Volume 6 Issue 1 June 2019

INTERNATIONAL JOURNAL OF HUMANITIES AND CULTURAL STUDIES ISSN 2356-5926

Comparative Study of leaf, arabesque and Ivy motifs in Egyptian Fatimids glass and Seljuks of Iran1

Seyed Reza Hoseini[2], Parisa Mohammadi[3]

Abstract:

During the Islamic period, the art of glassware grew considerably in the era of the Fatimids of Egypt and at the same time during the Seljuqs dynasty of Iran. The coexistence of these two dynasties and the relationships between them can provide the basis for following the characteristics of each works. The aim of this study was to investigate the quality of the form and also to identify the similarities and differences in plant motifs of leaves, arabesque and ivy motifs in glassware of these two dynasties. Accordingly, the following question arises: What are the similarities and differences in the plant motifs of leaves, arabesque and ivy motifs in the Fatimids and Seljuks glassware? In order to answer this question, 55 works were employed; among them,19 items of the Fatimids dynasty glassware and 17 items of the Seljuqs dynasty glassware with mentioned motifs have been compared. Using a descriptive analytical approach, this comparative-historical research has been conducted based on the library resources. The results show that in Fatimids works, palm leaves are often similar to the original form of the leaf, in the form of a triangle and decorated with golden colour, which can indicate the importance of the motif, but in the Seljuqs works, the leaves have different forms and often an abstract form. Two dynasties' motifs were common in the use of empty space and curved forms.

Also, in the Seljuqs works, the leaves motif similar to the numbers 7 and 8 in Persian language (٧&٨) have a straight central line, multi-rows and connected to another which created a zigzag form. But the Fatimids motifs, they are in a single row; and in addition to the straight central line, lines are often curved. In addition, in arabesque and Ivy forms, there are differences that are derived from the native and cultural characteristics of each territory.

Keywords: Egypt, Iran, Fatimids, Seljuks, Glassware, Plant Motifs.

1- This article is extracted from the from M.A. thesis of writer titled "Comparative Study of leaf, arabesque and Ivy motifs in Egyptian Fatimids glass and Seljuks of Iran" by supervisor of Dr. Seyed Reza Hosseini at the Faculty of Art of Shahed University.

2-Assistant Professor, Faculty of Art, Shahed University, Tehran, Iran. (Corresponding Author), Email: reza_hoseini4@yahoo.com.

3- M.A, Student of Painting; Faculty of Art, Shahed University, Tehran, Iran. Email: mohammadiart70@gmail.com

Introduction

Glass is a transparent and fragile object, which its main source is nature. Due to its grace and special properties, this material has been taken into consideration throughout history. In the first periods, it was used as an applied object to meet the basic needs, but the evolution has changed it into an industrial art, and artists have used to create artworks by this beautiful material with novelty initiatives. Along with increasing the artisans' knowledge and experience in using glass and its capabilities and the evolution of works, new decorative elements and forms are emerged. In the meantime, using various motifs and adapting them somehow represents the virtue and aesthetic experience of the artist and society. Since the arrival of Islam and promoting it among nations, new characteristics were added in the way of making and decorating the works. Then, they gained a special and independent display and Islamic spirit dominated them. In the glorious era of the Fatimids, and simultaneously with it in Seljuqs period, glassware in Iran has grown significantly. The issue of coexistence leads to the creation of works with common and different characteristics. This study aimed to investigate the figural quality and to identify the aspects of the common and different properties of leaf, arabesque and Ivy motifs in the Fatimids and Seljuks glassware? In this study, in addition to dealing with figural qualities, motifs in terms of color and decorating tools are also adapted to each other.

Research method, sample number and research tools

Using historical comparative methods with reference to library resources along with a descriptive- analytic approach, the present study investigatesleaf, arabesque and Ivy motifs in glassware in two periods. In total, 55 works including 17glasses belonging to the Fatimids period and 19glasses belonging to Seljuqs period were analysed. Also, the method of data collection includes library, referring to internet resources and images.

Research history

According to the conducted studies, a few researches similar to this study presented in the form of a book or article are as follow:

1- Canby, Sheila R.(2016).Court and Cosmos: The Great Age of the Seljuqs. In this book, the author addresses the socio- economic, cultural and artistic aspects of this course including ceramics, metalworking, silver, gilding, glassware and so on.
2- Khanpur, Arezoo&Enzabi. (2015). A Comparative study of glassware motifs of Seljuksin Iran and Fatimids in Egypt during the 5th and 6th centuries AH. Two scientific journals of comparative studies of art. No.9. In this paper, we identify the similarity and difference of glassware motifs of both above mentioned periods which has not been accepted according to the reviews.
3- Bloom ,Jonathan.(2014). In "Art of the City Victorious: Islamic art and architecture in Fatimid North Africa and Egypt" based on 30 years of field researches; he provides the first detailed book about Fatimid rule from 909 to 1171 AD. This book includes 100 photo of art of architectural, textile, tiling, metalworking, crystal, ivory and wood.
4- Mazot, Sibylle. (2011). glorious of Fatimids court and their cultural variety. Safura Fazlal'lahi.Payam Baharestan. No.14. This paper refers to various arts which have

been existed in Fatimids period including earthenware, work on glass, crystal, wood, ivory, textile and architecture.

5- Goldstein, Sidney M. (2008). In "Glass: From Sasanian Antecedents to European Imitations"has examined the history of Islamic glass-making art from Byzantine and Sassanian period to the late nineteenth and early twentieth centuries. This collection includes over 300 pieces. This book helped to identify the glassware of Egyptian and Iranian lands.
6- Hasan, Zaki Muhammad. (2003). reviewed the history and art of this era in the "Treasures of the Fatimids". The first chapter includes "the artworks of Fatimids castles" and second chapter refers to the handicraft of this period as well as the study of the artworks remained from these periods in museums and cultural centers, especially Dar al-Asar al-Arabiya. In general, it provided comprehensive information for identifying the art works of the Fatimids.
7- Barrucand, Marianne.(1999). in "L'Égypte fatimide son art Et son histoire", allocated seven seasons of the book to monuments and inscriptions, art objects, tombs, political space, interfaith relations and Fatimid caliphate.
8- Christie, A.H. (1942). Tworock-Crystal Carvings of the Fatimid period. Journal article. Freer gallery of art. The Smithsonian institution and department of the history of art. University of Michigan. In this article, the author reviews two precious crystalline dishes belonged to Fatimid period.

The history of glass-making and its importance

Throughout history, numerous arts manifested by human beings and over the time, they acquired some exquisite attributes. Among these, the glass-making is considered very valuable and today it is an inseparable part of people's lives. In relation to the beginning of the glass-making, the scientific researches show that the first human beings who lived near the volcano have obtained the raw material of glass in places where the molten rocks quickly cooled down."According to the historical evidences, the origin of the glass-making must be Mesopotamia in an area where sand and alkali located side by side. The residents of this area and surrounding civilizations had the first melting experience in the glass. The civilization of Egypt, Syria and Mesopotamia were at the center of the competition. Alexandria of Egypt, Damascus of Syria and Nineveh in Mesopotamia become the poles of the glass-making of their periods at the beginning of this historical process (Yavari, 2008: 21-22). In the Egyptian region, also some beads discovered that are belonged to 2500 B.C (Fig 1). Also further evidences suggest that the Egyptian people have addressed to glass-making from 3000 BC and even earlier than it (Maloney, 2000: 73). In the historical process and with the advent of Islam, new features were added to the way of making and decorating works, among which the art of glass was no exception. "The Islamic period of glass-making began in the 7^{th} -8^{th} century AD and it is result of mixing the civilization of the eastern emperors (Bysantium) and the Parthians and Sassanians in Iran. A method of glass-making used during the Islamic era in Iran was mold-blowing (Fig 2) used for the preparation of thick glassware. It was employed since Parthian and Sassanid era. Other method was free blowing (fig3) for producing the thin glass and this method has reached its peak in the Islamic era (Fukai, 1992: 97). In the 9^{th} century AD, a new technique transferred from Egypt to Iran for graving motif on both side of glass by a flat two head tweezers which grew in the two last centuries in the country. Among the other Iranian glassware in the Middle Ages, making motif on the glass was conducted by

impression technique. The simplest motifs were a kind of spoon like groove (Fig 4). But some more sophisticated molded designs were made including scroll chains, inscriptions, animal patterns and also exceptionally human faces (Fig 5) (Pope & Ackerman, 2008: 3012). Among other motifs implemented in the early Islamic period was Assyrian period method including decorating objects with thread, ring of glass bullets (Fig 6) which were attached with many decorations on the these glassware and in some cases also the name of the manufacturer and the place of production was written on it (Wulff, 2005 :152).

Regarding the construction of glass in Islamic furnaces, Contadini, an Islamic art scholar has stated: "furnaces used in the Islamic period consisted of three parts: the lowest part for fire which required a temperature of at least 1100 degree Celsius. In middle part, it was a crucible for melting glass and in top, it was also cooled down. This gradual cooling process results in cooling thicker and thinner parts uniformly" (1998:91). Using this furnaces and available facilities during the period of the Fatimids and Seljuks, various methods were employed for producing and decorating glass which we will address them in future.

Figure 1:Beat, Egypt, 2500 BC. Resource: www.etsy.com.
Figure 2: Stoup; Blowing in a mold. 9th century AD. Neyshabur (source: authors, 2017).
Figure 3: Stoup, free Mold-Blowing. 10th centuty AD.Neyshabur (source: authors, 2017).
Figure4: A part of a bowl. West Asia. 7th-9th century AD. Sponge-like groove impression technique. Height: 4.7 cm, diameter: 10.6 cm. Resource: www.cmog.org.
Figure 5: Stoup, Probably Egypt or Syria. 11th – 10th century AD. Impression technique with human shape motifs. Height: 9.2 cm, diameter: max 5.2 cm. Resource: www.collections.vam.ac.uk.
Figure 6: Cup, Iran to Syria, 10th- 11th century AD, decorated by glass bullets. Height: 12.8 cm, diameter: 7 cm. Resource: www.pinterest.co.uk.

Effecting factors relating Fatimids and Seljuks

Among effecting factors relating Fatimids and Seljuks , it can be referred to historical aspect of it. One of these factors is Silk Road, "which was made by the Persians and the Chinese from the beginning. They set up this way around the 140 BC to transfer Chinese goods to West countries. Then, the road has been used by them and other countries during twelve centuries. This ancient road connect Mediterranean to china via Iran and crossed the city of Rey and southeast of Caspian Sea and Central Asia and Chinese Wall and connected to Beijing" (Drege,2000: 4). This road was not only a route for economic activity, but also a highway for the exchange of cultures and artistic experiences and so on. Due to this road, there was a kind of cultural and artistic frontier among nations and the culture of societies which in many cases led to changes in the artistic traditions and its constituent elements.

The glass designing art of Fatimids

The history of the Fatimid dynasty began in 909 AD with the advent of the first Fatimids caliph called al-Mahdi who created capital in Ifriqiya which then was conquered by fourth caliph of this period call Al-Mo'az in 969 AD. After 262 years of rule, in 1171 AD, it was destroyed by caliph of Abu'yan called Salah Al-Din (contadini, 1998).
Regarding the artistic works of this era, on can refers to industries like "textiles, metalworking, ivory-made works, pottery, wooden works, painting, and architecture and also glass art which reached its highest level in this era" (Bloom, 2014). In the glassware industry, Fatimid artists succeeded to make Hedwig beakers glasses, enamel vessels, and also mountain crystals which are the most prominent work of this period. According such valuable works, a few results are obtained. First, regarding the historical evidences that show the Fatimids lived in Egypt most of their period, this issue was very important for artists and they didn't feared to move from land to land. Second, the focus on the construct and decoration of these works which were cut with ultimate delicacy shows the calm of artist. Third, the diversity in the glass art is indicative of the value and position of the artist and the art of glass-making. Regarding the subject of the present research, these works are not investigated. Also, "glass maker of Fatimids period could make cups, bottles, lamps and very thin, elegant and applied objects by blowing technique which were used as everyday items (fig 7). But unfortunately, because of their fragile nature, only a few of them have remained intact. Then, a new technique called impression technique was created which was carried out by pressing the glass objects blown up by a bead (Figs 8-9) which was decorated with the object outside it. Among the motifs used in this technique, there are inscriptions, animals and bird pattern (Fig 10) that have been engraved in a same line into a sequence and near to each other" (Ali, 1999 :155).

Figure 7:Jug; Probably Egypt. 10^{th}-11^{th} century AD; Height: 13 cm; maximum width: 8.7 cm; resource: colletions.vam.ac.uk.
Figure 8: Cup; Probably Egypt; 11^{th}- 13^{th} century AD; Height:11.4, diameter: 11.5 cm; resource: colletions.van.ac.uk.
Figure 9: Bowl; Probably Egypt or Syria. 10^{th} -11^{th} century AD; resource: colletions.vam.ac.uk
Figure 10: Bowl; Egypt; 9^{th}-10^{th} century AD; resource: Carboni&Whitehouse, 2001: 103.

On the one hand, it seems that in this period, the painting on glass was common and this led to the painting on other things like pottery and the plaster wall (Barrucand, 1999:172). Regarding identifying motifs as can be observed in (Fig 11), according to experts of Metropolitan museum of Art of New York, one can attributes it to Fatimids period because of plants motifs on works. In addition, in (fig 12), Goldstein confirms the presence of the seven stars on the upper part, as "the number seven probably reminds the seven Imams of the Ismaili dynasty" (Bloom, 2014: 25).

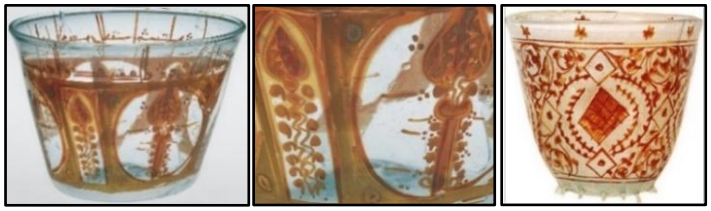


Figure 11: Cup; Probably Egypt; late 10th century and early 11th century AD; Height: 15.3 and diameter: 10.7. Resource: www.metmuseum.org.
Figure 12: Cup; Probably Egypt; 11th- 12th century AD; Height: 7.9 and diameter: 8.5. Resource: (Goldstein, 2008:93).

Production centers

Among the main centers that have already been the place for the Roman glass industry, one can refer to Fustat (old Cairo), Madinat Al-Fayyum, and Alexandria (Ali, 1999: 155). Also, Oshmunayn, ShaykhIbadah, Antiochia, ArRaqqah, Aleppo, Damascus were included (Hasan, 2003: 192-196).

Glass designing art of Seljuks

Seljuqs were a family of Ghazan (or Oghuz) who wandered in central Asia from Caspian Sea to the Aral Sea and the valley of the UpeerSihon or SyrDary. In some Islamic resources, they also have been called Turkmen, as if it refers their desertification (Fray, 1996: 241). In 1040 AD, they became the owner of the entire Khorasan and turned to the center of Iran and seized the city of Rey and Isfahan (Cattelli&Hambis, 1997: 6-7). they ruled Persia and Mesopotamia in the eleventh and twelfth centuries. the first Seljuk sultan was Tughrul beg (1038-1064). in 1055 AD, the seljuks took Baghdad, and in 1071they defeated the Byzantines at the battle of Manzikert, spreading into Anatolia. After having taken Damascus in 1078and Jerusalem in 1079, their leader founded the sultanate of rum. they experienced setbacks during the crusades, later re-establishing themselves in the thirteenth century, only to be defeated by the Mongols in 1243(Stierlin, 2009: 220). Regarding the artwork of this period, one can mention some industries like "metalworking, architecture, jewelry, cloth, pottery and bookbinding" (Ettinghausen& Grabar, 2012). Another valuable art of this period is the glass art. The glass-making industry has also grown significantly in the Seljuqs era, but it has not progressed compared with the variety of the glass art of Fatimids. It could be due to the economic and social situation of the state; because numerous incurred many costs and artist has not been appreciated as it should be. In addition, numerous displacements and social turmoil have disturbed the artist and reduced his concentration and calm required for creation and implementation of works. Relating the history of glass-making in Iran, as mentioned in the previous discussion, "after discovering the glass objects belonged to the Oarthians and Sasanians periods, it can be said that the glass-making industry was totally popular in Iran and both method of "mold-blowing" and 'free blowing" were used (Seyyed Sadr, 2007: 254). These two mentioned methods used in the Seljuqs period also refer to some of the decorations used in this period. For example, in the collection of David, there is a long neck bottle which has been made by mold-blowing method and the neck was made individually (Fig 13). Due to different rate of body and neck, it is attributed to this period. Also, a stamp in Corning Museum of Glass which is made by compressed mold has been attributed to the

Seljuqs period due to its type of motif (Fig 14). Another works in the museum is a bottle decorated by free blowing method using a turnery machine (Fig 15). In the Tehran's glassware museum, there is a glass container which made by free blowing with a special form and without motif (Fig16). Also, there is a scent bottle in Metropolitan Museum attributed to the Seljuks period. It made by placing hot glass elements on the glass surface before cooling (Fig 17). In addition, there is a pitcher on the Christie London auction which attributed to the Seljuqs period due to using the methods with two colors and sealing the body and attaching a ring (Fig 18).

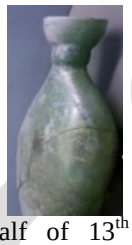


Figure 13:Bottle; Iran, 12th century- second half of 13th century AD; Height: 20.7 cm. Resource: www.davidmus.dk.
Figure 14: Stamp; uncertain location; 12th century AD; Diameter: 10.3. Resource: www.cmog.org.
Figure 15: Bottle; Probably Iran; 10th- 11th century AD; Height: 25.5 cm, diameter of shoulder: 13.6 cm. Resource: www.cmog.org.
Figure 16: Glass container; free blowing, 11th- 13th century AD; Gorgan or Neyshabur (image resource, authors, 2017).
Figure 17: Scent bottle, Probably Syria, 11th- 12th century AD; Height: 26 cm, diameter: 13.4 cm. Resource: www.metmusEum.org.
Figure 18: Pitcher; Probably Neyshabur; northeastern Iran, 12th century AD; Height: 17.8 cm. Resource: www.christies.com.

Production centers

Given to excavations performed in production centers of Seljuqs period, one can mention Rey, Gorgan, Neyshabur. Also, in this regard, Canby, the Islamic researcher confirmed Gorgan as one of glass producing centers in this period (2016: 126).

Conformity of plant motifs of both periods

Artists did not initially emphasized on the form or motif which works deserved. Their handicrafts were made with simple and primitive forms along with hidden lines of motifs or painting with perceiving peripheral phenomena and personal perceptions. But gradually, innovations were added to the work and caused each region have its own characteristics. Since the arrival of Islam, Islamic design and inscriptions were added to the work and the Islamic spirit dominated on the industries. Among them, glass industry grew significantly during the Fatimids era and simultaneously during the Seljuqs period. In this section, according to the subject, the number and statistical population of the research, the works emphasizing on plant motif of palm leaf, leaves like the numbers 7 and 8 in Persian language (۷&۸) are adapted to each other. Of course, it should be noted that the obtained images in some samples are more than it, that we avoided mentioning them due to the repetition of the motifs. This is also possible that there are other works which unfortunately cannot be accessed or may be lost. As regard the inhabitancy of the Fatimids and Seljukswas more in

Egypt and Iran, in the selection of images, the works attributed separately to Egypt and Iran are selected, and the works attributed to both lands were used rarely and with mentioning the reason. For example, in (fig 22), there a part of a bowl on which was decorated by golden colors and blue enamel. It is attributed to two lands of Iran and Syria that due to the presence of two glasses in (figs 23 and 24), the mentioned work can be attributed to Syria and Fatimid period more confidently. In (fig 23), there is a bottle which according to experts of British Museum, this process was also carried out during the Fatimids period, as the form of motifs and decoration method are similar (Fig 22). In addition, according to the shape of a cylindrical cup (Fig 24) that is attributed only to the land of Syria, one can observe the similarity of the pattern and its color (Fig 22). Also, according to Jeremy Jones, researcher of Islamic art relating to the motif of tree life in the movies of" Seven Rock Crystals of the Fatimids period" about the motifs of these crystals (Fig19), one can attribute the rock crystal on which life tree motif has been implemented to Egypt (Fig 26). On a bowl, there are Kofi texts which are combined with the motifs of the semi-palm leaves beautifully (Fig 28). These leaves are like semi-palm shapes which observed in (fig 20). According to experts of Museum of Islamic Art of Cairo, the mentioned works is attributed to this period due to texts on it that refers to one of Fatimids caliph's army commander (Hakem Be-Amr-Al'lah).

It should also be noted that sometime the social situation and position of artist in implementing motif and aesthetic approach were not affectless. For example, in (figs 35-41), there are motifs of leaves belonged to Fatimids and Seljuks that are similar to number 7 and 8 in Persian language (۷&۸). Implementing these motifs in Fatimids' works is observed singularly or with soft and fluid lines which may be due to not being frequent wars there. It makes sense of independence and tranquility of current situation in their works. But in Seljuqs period, the anxiety of the artist due to turmoil resulted from multiple wars led to implementing connected motifs and in an aggressive manner.

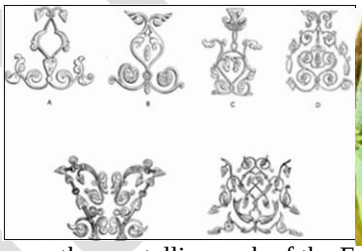
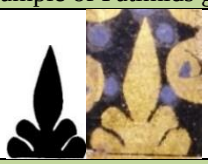


Figure 19:Motif of life tree on the crystalline rock of the Fatimids period. Resource: www.youtube.com.
Figure 20: A part of platter, Egypt, 11th century AD. Resource: www.miaeg.ypt.org.

According to the purpose of this study, after the adaptation of the plant motifs of both periods, the color, the manner of implementation and tools of decorating glassware and difference and similarity of them have been analyzed in the form of adaptive tables separately.

Table 1: plant motif of palm leaf

A sample of Fatimids glassware			
			
Figure 21: a piece, Egypt, Fustat, 12th-13th century AD; Height: 3.1 cm.	Figure 22: A part of a bowl, Syria or Iran, 10th century AD; Height: 8.5cm.	Figure 23: A part of a bottle, Asia, Middle East, Levant, Syria, 9th-10th century AD; Height: 14.5, diameter: 10.4 cm.	Figure 24: a cylinder cup, Syria, 9th-10th century AD; Height: 7.9, diameter: 8.2 cm
Resource: collections.vam.ac.uk	Resource: www.davidmus.dk	Resource: www.britishmuseum.org	Resource: www.pinterest.co.uk
			
Figure 25: Lower part of a bottle, Syria, Palestine, 9th-10th century AD;Height: 8.2 cm, diameter: 7cm.	Figure 26: A part of a ewer, Iran or Egypt, late 10th to early 11th century AD; Height: regardless of shaft: 21.3 cm; maximum diameter: 10.6 cm.	Figure 27: A part of pitcher, Egypt or Iraq; 9th-10th century AD; Height: 9.8 cm; maximum body diameter: 6 cm.	Figure 28: A part of a bowl; Iran or Iraq, 10th-11th century AD; Height: 8.5; diameter: 18.4 cm.
Resource: Goldstein, 2008: 47	Resource: Goldstein, 2008: 132	Resource: Goldstein, 2008: 79	Resource: Goldstein, 2008: 136

A sample of Seljuks glassware		
		
Figure 29. A part of a bottle; Mesopotamia of Iran; 9th- 11th century AD; Height: 11.3; maximum body diameter: 7.5 cm.	Figure 30. A part of a pitcher; middle east; late 11th- 12th century AD; Height: 13; maximum body diameter: 6.8 cm.	Figure 31: A part of a pitcher; probably Iran, 11th-12th century AD; Height: 12.3 cm; diameter: (max) about 6.8 cm.
Resource: Goldstein, 2008: 78	Resource: Goldstein: 78	Resource: www.cmog.org
		
Figure 32. A part of a spherical cone dish; eastern Mediterranean or Iran, 11th-12th century AD; Height: 9.4 cm; diameter: 8.6 cm.	Figure 33. The broken body of a bottle; Iran or Afghanistan; 11th- 12th century AD; Height: 10.8; base diameter: 11cm; maximum body diameter:12 cm.	Figure 34. A part of a bottle; eastern Mediterranean of Iran; 11th- 12th century AD; Height: 22 cm; diameter: 11 cm.
Resource: Goldstein, 2008: 150	Resource: Goldstein, 2008: 88	Resource: Goldstein, 2008:150

Table 2: Adaptation of motif of palm leaf belonged to Fatimids and Seljuks

Difference and similarity	feature	Using geometric forms	Semi-palm	Contrast in the upper part of the leaf
	Fatimids			
	Seljuks		Lack of motif	
	Description	Motifs of palm leaf belonged to Fatimids were implemented in the shape of a triangle but in Seljuqs' motifs, there was circles and rhombic shape also.	Using semi-palm motifs was considered by Fatimids.	Often, the upper part of the leaf motifs of Fatimids are drawn linear and similar, but the upper part of the various designs are implemented.
	feature	Being close to main form of leaf	Using curved stems	Too much use of the empty space
	Fatimids			
	Seljuks			
	Description	The motif of palm leaf and semi-palm, close to original form of the leaf; but the motifs are often abstract.	In common, the motifs of Seljuqs are with stem but in Fatimids motifs, it has rarely been implemented.	Using empty space in leaf motifs of Seljuqs with more number and scattered in the middle section and in the header, but this feature is less used in the Fatimids ' motifs.
	feature	Lack of connection in the components	Returning the small forms to beneath the leaf	
	Fatimids			
	Seljuks			
	Description	In both periods, the motif of leave whose components are implemented with considerable distance are observed.	Using small forms has been common.	

Table 3: plant motifs of leaves similar to numbers 7 and 8 in Persian language (٧&٨)

A sample of Fatimids' glassware			
			
Figure 35: A part of a piece, probably Egypt, 9th-10th century AD; dimensions: max 5.6 cm.	Figure 36: A part of a piece of plate or bowl; probably Egypt; 11th-12th century AD; Height: 7.7 cm; diameter: 5.0 cm.	Figure 37: A part of bottle; Egypt; 9th-10th century AD; Height: 3.8 cm; diameter: 2.2 cm; depth: 2 cm.	Figure 38: Earring; Egypt; 9th-10th century AD; Height: 3 cm; diameter: 3.3 cm; depth: 1 cm.
Resource: www.comg.org	Resource: collections.vam.ac.uk	Resource: www.smb-digital.de	Resource: www.smb-digital.de

A sample of Seljuk's glassware

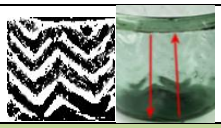
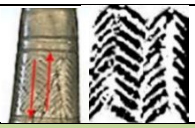
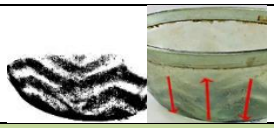
		

Figure 39: A part of a bowl, Iran; 10th-11th century AD; Height: 7.2 cm; diameter: 8.8 cm; wall thickness approximately 0.15 cm.	Figure 40: A part of a bottle; Iran; 9th-11th century AD; Height: 23.8 cm; diameter: maximum 14 cm.	Figure 41: A part of a bowl; Iran;10th-12th century AD. Height: 4.4 cm; diameter: 10.6 cm; wall thickness: approximately 0.15 cm.
Resource: smb-digital.de	Resource: collections.vam.ac.uk	Resource: www.smb-digital.de

Table 4: adaptation of the motifs of the leave similar to number 7 and 8 in Persian language (۷-۸) belonged to Fatimids and Seljuks

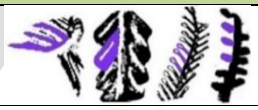
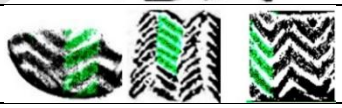
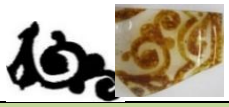
Difference and similarity	Feature	Difference in central lines	Difference in row numbers	Drawing flat leaves
	Fatimids			
	Seljuks			Lack of motif
	Description	In leaf motifs of Fatimids, the central lines are often curved but they are seen flat in Seljuks motifs.	The leaf motifs of Fatimids are implemented in a row, but Seljuks' motifs are more than a row.	In a sample of leaf motifs of Fatimids, the leaves state tends to be slightly downward or upward, so that they can be also seen flattened.
	Feature	The existence of zigzag lines by the binding of leaves		The leaves line are roughly the same size
	Fatimids	Lack of motif		
	Seljuks			
	Description	In the works of the Seljuks, the connection and multiple rows of motifs have created a zigzag form, but in Fatimid motifs, this feature is not seen due to being in a row.		The motifs of both periods are roughly the same, but the forms of Fatimid motifs are slightly different from each other.

Table 5: Slavic plant motifs

A sample of Fatimids glassware		
		
Figure 42: A piece; probably Egypt; 11th-12th century AD; dimensions: 5 cm.	Figure 43: A part of a bowl; probably Egypt; 10th-11thcenturyAD; Height: 5.3 cm; diameter: approximately 12cm.	Figure 44: A part of a bowl or plate; probably Egypt; 10th-11th century AD; Height: approximately 1.7; diameter approximately 31cm.
Resource: www.cmog.org	Resource: www.cmog.org	Resource: cmog.org
		
Figure 45: Cup; probably Egypt; 11th-13th century AD; Height: 7.7 cm; diameter: 12.9cm.	Figure 46: A cylinder cup; around the Egypt; 10th-12th century AD; dimension: 8.1 cm.	Figure 47: A piece of flower vase; Egypt; 9th-10th century AD; Height: 9.6 cm; diameter: 6.5 cm.
Resource: www.collections.vam.ac.uk	Resource: www.Antique-Fatimid-	Resource: www.smb-digital.de

	Glass	

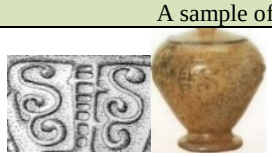
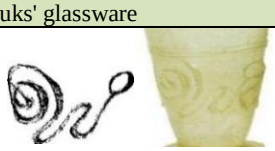
A sample of Seljuks' glassware			
			
Figure 48: Cup; Iran; 9th-11th century AD; Height: 11cm; diameter: Max 14 cm.	Figure 49: A part of bottle; Iran or Afghanistan; 12th century to mid-13th century AD; Height: 27.4 cm; diameter: 12.5 cm.	Figure 50: A part of a cup; probably Iran; 11th-12th century AD; Height: 10.8 cm; diameter :6.5 cm.	Figure 51: A part of a cup; Iran; 10th-12th century AD; height: 12.2 cm; edge diameter: 8.7 cm.
Resource: www.cmg.org	Resource: Goldstein, 2008: 152	Resource: Goldstein, 2008: 154	Resource:www.cmog.org

Table 6: Adaptation of Slavonic motifs of Fatimidsand Seljuks

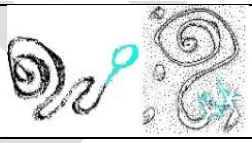
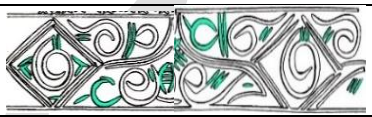
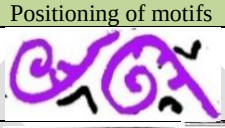
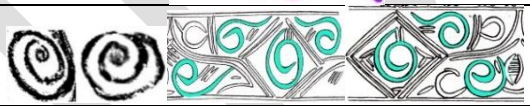
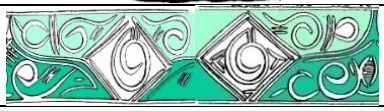
	Feature	Horizontal and vertical position of motifs	Plant motifs alongside the Slavic motifs
Difference and similarity	Fatimids		
	Seljuks		Without motif
	Description	The placement of Slavic motifs in horizontal and vertical position around the container were used in both periods.	The motif of cedar has been used in harmony with Fatimid Slavic motifs, but the plant motifs is not seen alongside Seljuk's Slavic motifs.
	Feature	The connection of small motifs to main motif	Contradiction on plurality
	Famidis		
	Seljuks		
	Description	In the decoration of the Fatimids' Slavic motifs, there are thorn-like and circular motifs, but in the Seljuk's motif, there is a small form like plant and a hollow circle only at the end of them.	The tendency to split up fascinated Fatimids. But in Seljuk's motif, it was not much attention and Slavic motifs often ended with a single line.

Table 7: Ivy plant motifs

A Fatimids sample of glassware	A sample of Seljuks glassware			
				

				
Figure 52: Bowl; Atfig ; Egypt; central Egypt; Africa; 10th-11th century AD; Height: 8.5; diameter: 10.9 cm.	Figure 53: A part of a bottle; late 9th century to 11th century AD; Height: 23.4 ; diameter: 9 cm.	Figure 54: A part of bottle; Mesopotamia or Iran; late 9th- 11th century AD; Height: 13.8; diameter: 8.2 cm.	Figure 55: A part of bottle; Iran; 12th- 13th century AD; Height: 23cm diameter: 10.4 ;edge diameter: 3.2 cm.	Figure 56: A part of bottle; Iran; probably Gorgan; 12th-13th century AD; height: 13.9 cm; diameter: Max 9.9 cm.
Resource: www.britishmuseum.org	Resource: Goldstein 2008: 131	Resource: Goldstein, 2008 :125	Resource: www.smb-digital.de	Resource: www.comg.org

Table 8: comparing the ivy motifs of Fatimids and Suljuks

Difference and similarity	Feature	Locating motif in a certain range	Presence of motifs for decorating the Ivy motifs
	Fatimids		
	Seljuks		
	Description	In addition to the parallel lines above and below the motifs in both period, there are the curved lines and geometric motifs in harmony with Seljuqs motif.	In the decoration of ivy of both periods, e few connectedmotifs and alongside them are drawn.
	Feature	Positioning of motifs	Contrast in number of motif row
	Fatimids		
	Seljuks		
	Description	The ivy motifs positioned upward and downward are observed in works of both periods.	Fatimids' motifs have better order and implemented in a row but Seljuqs' motif are in two rows.

(Providing and setting up of table: authors)

Manner of implementation and decorating tools

Studying on the decoration of glassware collection of both periods, it was identified that implementation manner of above mentioned motifs executed by coloring, cutting, impression technique, adding glass elements ant composite method. Accordingly, the (table 9) shows the number of implemented method in each period with images of them.

Table 9: comparing the implementation method and decoration tools

Fatimids			Seljuks	
Number	2	4	9	4
Method	Impression technique	Cutting	Impression technique	cutting
Work				
Number	12	1	4	
Method	coloring	Coloring and cutting	adding	
Work				

(Provide and set up of table: authors)

Color

In this section of research community, 7 glassware of Fatimids period and 2 glassware of Seljuks period were not placed in table because of lack of identification of the piece, type of container and the absence of similar dishes to each other of both periods (table 10). It is also should be noted that the glassware colors have been changed caused by weathering. Accordingly, the mentioned colors are obtained based on the scientific resources referred to.

Table 10: comparative table of colors used in Fatimids and Seljuks glassware

Color	The number and type of the Seljuks dishes				The number and the type of the Fatimids' dishes			
	Cup	bowl	pitcher	bottle	Cup	bowl	pitcher	bottle
	2	2	2	9	3	4	2	3
Gold and blue enamel								
Greenish yellow								
Eggplant								
Light green								
Colorless background and salmon pink motifs								
Colorless with yellowish tinge green								
Grayish green-blue or dark blue								
Turquoise – purple								
Grayish blue								
yellowish green tinge								
Yellowish								
Green								
Yellowish brown								

Brown								
Yellowish brown background, dark blue strings								
Colorless with yellowish tinge								
Light brown								
Colorless with very light yellow tinge								
Dark blue								
Blue								
Almost colorless, opaque turquoise drops with clear blue								

Similarity:	Cup: blue	bottle: green, blue, yellow	Pitcher: green

(Provide and set up of table: authors)

Conclusion

Regarding this study title which focus on comparative study of leaf, Slavic and ivy motifs in glassware of Iran's Fatimids and Egypt's Seljuks, 55 items were selected for analyzing including 19 glassware of Fatimids period and 17 glassware from Seljuqs period. The results show that: in both periods, above mentioned motif were used for decorating stoup, pitcher, bowl and cup. Most of produced works were applied. Although, some works have destroyed due to fragility of glass which their presence could increase common dishes. Also, adaptation of above mentioned motifs in table 1-8 show that palm leaf motif of Seljuqs in various forms are often abstract and with different letterheads relative to each other, but palm and semi-palm motifs of Fatimids in the form of triangles are close to the original form of the leaves and often without stem joints. As using gold color in palm leaf of this period can show the importance of motif. Although, they are common in using empty space, drawing small curved shapes under leaves and curved stems of both periods. Also, in performing the leaf motifs similar to the number7 and 8 in Persian language (۷&۸), Seljuks' motifs have smooth central line connected to each other and several rows which have created zigzag form. But in Fatimids' motifs, the line is often curved and in a same row as well as the flat central line. Also in the Fatimids' Slavic motifs, the cedar tree motif in harmony with the Slavic motifs and attachment of the circular and brittle-like as well as multiplication has been considered. But in Seljuqs' works, the motif is often ended with a single line and the connection of the circle and a small plant form are seen at its end. Although, horizontal and vertical position of motifs have been used in both periods. Regarding ivy motif, it should be noted that both period have been common in using certain range for implementing motif, positioning and drawing motifs connected to main motifs. But they were different in number of rows, using geometric form and coating the motif on whole body. Also, in terms of implementing motif manner, table 9 shows that both periods were common in using impression and cutting techniques. But the common way of implementing in decoration of Fatimids period was the

use of color and in the works of Seljuqs was impression technique. According to the historical documents, since Fatimids established in Egypt mostly and Seljuqs was changing their place constantly and were fighting, they were effectual in selection of the way of implementation of works. According to table 10, it was also observed that coloring works in Fatimids periods, they implemented some motifs using color on dishes as well as background color of works, but in the Seljuqs' work, just the background of works has been painted.

References:

- Ali, Wijdan. (1999).The Arab contribution to Islamic art: from the seventh to the fifteenth centuries. Jordan: The American University in Cairo Press.
- Barrucand, Marianne. (1999). L'Égypte Fatimide son art Et son histoire. Paris: Presses de l'Université de Paris-Sorbonne.
- Bloom ,Jonathan. (2014). Art of the City Victorious: Islamic art and architecture in Fatimid North Africa and Egypt. Mohammad Taghi Faramarzi. Tehran: Art research center.
- Canby, Sheila R. (2016). Court and Cosmos: The Great Age of the Seljuqs. New York: London: Metropolitan Museum of Art: Yale University Press.
- Carboni, Stefano; White House, David. (2001). Glass of the sultans. New York: Metropolitan Museum of Art.
- Cattelli, Margarita; Hambis, Louis. (1997). Seljuk art and Al-Khwarizmi. Yaghoub Azhand. Tehran: Molla.
- Contadini, Anna. (1998). Fatimid art at the Victoria and Albert museum. London: v & Publications.
- Drege, Jean Pierre. (2000). The Silk Road Sage. Hormoz Abdollahi. Tehran: Rozaneye Kar.
- Ettinghausen, Richard; Grabar,Oleg.(2012). The art and architecture of Islamic 650-1250.YaghoubAzhand. Tehran: Organization for the Study and Compilation of Humanities Books of Universities (SAMT)
- Frye, Richard Nelson.(1996). The Golden Age of Persia. Masoud Rajabnia. Tehran: Soroush (Islamic republic of Iran broadcasting company)
- Fukai, Shinji. (1992). Persian Glass. Arman Shishegar. Tehran: Tehran province cultural heritage company.
- Goldstein, Sidney M. (2008). Glass: From Sasanian Antecedents to European Imitations. Soodabeh Rafiee Skhaei.Gholam Hossein Ali Mazandarani. Tehran: Kar Rang.
- Hasan, Zaki Muhammad. (2003). Treasures of the Fatimids. Neda Goleyjanimoghaddam. Tehran: Al-Zahra University.
- Johns, Jeremy. (2015). The magnificent seven: the great Fatimid rock crystal ewers.
- Maloney, Francis Joseph Terence.(2000). Glass in the modern world. Mohammad Ramezani. Tehran: Gutenberg.
- Pope, Arthur Upham; Ackerman, Phyllis.(2008). A survey of Persian art, from prehistoric times to the present (vol 6). Najaf Darya Bandari et al. Tehran: scientific and cultural.
- Seyed Sadr, Abolghasem. (2007). Encyclopedia of handicraft and related letters. Tehran: Simayeh Danesh.
- Stierlin, Henri. (2009). Islam from Baghdad to Cordoba, early architecture, from the 7th to the 13th century. Hong Kong: Taschen.
- Wulff, Hans E.(2005).the traditional crafts of Persia. Sirous Ebrahim Zadeh. Tehran: scientific and cultural.
- Yawari, Hossein. (2011). Manual glass-making in Iran. Tehran: Sureh Mehr.