.

In general, the complexity of the borders in the Codex of Osman bin Waraq of Ghaznavi is more than the Codex of Mir Abdul Qader Hosseini Shirazi. Regarding the girih of the two versions, it is worth mentioning that the ١٠٦ version has a greater variety of patterns and colors than the ٣٠٥٣ version. In the ١٠٦ sample, the smalt and gold colors are used in a very beautiful combination, while in the ٣٠٥٣ sample, the blue color is not seen. The geometric patterns in the ٣٠٥٣ model have a simpler structure than the ١٠٦ version. Codex ٣٠٥٣ belongs to the Seljuk period, has simple bordering and has no colored calligraphy. But the girih of the pages, due to its beginning in this period. It has complex and intertwined geometric patterns. In some pages of this period, smalt color was used, while Codex ١٠٦ in the Safavi period, unlike Codex ٣٠٥٣, has more borders and simpler girih. Headings in Codex ٣٠٥٣ is separate from the designed border and Kufic lines are not enclosed in the border.

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REFERENCES

- [١] F. Anbari Yazdi, "Geometry of designs ١". Tehran. Iran Textbook Publishing Company. ٢٠١٣.
- [٢] D. Et. al., Copywriting and book designing in the Islamic world, *Baharestan Letter*, Volume ٧, Number ١, ١٨٦-١٧٧, ٢٠٠١.
- [٣] F. Farrokhfar, "The tradition of Iranian book design and its development in the Middle Ages in the Middle Ages", *History and Culture*, Volume ٤٩, Number ٩٨, ٦٠-٣٧, ٢٠١٧
- [٤] S. Ghaffarpour, "A study of the evolution of illustration of the Qurans of the Astan Quds Razavi Museum from the beginning to the Qajar period", *Nagreh*, No. ٤٢, ١٩-٤, ٢٠١٧
- [٥] F. Ghafourieh Far; F. Shamili, "A Study in the Structure of the Design and Role of Quranic Illuminations of the Timuri period in the Museum of Astan Quds Razavi, *Library and Information Science*", Volume ٢٠, Number ٣, ٢٣-٢٩, ٢٠١٧
- [٦] H. Pourlamar, "Study and analysis of designs (girih) used in the buildings of the historical city of Masouleh, case study: Keshe Sar Olya neighborhood", *Armanshahr architecture and urban planning*, No. ١٧, ٣٦-٢٥, ٢٠١٦.
- [٧] N. Mayel Heravi, "Book of Arrangements in Islamic Civilization, Collection of Essays in the Field of Calligraphy, Inkjet, Paperwork, illustration and Imitation, Mashhad: Astan Quds Razavi, Islamic Research Foundation. ١٩٩٣.
- [٨] N. Mayel Heravi, "Historical Culture of Scriptural Terms (border)" ١٥٣, *Baharestan Letter*, Year ١, Number ٧, ٢٥-٢٢, ٢٠٠٠.
- [٩] A. Mojarad Takestani, "Guide to Painting and Book designing in Iran", The Holy Threshold of Imam Masoumeh (AS), Qom, First Edition. ١٩٩٣
- [١٠] A. Mojarad Takestani, "The Method of Illustration", Soroush Publications, Tehran, seventh edition. ١٣٨٨
- [١١] A. Mojarad Takestani, "A Study of Transformation and Evolution, Patterns of the Art of Illumination in Iran", Yasavoli Publications, Tehran, First Edition. ٢٠١٦.
- [١٢] E. Rajabi, "Border drawing in the art of book designing, the growth of art education", Volume ١٢, Number ٢, ٢٠١٤.
- [١٣] -A. Sabetunia, "Artistic masterpieces in Astan Quds Razavi (selected exquisite Qurans from the beginning to the ninth century AH)", *Astan Quds Razavi Institute of Artistic Creations*, Volume ١, ٢٠١٢.
- [١٤] A. Sabetunia, "Artistic masterpieces in Astan Quds Razavi (selected exquisite Qurans from the tenth to fourteenth century AH, *Astan Quds Razavi Institute of Artistic Creations*, Volume ٢, ٢٠١٤.
- [١٥] M. Sarikhani, H. Hashemi Zarjaabad, M. Tavousi, "The role of the Holy Quran in the artistic creation and different methods of book designing in the Islamic civilization of Iran", *Negarineh*, No. ١, ١٨٦, ٢٠١٤.
- [١٦] P. Shadghazvini, "A Study of the Principles of the Basics of Traditional Iranian Arts (An overlook at the Book of the Seven designed Principles of Iranian Art)", *Book Critique Quarterly*, Volume ١, Number ٣, ٤١-٦٠, ٢٠١٤.
- [١٧] H. Sharif, A. Habibi, A. Jamalabadi, "Climatic function of Chinese girih not art in Islamic architecture - Case study: Qajar residential buildings in Shiraz", *Islamic Architecture Research*, Volume ٤, Number ١٣, ٧٢-٦٠, ٢٠١٦.
- [١٨] M. H. Zaki, "History of Iranian Industries after Islam, translated by Ali Khalili", Tehran: Iqbal. ١٩٨٤.