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In the Name of God

Dear Readers,

I, on behalf of the editorial board, am proud to present this first issue of the *International Journal of Applied Arts Studies (IJAPAS)* under the sponsorship of the Islamic Azad University, Yazd Branch. We were driven to found the *IJAPAS* by a noticeable lack of journals, in the Islamic Republic of Iran in particular, devoted to architecture, urban design, urban planning, architectural conservation and restoration, painting, art history, graphic, digital arts, fashion design, performing art, industrial design, aesthetics and semantics. Although the academic world is increasingly driven by cross-disciplinary visions and models, we seek multi-disciplinary views, an attempt to inform researchers, graduate students, and professionals about the trends, ideas and innovations being put forward in applied arts. To this end, in addition to standard articles, in every volume of the *IJAPAS* we hope to provide a special issue related to a respective field with innovation.

We are also sending out a call for papers related to *Applied Arts* to appear in the next issue of *IJAPAS* in July – August 2017. The deadline for submissions for this issue is June 30, 2017.

Finally, I should mention that we are committed to a speedy refereeing process for every article submitted to us. We effort to reply to all papers submitted within five weeks' time with a response about acceptance or rejection. We also do not require formatting for submissions in our style until *after* the paper has been accepted by us for publication.

I would like to thank our Editorial Board for their work so far in helping to establish the *IJAPAS*. And, finally, I would like to extend my deepest gratitude to Dr. Ali Bolor, the assistant editor of the *IJAPAS*, for all of his hard work to ensure the timely completion of the first volume.

I am delighted to invite you to visit us at www.ijapas.org.

Sincerely,



Dr. Abolfazl Davodi Roknabadi
Editor-in-Chief
International Journal of Applied Arts Studies (IJAPAS)
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INDEX

NO	TITLE	PAGES
1	Introduction	i-v
2	Typology Architecture of the Stone Caravanserais of the Seljuk Period in Qom Province <i>Elahe Lotfalikhani, Ahmad Danaeinia</i>	7-18
3	The Role of Sheikh Lotfollah Mosque's Buttress in Prevention of its Thrust and Reasons for its Re-thrust <i>Narges Karimi, Reza Abouei, Dariush Heydari</i>	19-36
4	Implementing Non-Repetitive Designs on Upholstery Fabrics <i>Soniya Avazpour, Loghman Karimi, Salar Zohoori</i>	37-46
5	"Giveh" Handicraft in Iran: An Anthropological Study Approach <i>Zahra Nikouei, Pedram Payvandy, Abolfazl Davodi Roknabadi</i>	47-54
6	The Effects of Instructional Technology and Media on the Painting Skill of Special Kids <i>Zohre Sahebi, Javad AliMohammadi Ardakani</i>	55-62
7	Investigating the Reasons for the Growth of Mural Paintings of Merchants' Houses in Yazd in the Qajar Era Based on the Constructed Model of Durability Process of Symbolic Capital <i>Ali Akbar Sharifi Mehrjardi</i>	63-75

Typology Architecture of the Stone Caravanserais of the Seljuk Period in Qom Province

Elahe Lotfalkhani^a, Ahmad Danaeinia^{b*}

^aStudent, Department of Restoration, Yazd Branch, Islamic Azad University, Yazd, Iran

^bAssistant Professor, Department of Architecture and Art, Kashan, University of Kashan, Iran

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Abstract

The suburban caravanserai architecture, considering its environmental and climatic factors, has various patterns in Qom province. The study is related to the caravanserais of the Seljuk period which are limited in number and which have unique structures in terms of physical and architectural features. In Qom province, regardless of research carried out so far on suburban caravanserai architecture, there is still a dearth of studies for a complete understanding, and consequently no accurate typology has been provided for the caravanserai of Qom region yet. Therefore, the typology architecture of caravanserai in Seljuk period is important as a response to the question of what patterns have been followed and what materials were used for the construction? The purpose of this typology is to provide architects with specific patterns in construction. This is a qualitative study conducted through a descriptive-analytic method and sample observation. The samples were selected based on their construction period (i.e., Seljuk), research study and the suburban caravanserai of Qom. The data collection was through field survey and library documents. The results show that division and classification of the suburban caravanserai as regular quadrilateral (i.e., square or rectangle) followed the four-porch construction. This type of caravanserai has a variety of configurations with and without towers; special attention has been given to stone as the main construction material. The entrance to the caravanserai is simple and projects outward from the main façade. The caravanserais are decorated using construction materials that are separated by plaster work from the building façade.

Keywords: Qom Province; Suburban Caravanserai; Stone Caravanserai; Typology

* Corresponding author. Tel: +98-9122574096.

E-mail address: danaeinia@kashanu.ac.ir.

1. Introduction

In Iranian architecture, caravanserais have a high status, especially along the communication network. The evolution and expansion of caravanserais in Iran in different historical stages have been dependent on social, economic and religion aspects associated with their formation and development (Kiani, 2008: 265). Throughout history, Qom region has been the major corridor area connecting north to the south of the country, due to the specific geographical location as well as numerous communication routes passing through this city.

The fundamental architectural features of caravanserai are a function of environmental, human and physical contexts. Among these, the environmental context is one of the most important elements that provide the underlying classification for architecture. Because of this, especially suburban caravanserai, being away from the city, lacks the condition for its restoration; this has given it a particular importance in the architects' eyes. In architecture, typology can be used as a tool to identify and classify things. The necessity of typology is for differentiating periods and architectural style to identify how architects have built in each period and to achieve common patterns in spatial design of a caravanserai. To understand these designs and patterns means to understand the social relationship that has occurred in the interior space.

The aim of this research is to recognize the existing ideas in the construction of these caravanserais and their typology. Through this, one can achieve the basic principles of restoration according to the basic structures of the building. The samples that have been examined in this study include the Salt Mountain Stone Caravanserai (Arab, 2007: 113-114), Stone Caravanserai of Mohammadabad (Dirkaj) (Arab, 2006: 98-101), Stone Caravanserai of Aliabad (Arab, 2007: 108), and Stone Caravanserai Tolab (Arab, 2007: 113) that belong to the construction of Seljuk period. The research question is what patterns has been followed by the suburban caravanserais in the Seljuk period in Qom region and what materials were used for their construction.

2. Research Background

The typology of caravanserais in different periods has been reviewed by Maxim Siro. In his book, entitled "Iranian caravanserai and small building along the way", he writes: "in the late Sasanian period, two types of caravanserai were known in Iran. The first type consisted of a courtyard surrounded with a wide corridor for the livestock like the caravanserai Darvazgach (plaster gateway caravanserai). The second type comprised a rectangular hall located around the central courtyard and this was the characteristic of Iranian caravanserais. But during the Islamic era, the plan of these two caravanserais was integrated in a manner that the caravans chambers were built around the central courtyard, and behind these rooms a wide corridor was built for the livestock; and like the Parthian and Sassanid palaces in most of the caravanserais two or four porches were built around the central courtyard."

The Iranian architecture of caravanserai varies and the diversity of plans and maps of caravanserais could be divided into different groups. For example, the typology of physical caravanserai includes mountainous area caravanserai, Persian Gulf shore caravanserai and Iranian central courtyard caravanserai that include caravanserais with circular or polygonal shapes, with two or four porches and colonnade hall caravanserais, or caravanserais with miscellaneous plans that differs from other groups in architectural drawings.

It should be noted that there has been no typology for the caravanserai of Qom region so far, and only few features of these historical buildings have been captured in research. In this study, hence, an attempt is made to examine the features of caravanserais, Seljuk architectural style, location and

area, native building materials of the region and its geographical locations, and also to take an effective step in providing a typology of stone caravanserai of the Seljuk period.

3. Historic Geographic Location of Qom

Qom province is among the 31 provinces of Iran, located in the center of the country in an arid and semi-arid area. The itinerary of Abbey Delft introduces Qom as the Islamic city. In addition, Qom province, with regard to the historic pre-Islamic era, enjoys numerous rich architectural sites, monuments and historic hills. According to the archeologist Roman Ghirsham, Qom is the first place on earth that hosted the first people gathering. Therefore, the old city of Qom and its suburbs are associated to the birth of civilization about ten thousand years ago. This was verified after the 1979 revolution, in an archeological excavation in the area of Qomroud in Qom. The excavation works are preserved at the National Museum of Iran (Zendehtdel, 2000).

4. Caravanserais in the Historical Route of Qom Province

The caravanserais of Qom extend on the historical routes from and to the city. The routes are briefly introduced as follows;

4.1. Route from Qom to Tehran and Rey

According to the historical literature evidence and research, there were two main routes that passed from Qom to Rey and the surrounding areas (Siru, 1970: 247). The first and oldest route from Qom was parallel to the river of Qomroud and its eastern margins were towards the village of Qomroud. The second route was constructed during the Safavid and Qajar period. The caravanserais located along these route were caravanserai of Alborz from Safavid and Qajar era, Dalak adobe bridge belongs to the Qajar era, Dalak brick bridge of Safavid era, Dir-Kaj (Stone Castle of Mohammadabad) from the Seljuk period, Deyrgachin of Sassanid era with a fundamental change in the Safavid era, Sadrabad of Safavid and Qajar period, Hoze Soltan of the Safavid and Qajar period, Asgarabad belonging to the Qajar period, Manzariye of the Qajar period, Bagherabad belonging to the Qajar period, Brick caravanserai of Aliabad dating back to the Qajar period, and the Stone Caravanserai of Aliabad of the Seljuk period.

4.2. Qom Route to Khalajestan, Tafresh, Ashtiyan and Hamedan

The following caravanserais that are located along this route are Tolab Caravanserai that comprises two caravanserais of the Seljuk and Safavid period, Tinuj Caravanserai of the Safavid and the Castle of Allah Quli of the Safavid period.

4.3. Qom Route to Kashan and Isfahan

The old Qom road to Kashan has been constructed parallel to the old caravan route. The important caravanserais located along this route are Pasangan, Shurab, Atabaki and Sansan. Only the Pasangan Caravanserai built during the Safavid period is in the vicinity of Qom province.

4.4. Qom Route to Aveh and Saveh

The stone caravanserai Kooh-e-namak (or Salt Mountain) is about 16 kilometers outside the Qom city and towards Togheroud, Gazoran and Aveh and belongs to the Seljuk period. The Aveh caravanserai belonging to Safavid-Qajar period is located in the central province (Arab, 2007: 104).

5. Seljuk Caravanserais in Qom

In the Seljuk period, due to the strong central government, there was economic and commercial prosperity and security in the territory, the trade routes and the monuments. The four-porch construction was one of the styles of this era that was promoted in a variety of buildings; the caravanserai was also constructed with this style, but there were other varieties of style too. An overview of the caravanserai of this period shows dual and multiple designs that appeared sometimes in the defense and military roles and in some cases royal and governmental functions. However, caravanserais showed the outstanding social and economic development of the time. The characteristic indicator of some caravanserais was embodied in the type of plan, and the ornamentation has always remained devoted to this period. Though they were magnificent examples of Safavid era in later periods, these caravanserai designs still remained the same. The reasons for this probably go beyond the architectural features and are manifested in the cultural and social behavior of that period.

In Qom there are 16 caravanserais which are located on the historical route of the city belonging to the Seljuk, Safavid and Qajar era. Among these caravanserais, the stone caravanserais of Mohammadabad, Aliabad, Tolab, Kooh-e-namak are the four unique stone caravanserais of the Seljuk period that are selected as samples of this research.

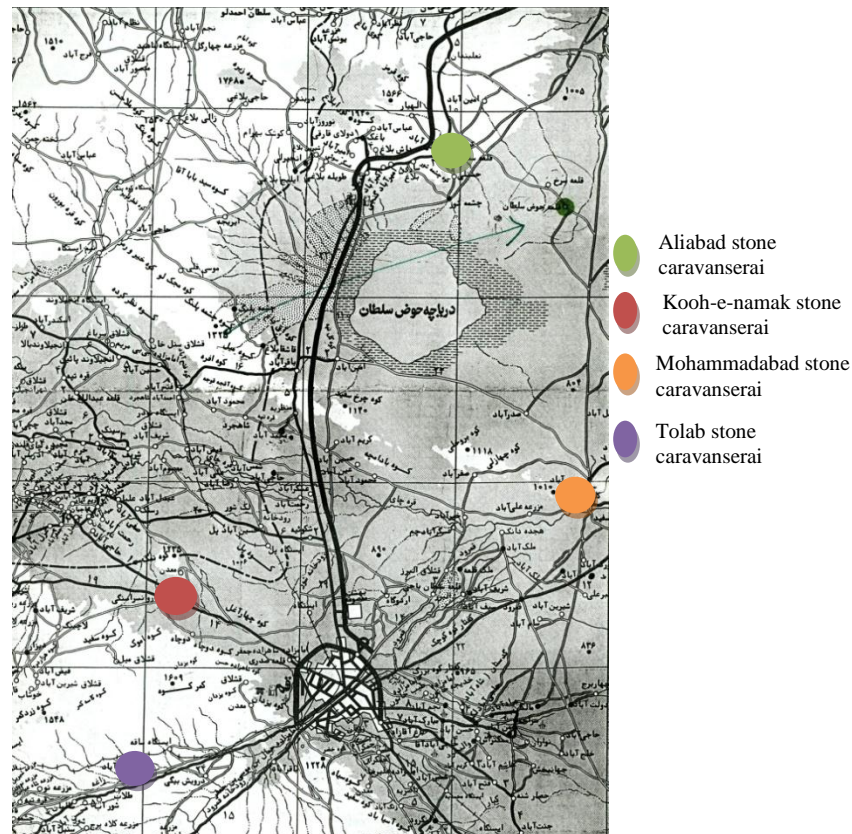


Fig 1 Distribution map of Seljuk caravanserais in Qom Province

Table 1 Study of the stone caravanserai of Seljuk period of Qom province

Caravanserai	Plan form	Courtyard	Chamber	Porch	Tower	Material
Kooh-e-namak	Square	Central	Around the central courtyard	Four porches	Four circular towers at the corners and three towers at the sides	Stone is the main material and only the roof is covered by bricks
Mohammadabad	Rectangle	Central and also newly constructed courtyard on the east side.	Around the central courtyard	Four porches	Four circular towers at the corners and four towers at the sides	Stone is the main material and only the roof is covered by bricks
Aliabad	Square	Central	Around the central courtyard	Four porches	Four semi-circular towers at the corners and four towers at the sides	Stone and brick structure
Tolab (Seljuk)	Square	Central	Around the central courtyard	Four porches	Without towers	All built with stone except one chamber built with bricks

5.1. Stone Caravanserai of Aliabad

The Aliabad Stone Caravanserai is a square structure with a four-porch plan. The deep porches on the sides with rhythm arcade are constructed on the four sides of the courtyard. The southern façade to the entrance to the caravanserai has a portico throughout, which is repeated on other façade. The southeast corner of the structure has a different space as four platforms with domed chambers that have been constructed with the help of frame and stone scaffolding. This structure has been beautifully worked with brick and stone unique in its own kind. The fences of the caravanserai are constructed with gravel stones collected from the surrounding rocks. The structure is surrounded by lime and plasters mortar, and has four massive towers at the corners and three supporting towers in-between the north, east and west side walls. Maxim Siro believes that initially the massive fence was built and later the interior facilities of the caravanserai were designed. This building serves back to the late Seljuk period (Arab, 2007: 107-108).

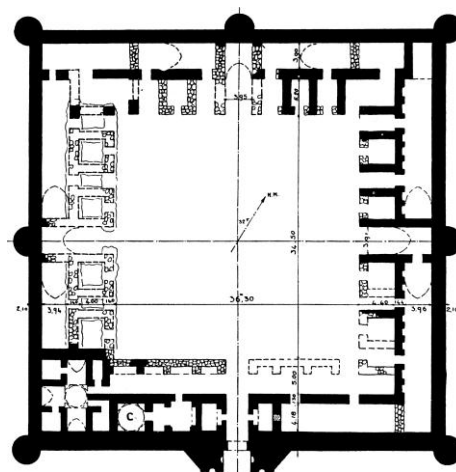


Fig 2 Stone caravanserai plan of Aliabad (source: Maxim Siro, 1970)



Fig 3 Front entrance of the Stone Caravanserai of Aliabad (source: Cultural Heritage Organization of Qom)

5.2. Stone Caravanserai of Kooh-e-Namak

The Stone Caravanserai of Kooh-e-namak has four porches and a square plan. The caravanserai has seven towers, among which the four towers are at the corners of the square and the three towers are located on the middle sides of south, east and west walls of the square. The main entrance is on the north side of the caravanserai that directly connects to the central courtyard. Between each side, there are porches that are recessed like the altar surrounded by a smaller chamber.

The building material used for the walls is stone and brick for roof coating. The decorative elements of the caravanserai are the recessed altar where the ruins of the bricks have been observed. The other decorative elements are the projecting rectangular shape built out of stone around the castle. The entrance to the caravanserai is made of stamp plaster that seems to be related to Patriarch period (Kavoosi, 2014).

The rubble stone materials are used for the construction of the caravanserai with a central courtyard surrounded with chambers. There are porches in-between the courtyard and chamber, and only the foundation still exists.

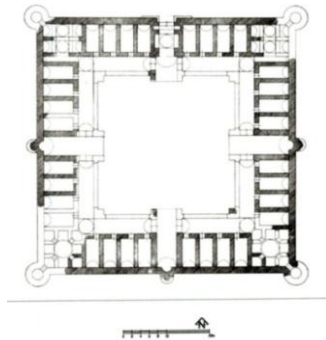


Fig 4 Stone Caravanserai of Kooh-e-namak plan (source: Iranian caravanserai book; 427)



Fig 5 Entrance gateway of Kooh-e-namak Stone Caravanserai

5.3. Stone Caravanserai of Mohammadabad

The Stone Caravanserai of Dir-Kaj (Mohammadabad) has a rectangular shape with a four-porch courtyard and belongs to the group of caravanserais of the central region of Iran. The caravanserai has two courtyards. The rubble stone from the surrounding mountain was used as construction material. It has a central courtyard and four-porch structures. There are four circular towers built at the four corners, and at the middle of each side a blind circular tower is constructed. In total, there are eight towers and all of them are hollow in inside. Generally, the principle for this caravanserai is the same as all the other caravanserais, that has chambers on all the four sides, and at some areas there is the de-loading area for goods. This caravanserai has a front entrance courtyard constructed with square columns which are connected with vaults and arches. The chambers have a vault construction.

The roof is made of bricks, but the entire structure is of rubble stone, except the caravanserai entrance which has been decorated with bricks. The builders of this structure have taken special care for selecting the stone and laying them, and joining the stone with mortar. From the broken section of the west side wall it has been observed that pieces of stone were laid without any mortar. If the whole structure is built like this, it can be understood that the construction method was like a rigid wall and only the exterior and interior elevation was built with mortar. The exterior walls were higher than the chamber ceiling. On all the four sides of the walls, holes were constructed for monitoring or shooting purposes.

In the entrance located on the east side of the caravanserai, a small yard was built. The walls of the yard are built with stone at a lower height but with a high thickness. It seems that the walls and yard are new constructions but the date is not known. This structure belongs to the Seljuk period.

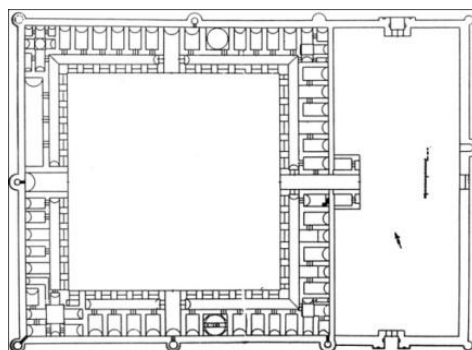


Fig 6 Stone Caravanserai plan of Mohammadabad (source: Iranian caravanserai book: 435)



Fig 7 Entrance gateway of the Stone Caravanserai of Mohammadabad (source: Cultural Heritage Organization of Qom)

5.4. Stone Caravanserai of Tolab

The Tolab Stone Caravanserai consists of two buildings with four porches constructed during the Seljuk and Safavid period. The caravanserai of the Seljuk period has four porches, and the chambers with barrel vaults are located around the porch. At the four corners and the north-eastern side of the structure, there are five vault structures covered with a dome in a skull shape. Stone and plaster mortar material were used for the building construction, except one chamber that was covered with bricks (Report review, Cultural Heritage Organization, Qom, 2002).

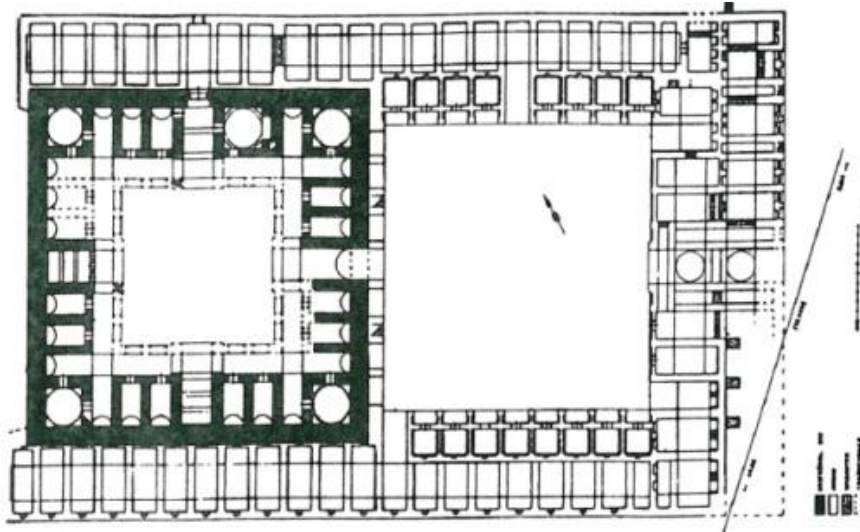


Fig 8 Tolab Stone Caravanserai plan (source: Iranian caravanserai book: 476)



Fig 9 North-west corner of Stone Caravanserai of Tolab (source: Cultural Heritage Organization of Qom)

Typology is the simple description of the characteristic of a building. Table 2, by examining the physical element of the stone caravanserais, has partly determined the building architecture; coordination and matching them with each other can specify the typology of the caravanserai. The caravanserai of this period is like the mosque in the form of four porches and the central courtyard is more similar to the mosque courtyard. Although the plans of these groups of caravanserais are similar, they are different in the details like the interior and exterior shape, entrance gateway, towers and other features.

Table 2 Typology architecture of stone caravanserai of the Seljuk in Qom province

Caravanserai	Typology plan	Courtyard	Entrance	Porch	Porch and tower	Corner plan
Kooh-e-namak						
Mohammad abad						
Aliabad						
Tolab (Seljuk)						

6. Results

The Seljuk era was the brightest period in the development of architecture. The architecture of this period has a special aesthetic aspect and stability. Although thousand years have passed, the ruins of the structure still represent the skills and art of the craftsmen and their awareness to the architectural styles. The boom of art in this period was indebted to the peace and political stability to the Seljuk period when the artists were able to create numerous works of art. One of the distinctive features of the caravanserai was the lack of stalls behind the chambers; the building plan was in the form of four porches, and the decorations were with brickwork and stucco.

The extensive use of stones as the main construction material, which is due to the environmental and climatic conditions, are seen in the Kooh-e-namak, Mohammadabad, Aliabad and old core of Tolab caravanserais in a similar way. But the stones used for Kooh-e-namak Caravanserai are rubble stones, and the rigid layer and stucco are used for the façade, while at Mohammadabad

Caravanserai, it is in the form of plated stones and mortar. The Aliabad Caravanserai was built with gravel and rubble stone and with lime and plaster mortar. The Tolab Caravanserai was built with stone, and the façade is made of brickwork.

Each of the four caravanserais has four porches with a central courtyard, while at Mohammadabad Caravanserai a smaller yard was later added to this structure. The Tolab Caravanserai has the combination of two caravanserais with four porches that were constructed in the Seljuk and Safavid periods.

In these caravanserais, the porches are constructed as a barrier between the central courtyard and the chambers. This feature has been less observed in other caravanserais, displaying a special approach during the Seljuk period. This part has made the space of the chamber as a private space, and it is considered as semi-open and semi-private space.

In the caravanserais of Kooh-e-namak, Mohammadabad and Aliabad, the composition of the tower and fortification followed a constant pattern. The presence of the terrace was another feature in the stone caravanserais of Kooh-e-namak, Mohammadabad and Aliabad. The builders of these historical structures doubled the exterior height of the wall and built a parapet wall and terrace on the rooftop of the chambers. However, these features are not observed in the Tolab Caravanserai.

The coating of the chambers, porches and verandas in these caravanserais are in the form of musical rhythm. The presence of alcove and suburban is another similarity of these caravanserais during the Seljuk period.

Table 3 Comparison of caravanserais in Qom region (source: Arab)

	Stone caravanserais of the Seljuk period in Qom province (Kooh-e-namak, Mohammadabad, Aliabad and Tolab)	Caravanserais of Qom province in different periods (Derehghachin, brickwork Aliabad, HozSoltan, Sadrabad, Dalak bridge, Bagherabad, Manzeriye, Asgarabad, Pasangan, Tinuj, Alborz, Allah gholi)
Plan form	Regular quadrilateral (square or rectangle)	Regular quadrilateral (square or rectangle)
Porch	Four porches	Most of them are two porches and some are four porches and only Bagherabad caravanserai has colonnade hall
Chamber	Surrounded around the courtyard and a barrier exists between the chamber and central courtyard	Around the porch on the first floor and in some on the second floor
Animal Stalls	Without animal stalls	Continuous animal stalls behind the chambers or built separately around the structure
Material	Most of the structure is built with stone materials and covered with brickwork	Most of the structure is built with adobe and brick and some with stone and brick
Tower	All have towers, except the Tolab caravanserai	Without tower, and at times towers were built later
Decoration	The important decoration is in brickwork and stucco	The Safavid caravanserais are less decorative at the entrance, while the Qajar caravanserai have more elaborate decorations like the seven-colour tiling at the Manzariye Caravanserai
In common	The form of plan in all the stone caravanserais in Qom was square or rectangle. The brick and stone materials were used. Brick was mostly used to cover the roofs. The brickwork decoration was at the entrance of the caravanserai.	
Distinction	The main distinction of the stone caravanserai in Seljuk with other periods was the absence of animal stalls and the presence of towers (except the Tolab Caravanserai). Another distinction was the presence of porches (or verandas) around the courtyard. The number of porches and the presence of four porches was the main feature of stone caravanserais in the Seljuk period. The main material of this period was stone, but in other periods other materials were also used.	

7. Conclusion

The ruins of the old caravanserais, many of which are built with strong materials such as stone and brick, indicate that a variety of materials with different qualities were used that were compatible with the geographical condition of each area (e.g., mountainous areas, deserts and wilderness, and wet or dry lands. The results (tables 1 and 3) show that the division and classification of the caravanserais of the Seljuk period have been done as regular quadrilateral (i.e., square and rectangle), four porches and also a variety of configurations with or without towers. The typology of caravanserais was based on the appearance of the entrance (built in a simple form and ahead of the main entrance). The caravanserais were decorated by using structure materials that were separated by stucco from the façade surface. Another distinctive feature of the Seljuk period caravanserai was the absence of animal stalls behind the chambers around the courtyard.

The presence of many mountains in the region of Qom has caused the extensive use of stone as the main construction material. The adherence of the architects of that period shows the use of indigenous materials. The difficulty of changing mud into clay and maintaining it against climatic factors in areas far away from cities caused the use of local materials. One of the architectural features of the stone caravanserais of the Seljuk period was the construction of porches (or verandas) with a wide span approximately five meters with a height of three meters. In the design of the chambers, the entrance span to the chamber is relatively smaller than the porch and the arches are constructed with bricks in a musical form.

Looking at the opaqueness of the towers, one can find that the caravanserais of the Seljuk period did not have the aspect of security and were just built to be in harmony with the other structures or to achieve the confidence of the travelers and caravans, and for this purpose the towers were built for the appearance to the caravanserais. When the caravanserais are observed from the outside, these towers seem to serve as defense weaponry but, in fact, they do not function as security towers. The caravanserais of this period are unique due to the construction of porches that serve as a barrier between the chambers and central courtyard. The common pattern that is achieved through the study of the stone caravanserais of the Seljuk period in Qom region shows that although the architects have used one pattern, all these structures have their own specific characteristics (tables 1 and 2).

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The Role of Sheikh Lotfollah Mosque's Buttresses in Prevention of its Thrust and Reasons for its Recent Re-thrust

Narges Karimi^a, Reza Abouei^{b*}, Dariush Heydari^c

^aM.A. Student in Restoration and Revitalization of the Historic Building and Sites, Art University of Isfahan, Iran

^bAssociate Professor, Department of Restoration and Revitalization of Historic Building and Sites, Art University of Isfahan, Iran

^cDepartment of Restoration and Revitalization of Historic Building and Sites, Art University of Isfahan, Iran

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Abstract

Sheikh Lotfollah Mosque is one of the important mosques in Isfahan located on the east side of Naghshejahan Square. The mosque was built from 1602 to 1606 A.D. by Mohammad Reza Isfahani. The structural balance was damaged after the destruction of the school behind the mosque and later the existing bathroom and Turkish closet. Afterwards, in 1934-1938, the project to construct the buttresses began, due to the thrust movement in the north and north-west side of the mosque. Currently, deformation and movement can be observed, despite the presence of these buttresses which are examined in this research using field studies, a careful examination of the buttresses and vulnerability analysis in the area according to library studies. The results of this study verify the presence of ascending moisture caused by leakage of water and sewage pipes in the area as the main reasons for this damage. Therefore, replacement of pipes, foundation grouting and organizing the area are among the restoration project requirements.

Keywords: Sheikh Lotfollah Mosque; Buttress; Pathology; Restoration

1. Introduction

Sheikh Lotfollah Mosque has been built on the east side of Naghshejahan Square in front of the Alighapoo mansion and on an old mosque called Jelokhan alley mosque (Jaberi Ansari, 1999). There are different opinions about the usage of the mosque, but a lot of travelogues and historical sources have referred to this mosque as Sadr mosque-school and based on the same sources, it was used for religious and educational purposes (Shardan, 1993). The structural balance was damaged after the destruction of the school behind the mosque, and later the existing bathroom and Turkish

* Corresponding author. Tel: +98-9133582769.

E-mail address: r.abouei@au.ac.ir.

closet; the north and northwest walls of the mosque also had deformation and movement. The architect master Maarefi, in charge of repairing the building, built four buttresses to transfer the generated thrust to the earth after the removal of the existing bathroom and Turkish closet in order to remove the disruptive factors, on one hand, and the reaction forces of the demolished buildings, on the other hand (Zargaran, 2014). Recently, some cracks have become visible on this side after a century which indicates the movement and deformation of the building, for which a thorough examination of the effective factors is the most consistent strategy. This article tries to answer the following questions:

- Did the buttresses of Sheikh Lotfollah Mosque have the appropriate response and did they have harmful volume or used weight?
- What is the main cause for the new deformations in buttresses and what strategies can be used to solve the deformation and damage of the area?

2. Geographic Location of Isfahan

Isfahan province is located on Iran's Central Plateau with an area of about 107045 square kilometers and contains about 25.6 percent of the country's total area. This province is located in central Iran between 30 degrees and 42 minutes to 34 degrees 30 minutes north latitude, and 49 degrees 36 minutes and 55 degrees 32 minutes east longitude. Isfahan city is the third largest city in Iran after Tehran and Mashhad with 51 degrees 39 minutes 40 seconds' east longitude and 32 degrees 38 minutes and 30 seconds North latitude (Shafaghi, 2002).

According to the latest country division, Isfahan province is surrounded by Markazi, Qom and Semnan provinces from north, Kohgiluyeh and Boyer-Ahmad, and Fars provinces from south, Yazd province from east and Chaharmahal-Bakhtiari and Lorestan provinces from west. In terms of area, it has the seventh place after Sistan-Baluchestan, Kerman, Yazd, Fars, Semnan and Khorasan Razavi. The place of Isfahan on the map can be observed in Fig 1 (by courtesy of the Portal of Statistical Center of Iran, Access Date: 30 August 2015).

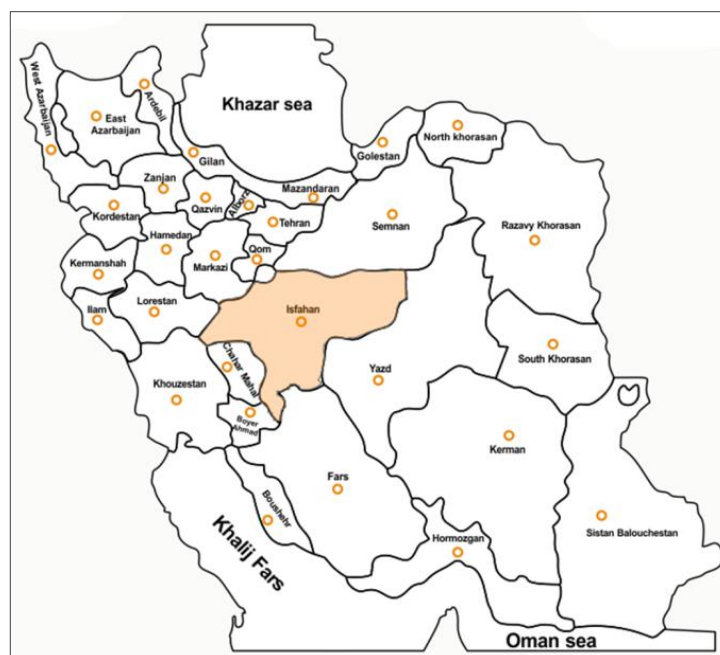


Fig 1 Isfahan's location on Iran's map (Electronic Portal ministry of Iran, Access Date: 30 August 2015)

3. Location of the Naghshejahan Square in Isfahan

As mentioned by Shafaghi: “Isfahan, has two natural and cultural bases which form the backbone of the city, Zayanderud in west to east direction as the natural base and Chaharbagh which is the cultural man-made base in north-south direction” (Shafaghi, 2002). The Naghshejahan Square is located near this base and on the intersection of north-eastern point meeting these two bases in the third district of Isfahans’s master plan (Fig 2). The third district marked in red dotted lines is the biggest among the twelve districts of the city with seventy five neighborhoods with an area of 51155.25 hectares (Shafaghi, 2002).

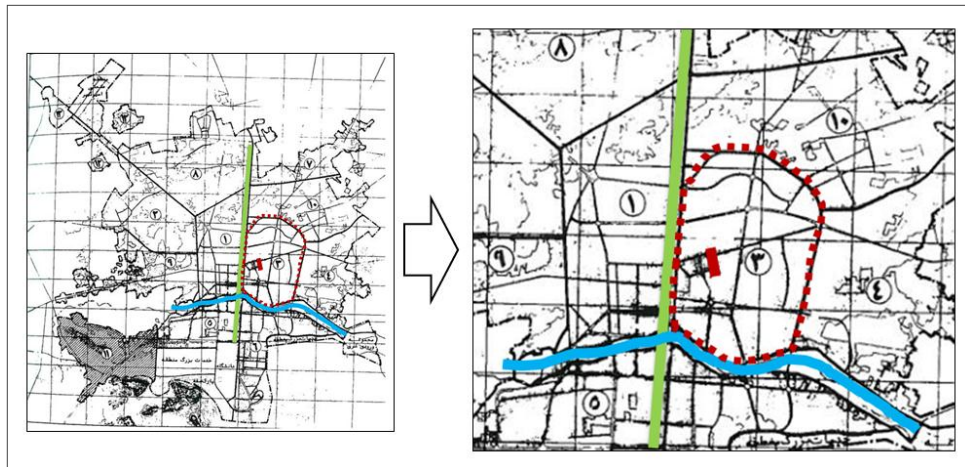


Fig 2 Boundaries of 12 districts of Isfahan (Shafaghi, 2002)

3.1. Location of Sheikh Lotfollah Mosque in the Naghshejahan Square

Sheikh Lotfollah Mosque is located on the east side of the Naghshejahan Square, in front of the Ali Qapu Palace and beside the Abbasi Grand Mosque (Fig 3). There is an inscription in the mosque sanctuary which dates back to 1028 AH and shows the completion date of the mosaic and tile. The date on the large inscription which is inside the mosque under the dome shows 1025 AH. This building has been registered in the list of the monuments on sixth of January 1932 (15th of Dey) (Godar, 1989).



Fig 3 Location of Sheikh Lotfollah Mosque in the Naghshejahan Square (Source: Abbasi, 2011: 9)

4. Restorations carried out in the mosque

The idea of repair and regeneration of religious, national and historical areas was the main focus at some point in time in the first and second Pahlavi regimes. In this regard, advisors and skilled craftsmen were hired, despite the financial problems that the government was facing. This pace then became slower after the Islamic Revolution and due to the eight-year war and its consequences. More attention, however, has been paid to this matter in recent years. Sheikh Lotfollah Mosque-School is among the buildings under restoration from 1928, which can be approved by a written report in this regard with the issue number of 2411 dated 3 April 1928 (Fig 4). This document which is in the form of a report signed by a finance steward in Isfahan and which has been set under the title of Ministry of Finance, states that: “the repairing of Sheikh Lotfollah Mosque has started as ordered and Shah Square will start soon, and in case of the mosque, the start of the new building will take a few days because they are busy removing the old wall and if you order, in a few days we can hire master Jafar who is an expert in dome construction. Because if we can ascertain that the damage of dome’s back does not affect the dome, we can escape the exorbitant cost of the new building and we can spend it in a better way; and if it is needed anyway, order the needed commands to architects to achieve the best results because the cost of hiring the mentioned architect is not high and may be paid form the costs of the mosque repair in Isfahan (the aforesaid law is among public benefits). Hiring an expert architect form Europe in Tehran is useful too, but it all depends on your order”. Nevertheless, Honarfar believes that the date of starting the work is 1932 due to the conservation and restoration of the square in this year, but based on the mentioned document, 1928 can be considered as the date for the beginning of the changes such as demolition of the walls, and the period from 1933 to 1937 can be regarded as the first phase of starting the restoration (Honarfar, 1971).

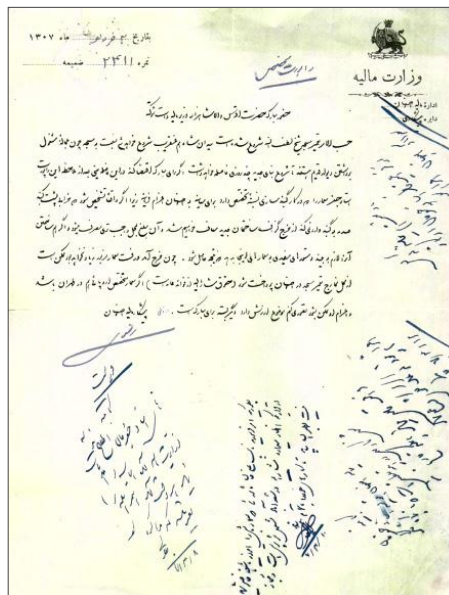


Fig 4 Document related to the start of Sheikh Lotfollah Mosque’s restoration, National Archives, Iran, (Zargaran, 2014)

Another document refers to "score sheet of 1" as "the list of non-movable national index" which includes a brief report on construction date and registration of the building and refers to the restorations carried out in the building. In remarks which are handwritten by a reporter, this document states that: “the building is still called Sadr and Fethullah Mosque. There is an inscription

inside the sanctuary which dates back to 1025. In the end, there is a large inscription above the entrance door with dates back to 1012. The lower sanctuary dates back to 1011, related to the tiles of entrance; other remains of these tiles have been installed in the basement. The toilets of the house and pools and the Turkish closet located behind the north wall of the mosque were destroyed, and long buttresses were built between 1934 and 1938. The repair and improvement of tile-work of the enormous dome of the mosque was carried out between 1937 and 1938, and the hall's floor was repaired using tiles" (Fig 5) (Zargaran, 2014).

ISFAHAN (Isfahan) No. du monument - 105
Fiche No. - 1

INVENTAIRE des MONUMENTS HISTORIQUES IMMOBILIERS

Designation du Monument *La masjed-e Sheikh Lotf Allah*

Localisation *Isfahan*

Datation *Construction sous le règne de Shah Abbas I. (985-1028
1587-1629)*

Date du classement *6 Janvier 1932. (15 Dec 1310)*

Situation administrative

Remarques *- Cette mosquée est encore appelée masjed-e Sadeq
et masjed-e Lotf Allah.
- Dans la niche de mi-hauteur de la porte
l'inscription datée de 1028 fut fixée à l'époque de
l'achèvement de la construction.
- La grande inscription fut de hauteur l'entree, et la base de
la porte fut la date 1028.
- Les autres grandes inscriptions horizontales de porte d'entree
à la date 1012.
- Les autres inscriptions furent de date 1011*

Fig 5 Documentation of Sheikh Lotfollah Mosque; National Archives of Iran, Tehran (Zargaran, 2014)

The repairing of Sheikh Lotfollah Mosque started in 1933 after the order of Isfahan province's governor. The restoration work ended in 1937, and in the '50s it was restarted. The measures related to restoration work were carried out under guidance and supervision of the Department of Archaeology and by Mr. Maarefi who was the chief architect of the department and a traditional buildings skilled master. He had the responsibility of the mosque's restoration and carried out the job in four stages based on the requirements of the building.

5. Pathology of Sheikh Lotfollah Mosque's Buttresses

The person who is supposed to carry out the restoration must properly identify the damages of the building and factors causing disruptions so that it can help the building's survival in case of having proper and on time determination and provision of proper repair plans; the damages and their position in this building along with their causes must be dealt with in the first step. Aging or the frazzle of monuments is one of the factors that exacerbate the damage which leads to weakening of the mechanical characteristics, abilities and strength of materials and provides favorable conditions for other imbalances. From the authors' observation of the mosque and the area of buttresses in October, December and February 2015, damages can generally be divided in the following categories:

5.1. Damages related to Internal Factors in Buttresses

Structural damages are those types of damages which are created due to dysfunction in the structure and withdrawal of forces which form the center of the gravity of the building and creation of additional forces in the structures. Structural damages include cracks, deformation, or both.

These types of damages can be observed in the form of cracks and deformations in the north and north-western wall of the mosque.

5.2. Damages related to External Factors in Buttresses

A) Damages caused by natural factors in the long term which have mostly occurred due to moisture in the building which can be considered to be in two forms:

1. Ascending moisture which is due to the presence of surface water
2. Descending moisture

B) Damage caused in this building by human factors which are relatively high. These damages can be divided into two categories:

1. Manipulation in the building
2. Lack of proper maintenance due to mismanagement.

5.3. Pathology table of Buttresses Location

Table 1 Pathology of the examined area

Spatial elements	Damages	Imbalance	Damaging factors
Buttresses Areal wall around the building North and North West wall of the building	Degradation and erosion of materials of the wall Degradation and erosion of materials of the wall mortars' Adherence	Degradation and erosion of materials Loss of the quality of mortar	Ascending moisture Lack of Attention to the building
North and North West wall of the building	Crack and deformation	Being out of vertical mode	Ascending moisture Lack of Attention to the building Human manipulation
North and North West wall of the building	Degradation and erosion of materials of the wall mortars' Adherence	Loss of the quality of materials	Descending moisture Lack of Attention to the building
The whole area	Degradation and erosion of materials of pavements	Loss of the quality of materials	Ascending moisture Lack of Attention to the building

5.4. Cracks and Deformations in the North and Northwest wall

At that time, a thrust occurred in the north and northwest side of the building in a way that cracks with the width of 10 cm occurred in the vault of the floor under the porch, and 20 cm cracks were caused in second floor which would lead to the destruction of basement's yard and mosque's corridors. Master Maarefi believed the reason for this thrust was the existence of bath and its chimney's defect, so the action was taken to remove and eliminate these units (i.e., bathrooms and Turkish closet) and four strong brick buttresses were created behind the northern wall of the dome's porch (Beheshtian, 1976). The noteworthy point is that there are currently relatively large cracks in

the floor of the hallway, cracks and deformations in the north wall of the building despite the use of an element consistent with the structure (buttresses) and the proper restoration that took place at that time which has shown a good performance in less than a century (Figs 1 to 4). The question that comes to mind is that: how much the buttresses system affects the security level of bearing capacity in Sheikh Lotfollah Mosque? Can a positive trend be observed in performance of mosque's structural systems? Are there other affective factors in these deformations and cracks?

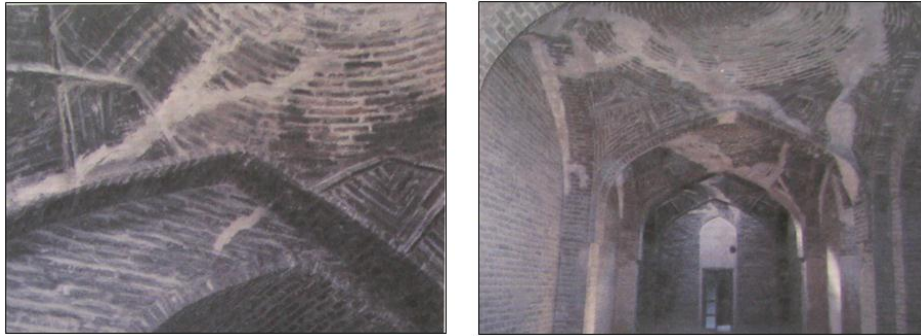


Fig 1 and 2 Cracks on the corridor of the second floor (Isfahan's Archives of Cultural Heritage)



Fig 3 and 4 Cracks on the northern side of the mosque wall

Analyzing Sheikh Lotfollah Mosque's buttresses and reviewing their structural behavior in ABAQUS software is a way to answer these questions in this section. For this purpose, first some parts of the mosque and buttresses have been measured by the authors using manual and laser meters and have been implemented using AutoCAD software (Fig 6). The details related to buttresses (such as connection of the buttress the main wall of the building, its connection to the ground and method with bricklaying) have also been examined and have been drawn manually and with the use of computer. All signs of rupture and deformation have been examined in detail in order to obtain information about the functioning of structure. The second step was transformation of required information to the software.

In the first step, the detained information about mosque's buttresses can be described in this way that the mosque has four buttresses which are almost identical in size which are located in the north and northwest without any fastening. The northwest to north buttresses have been named b1 to b4 and names r1 to r9 have been selected for corridor's ribs.

The mentioned buttresses are solid buttresses with trapezoidal plan in size of $1.47 \times 1.3 \times 7.94$ meters and combined section (rectangle, triangle) which are clearly visible in Fig 6. Their height is 11.85 meters which are 60 cm lower than the building's roof. The section of the buttress increases by 1.5 meters at the height of 6.15 meters (the place where the roof of first floor's hallway is located) which is certainly because of thrust force of this section's vaults and increasing confidence

coefficient in the structure (Fig 7). The b1 and b2 buttresses are located in along second floor and the roof's entrance hallway's main piers and b3 buttress is located along the twist of the main corridor and b4 buttress has been embedded behind the main corridor after the twist along r7 rib. The surfaces of buttresses have been constructed with bricks with dimensions of $20 \times 20 \times 5$ cm with slope for directing rain and snow.

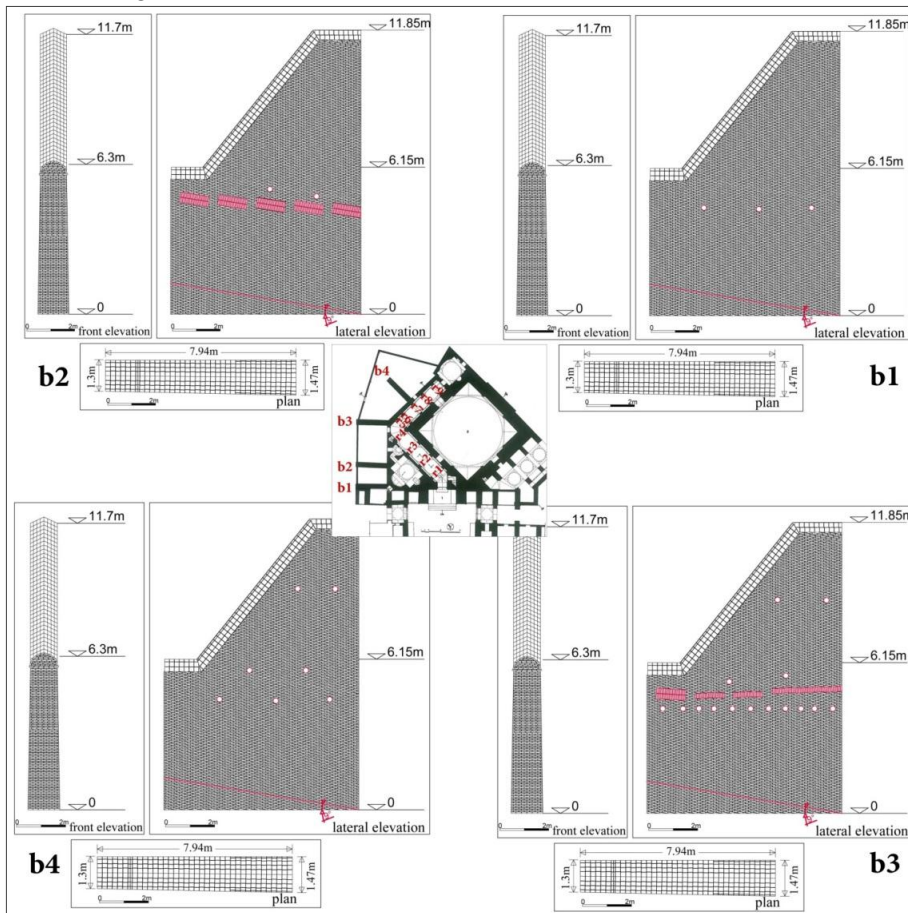


Fig 6 Plan, front elevation and side elevation of buttresses of Sheikh Lotfollah Mosque

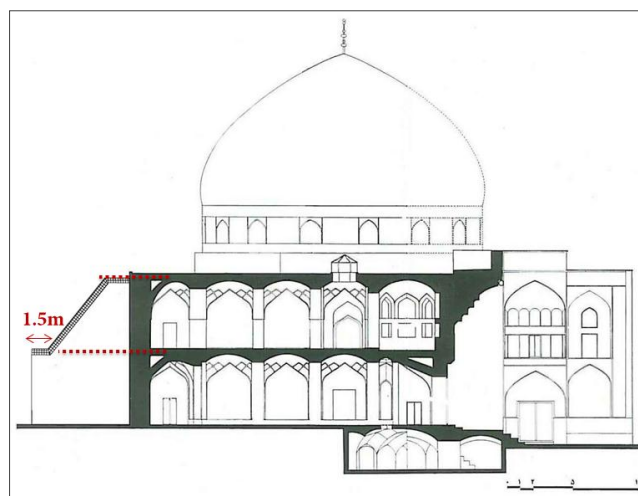


Fig 7 Increase section of the buttress where the roof of first floor's hallway is located (Isfahan's Archives of Cultural Heritage)

In the second step, information was simulated in the software. Although the single-shell dome of Sheikh Lotfollah Mosque is considered to be a dormant dome and exerts a huge thrust force but the skillful architect has been able to control thrust force with extremely low curvature of dome's bottom into the craters and designing thicken walls and two floor corridor in west and north of the mosque.

In this case, Ackerman and Pope believe that: “the dormant curvature of the dome leads to increased thrust in Oguns, but this force has been solved by increasing the thickness of walls” (Pope and Ackerman, 2008). Hejazi has also analyzed the dome of Sheikh Lotfollah Mosque using ANSYS software and expresses in this regard that: “applied tensional, compressive and shear strengths to the dome, do not pass the authorized strengths” (Hejazi, 1997). Thus it can be argued that the thrust force applied to the buttresses are not coursed by thrust force and the thrust force caused by the weight of corridors' roof (vaults and ribs) has been calculated without consideration of dome's load in order to apply thrust force in the simulated model. The force distribution in the dome can be seen in Fig 8.

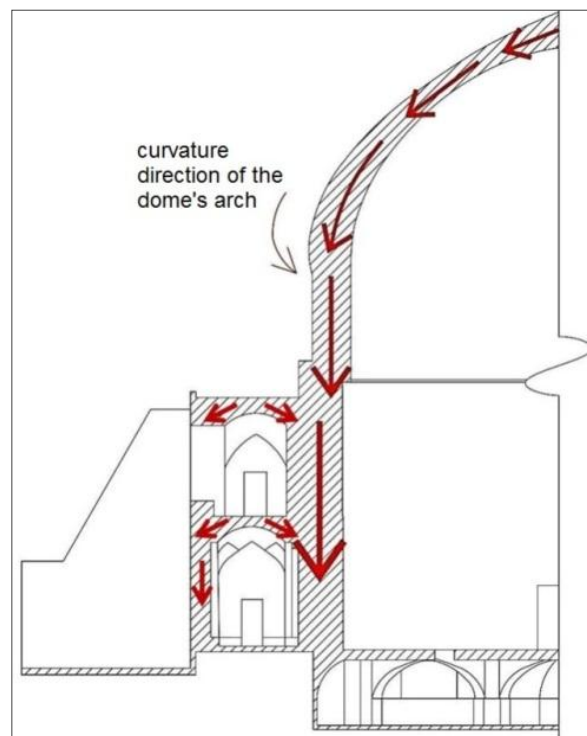


Fig 8 Force distribution and its transformation to the ground in the dome of Sheikh Lotfollah Mosque

As shown in Fig 9, the maximum tensional and compressive strengths in simulated buttress are respectively 115.7 and 35440 Newton per meter squared which are acceptable compared to allowed tensional and compressive strengths in used materials (table 2).

Table 2 Mechanical properties of materials used in buttresses (Haj Esmaili, 2001)

Materials	Compressive Resistance (MPa)	Tensional Resistance (MPa)	Shear Resistance (MPa)
Work brick unit	0.85	0.065	0.1

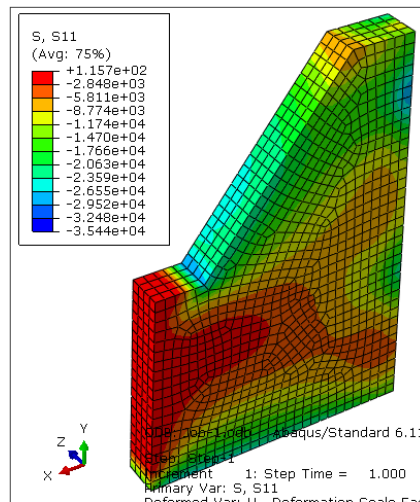


Fig 9 Tensional and Compressive contour stresses in modeled buttress without the load of dome

The thrust force caused by the dome was also added to previous forces in the modeling and the model was implemented again in order to have more reliable results. Not only has the buttress showed a positive response in the mode, but also tensional and compressive strengths do not exceed the limit until 1.2 time bigger force (Fig 10).

According to fig 10, it can be stated with confidence that the volume of used materials and the dimensions of buttresses are relatively high for transformation of thrust force and smaller buttresses with smaller dimensions would be able to bare the applied forces. In this regard, the buttresses with opening were also capable of meeting the demands of the architect and a prominent example of which is the great mosque of Yazd.

Based on the mentioned presentations, high volume and weight of buttresses will lead to subsidence of the building which indicates the theory of creation of cracks or deformation. But nearly a century passes from the construction of these walls and the subsidence is in fact a consolidation subsidence in the building which has reached to a balance at the moment. The question which can be posed is that: what is the cause of created crack and deformation? This will be discussed in the next section.

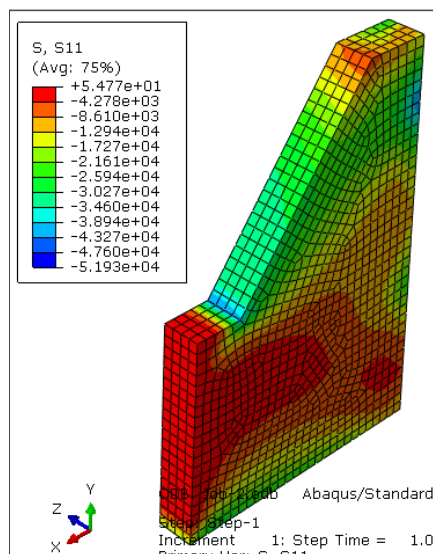


Fig 10 Tensional and Compressive contour stresses in modeled buttress with the load of dome

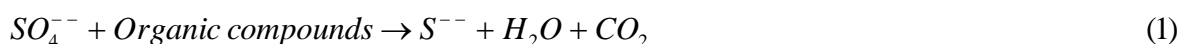
5.5. Erosion damage and decay of materials

The caries, corrosion and moisture in buildings in the sides of mosque's adjacent streets (Photo 5 to 8) made authors to search for an external harmful factor out of the mosque's building. The ascending moisture of sewer and water pipes leaking in the studied area were identified to be the causes of damage in conducted research and studies. According to water and sanitation experts, the design of the existing sewer plumbing in the mentioned alley is related to 1971 and its implementation has been carried out in 1972 with an inner diameter of 250 mm and a depth recorded in Fig 11 which are estimated to date back to 40 years ago and have not been reconstructed or replaced in this time period. Given that this time period is a long time compared to regional standards in a way that the determined standard in Middle East countries is 6 years and up to 17 year in Europe and their replacement, repairing and reconstruction are necessary after this time (Naddafi and Dindarlu, 2003). On the other hand, according to concluded studies: "Leakage of sewage networks in Iran is averagely nearly 59 percent in different areas every 24 hours" (Asadiany Yekta and Tabesh, 2010) which is a significant amount. It can be argued using this interpretation and with the population growing in recent years that the sewage pipes in the area under evaluation have been eroded and damaged.



Photo 5 to 8 Caries, corrosion and moisture in buildings in the sides of mosque's adjacent streets

"Erosion of sewer pipes takes place according to the chemical reaction in formulas 1 to 5" (Naddafi and Dindarlu, 2003).



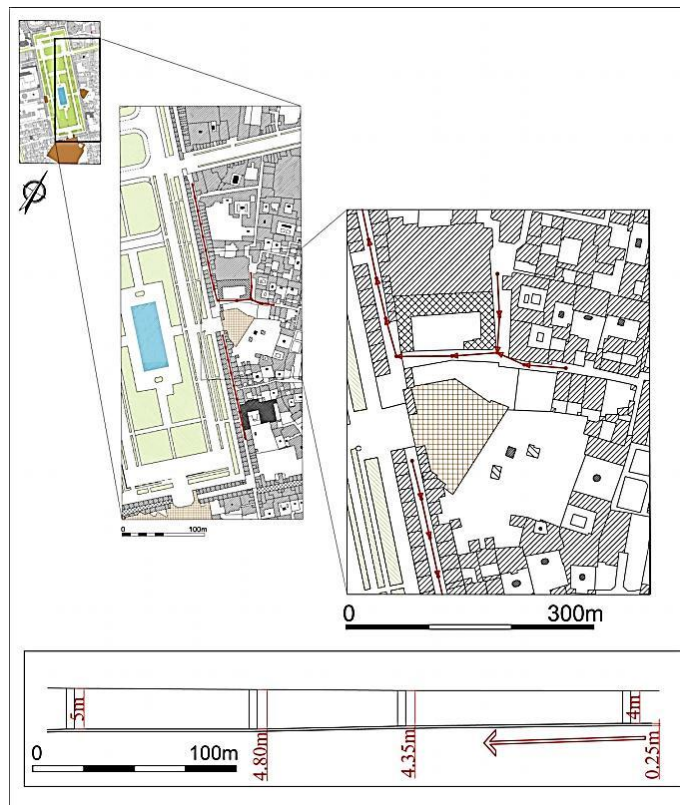


Fig 11 Tilt and depth of the sewer pipes in the mosque's adjacent alley

H₂S gas enters the upper atmosphere of sewer pipes due to turbulence and the presence of moisture and oxygen provides the sulfur by oxidizing bacteria for the oxidation reaction of H₂S gas. As a result, the produced sulfuric acid will cause the concrete corrosion by dissolution of calcium carbonate in the concrete. Fig 12 shows the stages of H₂S gas production in sewer pipes (Naddafi and Dindarlu, 2003).

Based on the observations of corroded pipes, the corrosion is not limited to the pipe's crown and it also attacks the sides of pipes. The rate of corrosion on the left side of the pipe has been reported to be higher than other parts in calculations (Fig 13) (Naddafi and Dindarlu, 2003).

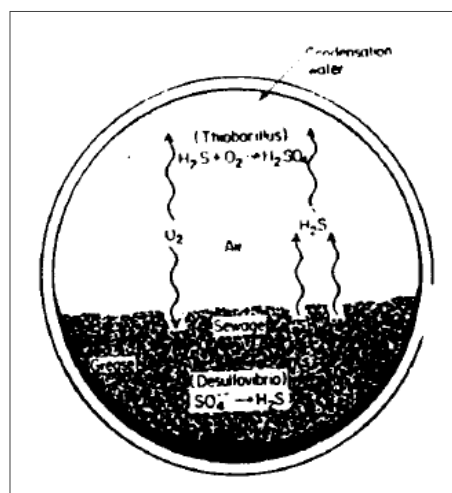


Fig 12 Method of H₂S gas production in sewer pipes and corrosion (Naddafi and Dindarlu, 2003)

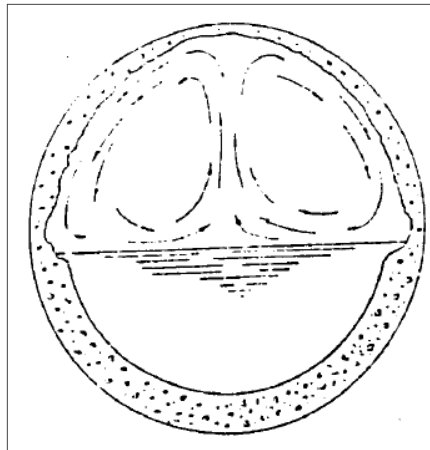


Fig 13 No equilibrium distribution of corrosion in concrete sewer pipes (Naddafi and Dindarlu, 2003)

The sewer pipe corrosion will definitely lead to leakage and penetration of salts and water the soil around the pipes. On the other hand, cations of the salts sewer pipes, absorb dipole molecules of water (Fig 14) and increases the level of soil's water absorption level. The dipole molecules of water rise up in form of capillary along with negative ions in the soil and positive evaporation occurs on the wall surface and negative ions will precipitate. The accumulation of negative loads on the surface of the wall and positive loads in the soil creates load potential difference in soil. This potential difference will cause more water to rise in the form of capillary with higher suction and increase the level of moisture in the soil and increase the possibility of having saturated soil (Massari, 1997) and this moisture will intensify the damage.

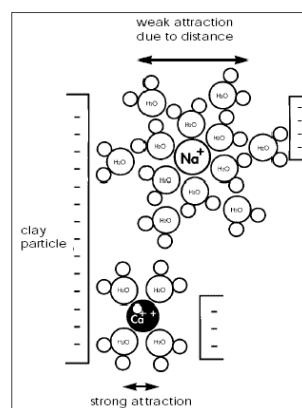


Fig 14 Absorption of water's dipole molecules in soil to existing Cations in sewage pipes' salts (Dos, 1993)

Water distribution system pipes in this area have also been created by metal pipes with an inner diameter of 100 mm which have much higher corrosion and leakage percentage compared to sewer pipes. According to concluded studies "leakage and damages of water form cracks, breaks and fittings of pipes are averagely about 40 percent" (Sarkarde and Khodashenas, 2008). This amount is also considerable due to lower depth of these pipes below the surface and water will capillary rise and shows itself. On the other hand, the permeability of the street has been taken by rigid material (asphalt) (Photo 9 and 10) and the ascending moisture is trapped and gets out form the most permeable side of the wall. The effects of moisture are visible in outer and inner bases of the wall.

Also, using materials such as stone at the base of the outer wall (Photo 11 to 13) will block the penetration location of wall's lower levels and moisture penetration into higher levels (Fig 15).



Photo 9 and 10 Use of rigid material (asphalt) in the alley



Photo 11 and 13 Use of stone and cement sand mortar in the perimeter wall of the mosque

The materials for pavement have also been damaged due to ascending moisture and lack of attention. Of course, taking the waterways of mosque, placement of rain water pipe of the mosque at the buttress's area and lack of proper slope in this area contribute to the problem in order to damage the pavements of this area.

After all of these interpretations, we can express about the reason for racks and deformations in the north and north-western side of the mosque that: the existing clay in the soil has turned into dough due to increased moisture under the soil of foundation due to leakage of water and wastewater facilities' pipes and doughy soil leads to the soil bearing capacity reduction and has caused the settling in the building. On the other hand, according to observations and conducted studies and modeling, the volume of considered buttress is high and since this buttress is solid, the overlapping of stresses' distribution of the main wall and buttresses are extremely high which has caused new cracks and settles in recent years. The cracks in the outer corridor of the second floor and the front wall of the building are considered to be active cracks showing the increase of the settle.

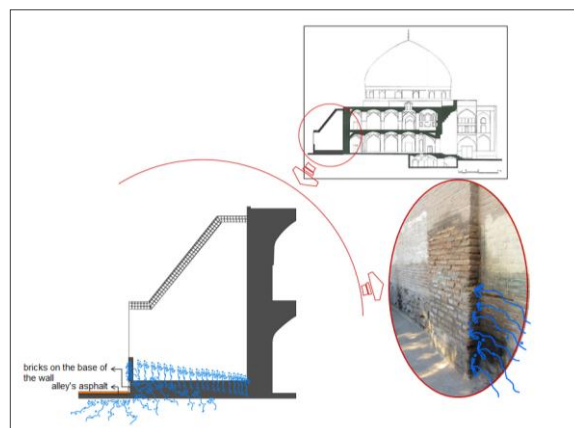


Fig 15 Method of rising moisture penetration in the base of buttresses and perimeter wall

6. Restoration plan of Sheikh Lotfollah Mosque's Buttresses

The presented restoration method in the area under study is based on preserving the authenticity of the building, using the reversible principle with minimal intervention, using innovative conservation practices with respect to the past executed repairs done by the late Maarefi.

The most basic protection scheme that can be done is collecting garbage and debris which have been accumulated by residents in the area. After that, the removal of the main cause in ascending moisture is necessary. Thus the asphalt on the alley must be removed and replacement of water and sewage network's pipes must be carried out in order to eliminate a part of damaging moisture in the area.

Since the soil moisture has reached saturation, the building will suffer from settlement after the elimination of moisture from the foundation and the body. The equation of $\sigma' = \sigma - u$ can provide a better understanding of the matter in this regard in which:

σ' is the stress applied on the soil

σ is stress caused by the weight of the building, and

u is also the stress applied on the water

u will be zero by eliminating water. Thus, $\sigma' = \sigma$ and the stress of the weight of the building will be imposed on the soil and soil will be compacted and settle occurs in it. Deformation and cracks will occur in the building over time with soil settlement. Thus the authors suggest the grouting of lime-stabilized and ash to the soil under the foundation to prevent soil compaction and its settlement in order to ward off destructive agent. "Since the lime alone has little effect on soil, there is the need for a pozzolanic material to enhance the effect of lime in the soil and its mass volume production which ash is used" (Bell, 2005).

The grouting of lime-stabilized and ash is a technique to enhance deep soils. The slurry penetrates the cavities, gaps and holes and reduces liquefaction, infiltration and soil plasticity and improves soil resistance and durability. This method is among the most economical methods of soil improvement. Factors such as soil gradation, different levels of underground water, the depth of the structure from surface and surface access to equipment are necessary for implement this method in order to determine the best method and grouting mode. Of course, since the consolidation grouting is a type of grouting in which "basic structure of the soil does not change and grouting takes place through the least pressure and increases the strength of foundation and also prevents water penetration", it is recommended (Vailer, 1996). Fig 16 shows the parts of the building which need grouting and its implementation details.

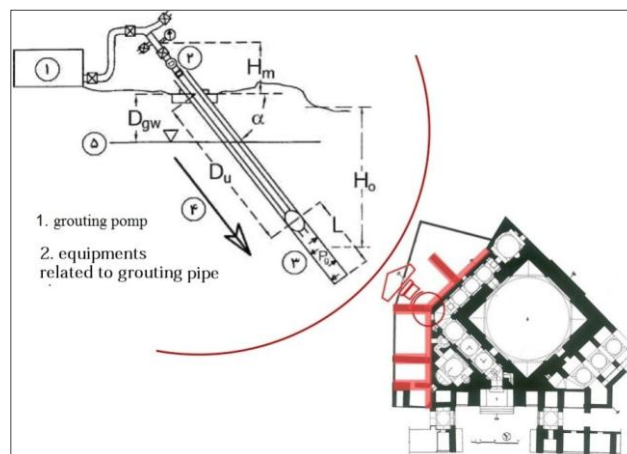


Fig 16 Parts of the building which need grouting and grouting's implementation details

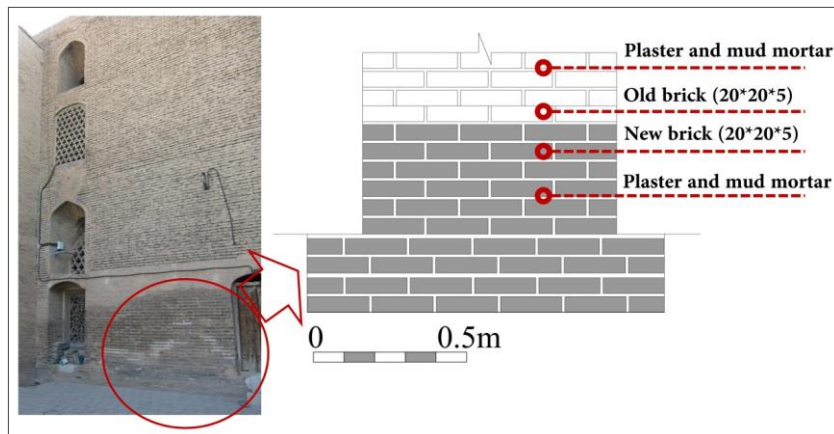


Fig 17 Replacement of new bricks and mortar and worn materials in the main wall and buttresses

Organizing the area of buttresses is necessary after grouting. The suggested plan for this section is in this form that parts of materials and bottom of the fuselage and Chinese seats which have been damaged due to moisture must be initially replaced with new and resistant materials. The intended area must be completely cleared for replacement and putting new materials in order to clean damaged mortars or debris left in it. Cleansing this part can be done by air compressor and then materials replacement be carried out. The $5 \times 20 \times 20$ half-pressed plaster mortar brick is recommended for the main wall of the building and buttresses (Fig 17).

Since the brick paving of this part has been completely destroyed and this will absorb water and moisture during rain and directs water and moisture to the lower part of the wall, all of the brick paving of this part must be collected and the area be paved by applying the correct slop and blocked waterways in this area be opened again in order to easily direct running water from drains to the alley. The slope of this part should also be directed to the alley in order to let water of rainfall to slip on the created surface and be directed to the area. The slope of the area has been shown in Fig 18.

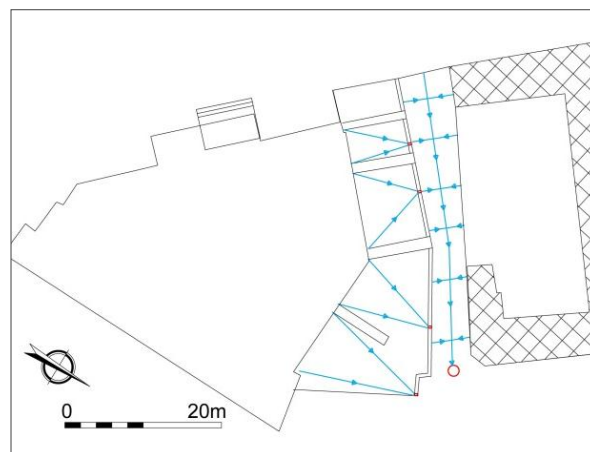


Fig 18 Slope of buttresses area and the alley

Pavement of this part has changed over time in a way that it has created a quite rugged surface. Since the floor bricks have severely suffered from displacement and settlement, maintaining it completely in the current status is not possible. The implementation of brick pavements are as follows: brick pavements are implemented with lime mortar with a little cement after the implementation of a 10-centimeter layer of limestone concrete (Fig 19).

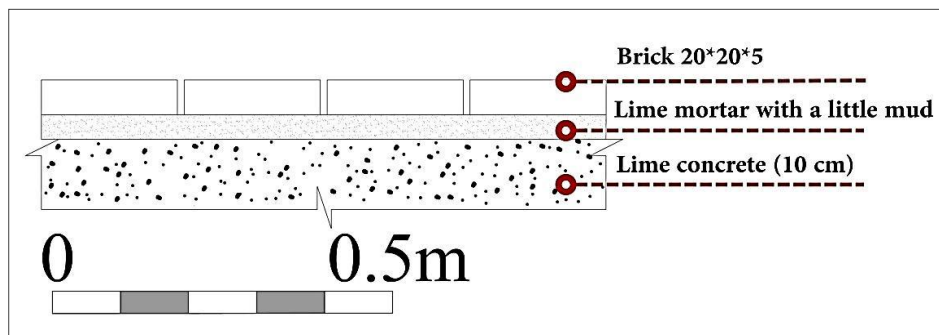


Fig 19 Area's pavement implementation

The Cutter stone is recommended for pavement alley adjacent to the mosque due to passing vehicles and motorcycles in this area. Cutter stone has been implemented in the sand and the moisture easily rises from seams between them. A water channel has been embedded in the middle of the street cement blocks in order to direct surface waters toward it. The details related to its implementation can be seen in Fig 20.

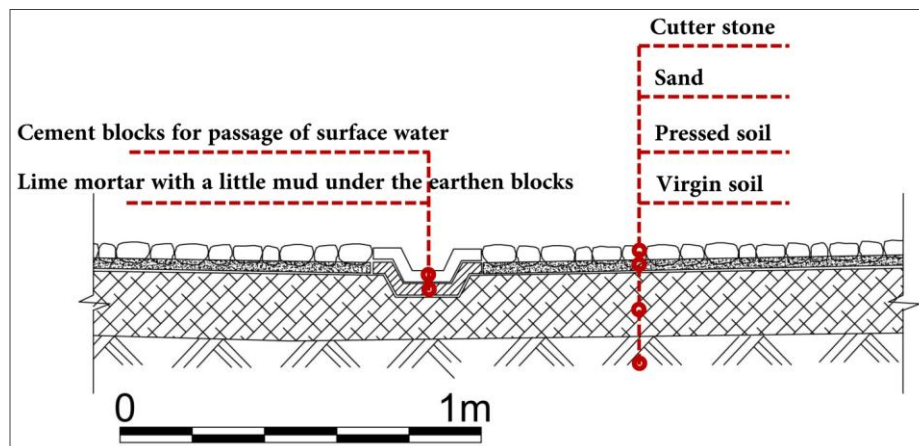


Fig 20 Details related to implementation of alley's pavement

7. Conclusion

The buttress structure of Sheikh Lotfollah Mosque has been able to fulfill the task of harnessing thrust forces during the course of its life which is almost a century despite being implemented in much larger volume. On the other hand, this structure is a part of the history of this building's restoration, maintaining and respecting it is valuable and necessary. Over time, damaging factors such as human manipulation aging and obsolescence of the building have jeopardized the implemented buttress. In the meantime, human manipulation has played an important role in the advent of damage. In a way that water pipes and sewage, lack of repair due to pipe corrosion, lack of proper slope, lack of water disposal via waterways, the use of rigid materials have prevented the rise of moisture from the surface and the foundation of building's walls. The bearing capacity of the soil decreases with increased soil moisture and having doughy soil and the high volume of buttresses have also accelerated the effect of water. Thus, the solution is to act on disposal of ascending moisture through the repairing and replacement of water and sewage pipes network with restoration and use of scientific and empirical methods and help in improvement of foundation's soil by grouting of lime-stabilized and ash and organize the studied area.

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Implementing Non-Repetitive Designs on Upholstery Fabrics

Soniya Avazpour^a, Loghman Karimi^{b*}, Salar Zohoori^c

^aArt and Architecture Department, Yazd Branch, Islamic Azad University, Yazd, Iran

^bDepartment of Textile Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran

^cDepartment of Textile Engineering, Yazd Branch, Islamic Azad University, Yazd, Iran

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Abstract

In this study, a new method has been introduced for the production of upholstery fabric, with a single design feature such as designs without repetition of color features to avoid uniformity in the furniture. In this regard, single fabric design with colors appropriate to sofa structure is considered. The aim is to study the different upholstery fabrics and to reach the starting point for upholstery fabric design. The design can provide feeling of relaxation and comfort for human beings. In today's stressful life, humans are concerned with the need to see and touch elegance and simplicity in their surroundings, despite the lack of diversity in upholstery fabric design that cannot fulfill their wishes. Therefore, designs need to be consistent with the theme so that they are integrated in the field and lead the viewer's sight to the surrounding, as if the design is ongoing.

Keywords: Furniture; Upholstery; Design; Fabric

1. Introduction

1.1. Furniture Design

Furniture is made to sit and rest and to make a loving home environment. Generally, furniture (like sofa) consists of objects that are used in the house or to decorate the house; they are made of wood, metal or soft metals and are covered with colored fabrics such as leather or plastics (Dehkhoda Dictionary). Basically, furniture creates a loving home atmosphere; it is a term derived from the French word "Ameublement", and in Persian language the first letter "A" is eliminated and replaced by correct word "equipment" (Kasraei, 2007: 60).

* Corresponding author. Tel: +98-9144422952; fax: +98-2188009611.

E-mail address: l.karimi@srbiau.ac.ir.

Furniture, with respect to the quality of design, can limit the physical comfort or development. Our body reacts to the comfortability of a chair or to the height of a chair. Therefore, human is an important factor affecting the form, proportion and scale of the furniture. Furniture must be designed in a way that in the first place it is associated with human dimensions (Mahmudi, 2007: 304).

The initial layout of the room is the living room furniture that must have a natural color and shades, decorated with colorful fabrics to suit the environment and commensurate with the taste of people. Furniture is categorized as the design elements that take place entirely with the interior design, while the walls, floors, ceiling, windows and doors are concerned with architectural design. In the interior design, the selection and arrangement of portable elements, furniture and other accessories with a building space are important.

Furniture is the mediating element between human and architecture. It provides a nature of change in the form and scale between interior space and people. A habitable interior space is created by the furniture.

Nowadays, many of the furniture designs are the combination of different pieces of historic and contemporary periods. There is a lack of research on the historical interior design by most designers, although these rooms are an appropriate case to be considered for designing as they maintain furniture and historical accessories, and at the same time preserve the antiques for the customer. Historical and cultural resources provide the examples of furniture arrangement and selection of appropriate projection and furniture pieces. Among the primitive designs that have been produced till date, most of the reproductions lack the quality of the original material, construction skills or the durability of their originality. The antiques are often recognized by cultural or historical aspects, countries and or important people of each period. The original pieces are usually expensive if the appearance condition is favorable (Cordella & Hidalgo, 2016).

Modern furnishings include pieces produced in the late 19th century and early 20th century designed by designers and craftsmen belonging to Bauhaus movement. The physical comfort can be restricted or developed depending on the furniture quality of design. Our body will react to the height of the chair. There are certain types of feedback that make us aware for the suitability of the furniture to be used. Therefore, human is an important factor that has an impact on the form, proportion and scale of the furniture. Furniture must be designed in a way that initially it is related to human dimensions, to favorable responses and also to the provision of movement patterns and the nature of the activities. However, our understanding depends upon the nature of things or ongoing activities. The duration of the environmental factors such as lighting quality and our mental state also effects the perception. Sometimes, the effectiveness and efficiency of furniture depends on the proper use of furniture or the level of our knowledge about their application (Mahmudi, 2007: 304).

1.2. Original Furniture Style

American – English classic design style: Styles and forms that have survived and remained over the centuries are known as classic. Recent furniture is still the same as it was earlier created to serve people's needs. All time furniture designs are new and up-to-date. In fact, a good furniture layout is permanent (Kasraie, 2007: 64).

Chippendale Style: Thomas Chippendale lived from 1720 – 1775 in UK and from 1750 – 1770 was an eminent cabinet maker of London. During his career, he was interested in furniture and ventured in the preparation of projects in the field of furniture. Over time, with the introduction of Mahogany wood in the profession of carpentry, Chippendale presented patterns that were in

compliance with this new wood; that was the beginning of popularity and transformation in furniture design, which was later recognized as Chippendale style. Thomas Chippendale worked exclusively on fine carvings and avoided inlay work. The right baseline was considered as the most important features of Chippendale furniture style (Justis, 2011).

Jacobean Style: This is an English furniture style formed from 1603 – 1688. The Oak chair with a long backrest, delicate carved legs, with Spanish velvet covered seater introduced proportion and lines of the furniture. From the primary Jacobean soft seater, emerged furniture with Stewart style fabric cover. The glory and elegance of the style was the result of advance in carpentry by Grinling Gibbons.

Queen Style: In the Queen era, the home furniture took distance from the carving style and specification which was the passed introduction. This was the first English furniture style where there was a combination of both beauty and comfort. The armrest and back of the furniture was appropriate for the body curvature. The cloth covering replaced the carving with curvy lion claw base, and rounded corners emerged in this style. The luxurious high backrest style was shortened. It was during this period that Mahogany wood was used for the first time in UK. In chairs of Queen Anne style, the backrest was indented or flat and with non-removable fixed fabric coated seats.

Classic French Style: This style was popular during the reigns of Louis XV and Louis XVI. The royal furniture makers filled the king's palace with furniture of the 18th century. Louis XV made the ancestors' love for the luxury objects.

Neoclassical: From the late 17th century till the mid-18th century the neoclassical furniture included the Federal and Empire styles. The passion for ancient style and imitation of Greek designs was inspired by excavation of Pompeii. The fathers of the Independent America saw the early democracy of the human history as their new republic model and believed that classic design must reflect the new United States. Very soon, the Americans showed their pride by filling the revival Greek style buildings with neoclassical furniture. This era of peace was perhaps the rise of Nationalism in several European countries and the furniture reflected the state of introspection of that period (Kasraie, 2007: 71).

Duncan Phyfe Style (1768 – 1874): Duncan Phyfe was born in Scotland but was the first furniture designer in America. His early work reflected the Adam and Sheraton style. Phyfe designs have been predicted with balance, building stability and economic aspects. His designs are characterized as using a grip shape as backrest recessed, and raised cylindrical carving on the base and hand-rest, brass network base, leaf carvings and projected curvature style are seen at the base of chairs and tables.

American Simple: The rural furniture is not specified through the furniture maker or through one period, but it represents the ordinary people's way of life. This simple furniture was manufactured in America from the colonial days until the appearance of machine-made furniture in the mid-19th century. Unlike "great style" furniture that was made by skilled craftsmen, the village furniture was made by un-trained carpenters or those who were self-trained. These carpenters with limited talent mixed the available materials and supplied types of furniture to the rural areas. The result was that the rural furniture had a strong and unique function. Nevertheless, these were identified as handmade furniture that included a range of styles built by primitive dwellers and partly skilled village carpenters (Kasraie, 2007: 76).

Classic Victorian Era: The furniture of mid-19th century (1850) till the end of 19th century was famous as the Victorian style, but in fact, this was the era of diversity and elite-oriented movement. The furniture was influenced by three different factors which are revival of the past styles, reaction to machine age and innovation in materials and technology.

Contemporary Style, Modern: The contemporary style similar to their ancestors began with a few talented people. However, the creators of the 20th century furniture were the architects and designers instead of furniture makers and carpenters. These new waves of craftsmen were trained in the Bauhaus. Bauhaus was a German Art school established in 1919. The students of the art school, with the slogan “form follows function”, learnt to use the concept of good design in the requirement of mass commercial production and the need for the homes of post-industrial age. The resulting furniture was simple and geometrical, showing fearless machine-made production (Kasraie, 2007: 76).

2. Types of Upholstery Fabric

The structure of this type of fabric is divided into six types of design;

2.1. Arabesque Design

The word ‘arabesque’ specifically refers to the original Iranian design in which curves and rotary motions of stem, leaves and flowers are used. The combination of these curves creates a complex and eye-catching design. This type of design is usually formed with single or mixed varieties of flowers. The stem movement is beautifully intertwined, giving glory to the fabric. Usually these designs are used in Jacobean and semi-Jacobean furniture; the floral patterns are divided into two categories as follows,

a) Mixed and elegant flowers are woven with a variety of high quality yarns, and special carving is used for high quality sofas. It is clear that the combination of the cloths is done with a beautiful design, high quality Jacobean sofa, and dense carving with a suitable color providing an ideal sofa set.

b) A pattern of simple flowers with dispersed composition which usually consists of flower stems repeated from left to right or crosswise on the entire fabric for comfortable sofas. The quality of yarn in this type of cloth is lower than the densely work cloth (Matin, 2005: 41). This type of design has a curved structure and floral motifs. The structure of the design is often of different spirals and uses different flowers like Shah-Abbasi, rose, narcissus and tulips (Hashemi, 2005: 39).

2.2. Geometric Design

The designs are mostly geometric shapes and structures. This type of structure does not have the same softness and smoothness as arabesque designs. It has cubism and a deformed statue that is mostly suitable for complete comfortable furniture fabrics, usually in the living room (Hashemi, 2005: 39). The meaning of geometry here is the design without curvature, composition of straight and diagonal lines and simple-geometric shapes like squares, triangles, etc. The quality of yarn is ordinary and often bowstring in three colors. Sometimes, more graceful tiny flowers are used among these patterns (Matin, 2005: 43).

2.3. Integrated Design

The integrated design is the combination of arabesque and geometric designs, and one can say that it is more modernized and has broken the past classic designs and is suitable for comfortable and semi-Jacobean furniture (Hashemi, 2005: 40). The integrated design is patterns made with arabesque and geometric designs; each of the geometry and arabesque elements should have an accurate proportion close to each other, not only to maximize the appeal but also to create beautiful

and psychological compositions. Geometric and arabesque designs are two separate issues and their composition must be done with great skills. This type of upholstery fabric is often used in comfortable and semi-Jacobean furniture and rarely in Jacobean furniture (Matin, 2005: 45).

2.4. Fantasy Design

This is a special and limited structure, specially used for children's room upholstery. The motifs of these designs are moon, stars, and lively artificial or real flowers. This design style has high functionality in printing industry, but it is less functional in jacquard industry (Hashemi, 2005: 40). In terms of design, this fabric is more specific than the others. Other designs are not usual and have lots of variations. Indeed, it is an innovation in the upholstery fabric design which is usually due to the taste of the designer. These fabrics are abstract and unusual; for example, the design may use cubism painting style. They are often used for comfortable furniture fabrics; of course, these types are relatively heavier and more expensive (Matin, 2005: 47).

2.5. Actual Design

The structure of these designs are photography; it means that the same things that we see in nature, home, work area and so on is designed in the same manner without any modification to the extent that the woven fabric is the same as the photograph. The composition is not very much considered, but a standard and good photograph will provide the fabric with a better design (Hashemi, 2005: 40).

2.6. Picture Design (Frame)

This is more modern type than the previous five structure (Hashemi, 2005: 40). Currently, innovations on upholstery fabric design can be seen as the images of humans and animals in the landscape. The images of this upholstery fabric are called picture motifs seen in different forms divided into two main groups (Matin, 2005: 49).

a) Image frame design: This design has an oval frame. The frame consists of different pictures such as flower bouquet, vases, human figures (reliefs of Persepolis) (Matin, 2005: 49). In the fabric, fine and elegant design are used as background which is according to the taste of designer associated with the role inside the frame. The frame may have intertwined branches of flowers, curved forms etc. In such cases, the frame completely separates the inside design from the background. The second way is that the design does not have a frame and the design could be a bouquet of flower, but which is known as frame design. The name of picture frame design on these types of design are not necessarily associated with the frame but it means single design on the background (Matin, 2005: 49).

In the design that does not have frame around usually the main design background has been integrated with the entire fabric background. This type of fabric is used in Jacobean furniture. As the number of fabric cut pieces, one frame is on the backrest of the furniture and the other frame is on the furniture seat. Of course, the seat frame maybe entirely eliminated and replaced by background design of the fabric (Matin, 2005: 49).

Due to the quality of the fabric, fine yarns are used for the production and it is considered as high quality fabric. Their frame layout changes on the basis of daily style. The design maybe composed of several colors or the design is apparent by super three colors weft with different texture. This fabric may not be used, Chanel weft and only filament weft with high density is used for the

production. Finally, this fabric is of higher quality and more expensive than the other upholstery fabrics (Matin, 2005: 49).

b) Motifs of landscape image: This fabric is not unlike other fabric size and in furniture and dining service that includes three person sofas, four single sofas, two host chair and few dining chair from six seaters to ... dining table. According to the number of dining table seat, a single cut piece of fabric is used for each chair for example, a three person sofa a frame width of 1.6 meter is used (Matin, 2005: 49).

3. Upholstery Fabric Material Survey

Usually, the upholstery fabric material are of jacquard fabrics woven by jacquard machine, and for the production purpose usually yarns such as polyester, super bright, Chanel, cotton, viscose are used or their combination. The design of these fabrics are completely innovative or imitate or a combination of both (Ahmadzade, 2007: 21). The fabric material should be selected in such a way to resist the normal corrosion while using the fabric. Textiles rated commercial have the resistant label on it against the fire-resistant, sun and corrosion caused by the use of fabric.

The materials that come under this category are:

Cotton: This is a plant fiber with low elasticity and combustibility and with high wrinkle property.

Linen (Flax fiber): This fiber is derived from flax stalk that has high strength and stability, fragile and wrinkle easily and it is more resistant to mold than cotton.

Rami plant fiber: This is a natural fiber and very strong with striking effect that is brittle and not elastic. The fiber is often used in combination with linen and cotton.

Silk: This is produced by silk worms and it is the most powerful natural fiber. This fiber is resistant against the solvents but rotten in sunlight.

Rayon: A substance that is made from wood pulp. Rayon favorably gets mixed with other fibers and also gets well colored.

Acetate: Fibers or woven plastic fibers are made from cellulose acetate and has low elasticity and rigidity. It is well drape with fabric and wrinkles easily.

Triacetate: Triacetate is a form of cellulose acetate which consists of three groups of acetate for each monomer of glucose. Monomers are molecules that can join other similar molecules to form a polymer. Monomer has good elasticity, resistant to abrasion and has high stability with permanent wrinkles.

Acrylic: The material is like silk or wool which can be easily colored and may create fluff easily.

Hybrid Resins (or Vinyl): This is like leather or suede (felt type) and it is easy to clean.

Polyester: Polyester is resistant to wrinkle, abrasion and folding, it is stable in dimension. This is prepared in two ways using slash fibers and extended fibers. In slash fibers (or cut fibers), the fiber surface is smooth and has circular cut and it is produced in gloss, semi-gloss and matt finishes. According to the stability it is similar to Nylon and at standard condition it absorbs 4% of moisture (Nylon at standard condition absorbs 7% of moisture). Polyester is resistant to temperature, wrinkles, abrasion, folding and dimensional stability (Ahmadzade, 2007: 101).

Many polyester are similar to polyamides and both these are produced by melt spinning and stretching of linear condensation polymer methods. Under heat treatment it begins to lower the resistant against tearing and the ability to absorb moisture is adequate (Ahmadzade, 2007: 101).

Polymer fiber (Elastomeric): The textile is rubber-like which has the ability to return to their original shape (elasticity) (Mahmudi, 2007: 311).

The fibers mentioned are used in the production of knitted fabric, woven and non-woven fabrics. But most of the productions are woven fabrics.

4. Process and Design Implementation without Repetition

According to the principles of composition for upholstery design contrast, movement, proportion and rhythm can be seen. So that the furnishing designs have appropriate shape and color and repeated design can be seen in the fabric. The monotony and fatigue of these repetitions has been fixed with the creation of contrast. The contrast causes the mobility, attractiveness and diversity on the fabric. The upholstery fabric composition must use the properties of contrast, shapes and colors. The movement in the fabric brings excitement and attractiveness. The rhythm is created through spaces between the design and placement position relative to each other. In other words, rhythm is the pace of movement. In fact, rhythm is the kind of movement. The focal point is that the eye focuses on the shape, color and parts of the forms that has brightness and darkness in the design that at times fuses with the background and has visual diversity.

The distinguishing feature of this fabric design is the whiteness and brightness of the design and allows part of the design to be vacant, as these activities are sub-consciously in our mind which is incomplete. If it was not like this than it would be an uniform furniture.

After preparing the design related to the target weaving area, the design is ready for weaving. It should be noted that any color of the fabric in an area has its own characteristics. The fabric is designed with regard to the designer recognition to the actual appearance of the texture in fabric and the created shading and brightness for the fabric. In this design collection, an attempt has been made to maintain the values so that the audience can easily connect with them to gain sense of peace and satisfaction.

There were six designs for the upholstery fabric. Initially, the fabric design and its implication on the furniture were conducted through the software. Each design has been shown separately below:

4.1. Final Design

Design 1: This design is done using grid which shows softness and movement, the floral patterns on the lattice are clear and at times invisible. The background design is separated with black lines. While the design has ongoing white background and displays the back lines with other colors indicating the mobility and dynamics.

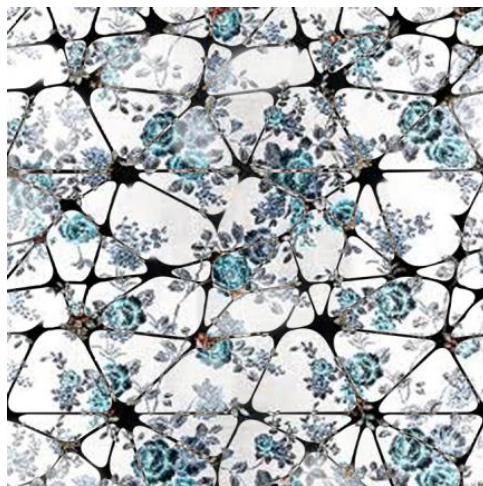


Fig 1 Design 1

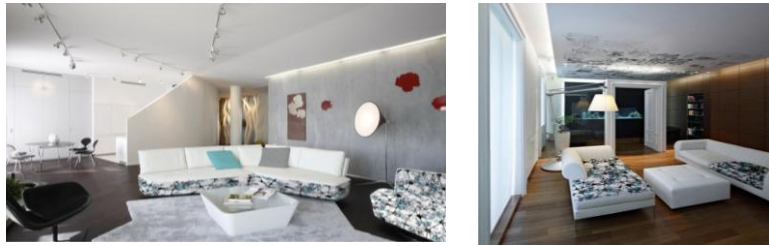


Fig 2 Final implementation of design 1

Design 2: The design has been prepared using colors with spring designs, so that they are moving towards brightness. The use of diamond lines is the advancement with interruption giving us the feeling that the flowers and the design is ongoing and has reached the peak.



Fig 3 Design 2



Fig 4 Final implementation of design 2

Design 3: This pattern is designed within the squares with the presence of contrast and color difference causing the movement of squares. At places when the design fades but the viewers' mind is still moving on the white background in search for the design.



Fig 5 Design 3

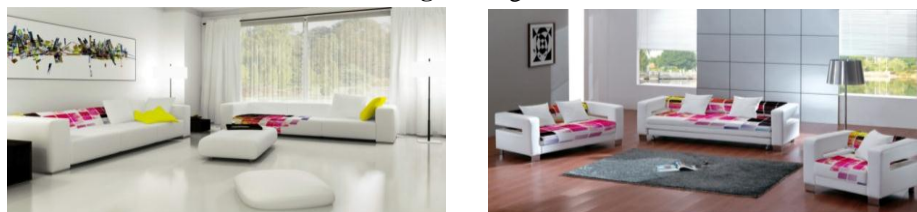


Fig 6 Final implementation of design 3

Design 4: In this design, features of the previous design are considered. The difference is that the design within the squares is closer to each other which depict winter and this sense is induced with the use of colors. Despite the presence of cool colors it shows the trend of movement and spring has been shown with the dispersion of squares and color difference.



Fig 7 Design 4



Fig 8 Final implementation of design 4

Design 5: The design is made with diagonal square color contrast and sometimes combination of squares together and at times disappearance of some squares depicting the design mobility. White background with spontaneous spots has created a bubble shape which gives a particular interest to the design.



Fig 9 Design 5

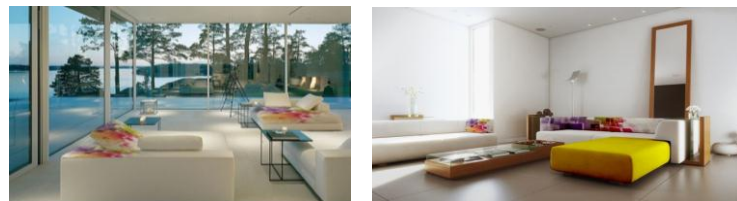


Fig 10 Final implementation of design 5

Design 6: The design is rectangular shape with color difference, brightness and darkness has allocated the previous characteristic of the design for example, disappearance. Eye observing the complete design when comes across the disappeared square sub-consciously seeks to find where this rectangle is completed; this causes movement and gives attractiveness to the design.



Fig 11 Design 6



Fig 12 Final implementation of design 6

5. Conclusion

According to the previous discussion and implementing of furniture designs, it can be concluded that in addition to the possibility of the lack of repetition on fabrics upholstery, these designs supply the human needs. Thus, in this article upholstery fabrics are designed with non-repetition characteristic and been a single design. Because upholstery fabrics, due to the comfort and simplicity for human need deals with the repetition and this consequently loses its attractiveness and the design been not appealing and the viewer sees the design repetition.

6. Recommendation

With regard to the upholstery, fabrics are fixed on the furniture framework. It is recommended that it increases the resistant and strength so that it has sufficient strength against scratches. The other complementary process to improve the efficiency of the fabric is to resist the absorption of moisture (moisture absorption causes infection).

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“Giveh” Handicraft in Iran: An Anthropological Study Approach

Zahra Nikouei^a, Pedram Payvandy^b, Abolfazl Davodi Roknabadi^{c*}

^a*Department of Design Textile and Clothing, Yazd Branch, Islamic Azad University, Yazd, Iran*

^b*Faculty of Engineering, Textile Engineering Department, Yazd University, Yazd, Iran*

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Abstract

Giveh is footwear worn by men and women appropriate for warm weather and in mountainous areas of Iran. The traditional shoe soles are built with unique material pieces of cloth and are covered with hand-woven cotton or silk. As a unique type of footwear and clothing, Giveh is an integral part of garments. Every country is expected to be a part of preservation and restoration of the culture and to introduce a new generation of useful features as written sources found on the cloth. The aim of the present study is to identify the reasons for the boom in the industry with respect to the components and characteristics of anthropological study considering the manufacturing process of Giveh. It also tries to shed light on the craft and art of the indigenous people, i.e., the way they made the shoes with existing materials and environmental situation around them.

Keywords: Giveh; Cover Fabric; Production Process; Giveh Production Industry

1. Introduction

Various ethnic groups live in Iran with their own customs and their own fashion. In the tradition, there exist different ethnic groups. In the meantime, traditional Giveh became the shoes of various ethnic groups in mountainous areas in temperate warm and dry climates with the raw material easily available to them. Some of these ethnic groups include Qashqai, Bakhtiari, the Kurds and the Lurs is, Khorasan, South Khorasan, Fars, Isfahan, Chaharmahal and Bakhtiari, Kerman, Bushehr, Khuzestan, Kermanshah, Ilam, Kohgiluyeh-Boyer Ahmad, Hamedan, Kurdistan, who wear Giveh and who have spread it around other areas. Besides, tourists who come from other countries to Iran usually buy different brands of these shoes from shoemakers as souvenirs.

* Corresponding author. Tel: +98-3531872495.

E-mail address: davodi@iauyazd.ac.ir

Giveh shoes are soft, light and resistant, which have been used in the olden days, the most frequent consumers of which were rustics and farmers. Often, farmers and ranchers used it because of the lightness and good resistance. Since early days, humans have considered the preparation and use of this foot wear to protect their feet against the ground and rough terrain. Although no one knows for sure how these foot wears have reached their current stage of the development, it is certain that the inhabitants of the Iranian Plateau, in a certain period of history, had access to the technique and texture of Giveh and still continue its production. Needless to say that all human inventions have been made according to the needs and possibilities, and, of course, there is no exception that Giveh footwear has consistent unique features for the arid and mountainous nature of the country. The style, in which the foot does not sweat and the raw materials and production methods can be found in various regions, as well as having a unique feature for the right and left foot, distinguishes Giveh from other footwear's worldwide (Begay, and Qambar, 2012: 60).

The profession of knitting Giveh footwear has a thousand years of history; some Giveh weaving tools have been obtained from Oramanyh, dating back to thousands of years ago (Mahmoudi, and Rahimi, 2011: 16). Some researchers believe that the Giveh timeline dates back to the time of Siavash and his mother who went to Turkestan and were wandering for seven years and as the need for their march arose, they made some shoes that were durable, light in weight and cool, which were later called Giveh (Karimi, and Habibi, 2010: 124). Alblkhy, the famous historian in 1105 AD, also refers to the Ghandyjan shoemaker-weaving industry in the Gulf; In 340 AD, the famous journalist Mostowfi stated that Giveh weaving business was at the peak of its perfection during his time (Wolf, 1993: 205).

2. Methodology

The aim of this anthropology study is to add to the readers' knowledge of the manufacturing processes and profession of making Giveh. This study has been carried out to realize this objective, and because of the lack of library resources, a field study was conducted for detailed comparisons of the types of Giveh that shoemakers had collected and categorized. In order to understand the identity of the craft, the manufacturing methods and materials used in the construction industry and the workman of Giveh handicraft need to be studied. The weavers and soles makers were interviewed regarding Giveh making procedures in different provinces of Iran. From the beginning of the process until the end, lots of photos were also taken. Giveh making procedure was carefully examined for the types of beds, and how to prepare a detailed study was also determined. In the cities which were once important centers of today's Giveh industry, just a few people working in this profession could be found, many of whom were often at the age of about 80. This seemingly small industry includes four professions, namely, leather, knitting, crochet in making soles and Giveh embroidery.

3. Findings

Giveh can be decomposed and divided into two parts, i.e., the soles and the upper section.

3.1. Upper section making procedure

The upper portion of Giveh is strongly woven and has a special procedure. Giveh shoe is woven with a long needle which has a smooth and rounded tip which is not sharp. Generally, three types of textures (or weaves) are there for weaving the upper section which is the plain weave or the original weave and plaited weave, grid weave, and double edged weave which is among decorative weaves.

The mesh textured fabric is used for processing the upper section of Giveh which is in the form of a net or the diamond-shaped designs usually used in this procedure (Afshar qhochany, and Nikouei, 2009: 56) (Fig 1).



Fig 1 (a) start procedures texture



(b) Mesh texture

Generally, the upper section making procedure is divided into two categories:

A. The upper section woven with cotton yarns which are of two kinds: (a) First the sole of Giveh is made and then the surrounding upper section is stitched; this is the main product of the West of Iran such as Kermanshah and Kurdistan (Fig 2).



Fig 2 Kermanshahi Giveh

B. The sole and the upper section of Giveh are later made separately; the two parts are then connected together by the third person. This product is mainly of the south and central west region, which is a more elegant type found in Fars province (Fig 3).



Fig 3 a) Giveh in Fars Province



(b) Upper section; hand-woven with needle and thread

2. The upper section woven with silk thread: The silk woven upper section procedure is about half a century old. By using colored silk threads, the upper section is woven with geometric designs, and these weaves are made using weaving hooks. Some Giveh shoes are woven with covers for toes which are used as slippers for domestic purposes, specially observed in the central Kermanshah region (Fig 4).



Fig 4 Giveh upper section silk woven

3.2. Giveh soles divided into four categories

A. Fabric soles Giveh: This type of Giveh shoes have different names in different areas such as flat soles or fabric soles. The soles are made by compressing pieces of cotton fabrics or manufactured linen, which gives popularity to this flat type of Giveh shoes; later, different types of flat soles were made (Fig 5).



Fig 5 Fabric soles Giveh

B. Giveh soles with embroidered Ejide work: Usually, in this type of soles, a few thin pieces of goat skin layer are used. The layers are stacked together; glue is applied in between each layer and the next layer is placed on it. When the required layer is reached then it is hammed by hand on the glued layers. The different patterns are embroidered on the leather in such a way that holes are created while stitching. The presence of these holes in the sole, caused by the stitching, allows the air to flow and the foot to sweat (Fig 6).



Fig 6 Giveh soles with embroidery Ejide

C. Giveh with leather soles: Usually tanned buffalo leather is used for the soles of Giveh. This leather can be cut according to the foot size and later the embroidery work is carried on the Giveh shoes. The Giveh sole leather comes in different colors (Fig 7).



Fig 7 Giveh leather soles

D. Rubber sole Giveh shoes: Rubber is used for the soles of Giveh because of its low price. The rubber sole is hot, and hence it is more suitable for winter wear. These are of two types; one is the lap-flat rubber, which is lighter, more flexible and more commonly used by the farmers and the villagers. The other is the under-surface rubber, which is heavier, has a rough surface, and is mostly used by ranchers in the mountain and in the desert (Fig 8).



Fig 8 Rubber sole for Giveh shoes



Fig 9 Type of Giveh soles

3.3. Production process of Giveh shoes

Three people are usually involved in the making of Giveh. The upper section weavers are the ones who weave the upper section of Giveh with cotton threads and needles; this is usually done by women. Sole makers are the ones who use pieces of cotton fabric to make the soles of Giveh, while the third person does the Giveh stitching by which the soles and the upper section are stitched together. The material used in manufacturing Giveh shoes is completely natural, and no synthetic materials are used.

3.4. Making the sole of Giveh

The necessary tools which are required consist of anvil, awl and hand punch. For making Giveh at different stages, different awls with different thicknesses and lengths are used; they are called by different names in different geographical areas (Fig 10).



Fig 10 Tools used for making Giveh

Materials used: The materials used for making Giveh are natural and available which include raw skin strips of cow or camel, silk threads, pieces of fabric that are used for making undergarment, and cotton and linen which are not made of synthetic fibers. Different types of colors are also used for dyeing the fabric pieces of Giveh soles. Giveh sole laying is an important and

difficult job; the person laying the sole must act carefully and must have the necessary skills. Giveh sole is made of pieces of fabric or linen which are cut into strips with the width of three centimeters and the length of twelve centimeters (Fig 11).



Fig 11 Thin wick fabrics for Giveh

Each of these pieces is known as a thin wick. For each pair of Giveh (normal size) about three wicks are required. The wicks are laid in batches on the anvil, and holes are made in the center with an awl. Some are made of leather strips that are used at the heel and behind the sole of the Giveh. Figure 11 shows the strips of cow or camel skin leather where the hole strips pass through the wicks at the heels and behind the sole. In each wick, six holes are made and the leather strips are passed through these holes and completely stretched so that the wicks are completely close to each other. In order for the wicks not to separate from each other, the junction meeting the upper section and the sole are wended with fifty layers of cotton yarn which is made of goat hair around the Giveh sole (flake). After the completion of dry rolling operation, it is then cut in the form of soles (Fig 12).



Fig 12 Making Giveh Fabric soles

After the upper section weaving and sole preparation are completed, they then need to be stitched together. The Giveh maker first washes the upper section and does the lining work. Later, the tanned leather strips of skin are trimmed, and triangular pieces are made ready. With precision and special skills, the upper section is joined to the sole. In some places, the upper section is woven all-around the sole (Fig 13).



Fig 13 Connection to soles to the surface

3.5. An anthropological study of Giveh

The warm and dry areas and rugged mountainous passages in Iran, the type of animal husbandry and agriculture-based livelihoods and the need for excessive movement in spring, summer and autumn which are the working seasons, require comfortable, resistant, cool as well as cheap footwear for the tribal, rural and semi-urban communities. Handicraft work of Giveh is a combination of art and industry where each has its special place. Today, humans, with help of industrial advances, meet their needs and this phenomenon has been coordinated with the wants of the consumers. However, the arising industrialization, gradual issues and challenges for humans, along with emotional, social and economic events caused lots of changes for the traditional communities. Meanwhile, Giveh gradually fell from the booming industries due to global mechanization. In fact, this industry only exists in communities that have a vast historical and cultural background. In the areas with handicraft production, people transfer their skills and experiences in craft production to the next generations.

The economic importance of Giveh weaving profession like any other crafts is for revenue income, which does not require expensive raw materials, and the employment possibility in most towns and rural areas with these industrial characteristics. In addition, the handicraft of a country is an attraction for domestic and foreign tourism, especially as a boost for the cultural and art tourism. The revenue resulting from this process can have a very beneficial effect on the economic development of the country (Partoy, 2008: 87).

4. Reasons for the decline of this industry

Although Giveh has unique and special features, its making profession has encountered fatal barriers for survival. Intense production development stages, severe competition in fashion trend and the emergence of various designs are the main cause for the stagnation in its present day industry. In the past, manufacturers of handicrafts used to take the responsibility and enthusiastically dealt with the product design. Today, clothes, footwear and industrial designers are very active in the field of design and have so many creative ideas that have stopped Giveh profession flourishing. Industrial production and modern lifestyles of Giveh and other crafts have faced profound challenges, to the extent that even the richest and most prestigious handicrafts have faced fundamental difficulties, causing many to lose or abandon their careers. These problems can be classified into four main groups namely (a) the design, (b) supply and packaging. (c) marketing and advertising, and (d) peripheral problems (Wahhabi, and Omarayi, 2008: 9).

5. Conclusion

Use of Giveh traditionally covers most regions of Iran, it is adaptable to different climates, and it is still one of the most common garments among other traditional crafts. As previously stated, Giveh has different types, yet what comes to mind upon hearing the word is the same type of fabric soles with fine-woven needle knitting. Women have been usually responsible for the knitting of the upper section of Giveh, while laying of Giveh soles and joining them to the upper section have been done by men. The proper planning and division of work in the industry to both women and men in employment were seemingly important among the makers. Further, according to the modern life style, innovation and competition in the fashion arena for the right design have created new plans to again introduce these kinds of shoes to help fashion arena. Giveh has original features to meet the

taste of people of this era besides its potential to enhance employment, innovation, economic aspects and revival of the industry.

6. Suggestions for future research

- In modern life, people spend most of their time outdoors, so comfortable footwear styles such as Giveh are necessary and can be a source of inspiration for the design of shoes.
- Promotion of technical and vocational training centers needs to be considered in future studies.
- Entrepreneurship and employment for young people in the profession also need to be emphasized in follow-up research projects.

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The Effects of Instructional Technology and Media on the Painting Skill of Special Kids

Zohre Sahebi^a, Javad Alimohammadi Ardakani^{b*}

^aFirst affiliation, Address, City and Postcode, Country

^bAssistant Professor, Painting Faculty of Art Science and Culture University, Tehran, Iran

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Abstract

Children of any age group are in their objective thinking stage, hence the importance of using tools consistent with their cognitive and mental characteristics. This study uses a descriptive-analytical approach, with an attempt to scrutinize the perception of instructional technology and media effects in conveying the instructional concepts to special kids. As such, a lesson plan based on painting skill was selected for this research study. The participants consisted of 40 male and female students from grade 1-6 elementary school from Ahwaz city (Khouzistan, Iran) which were sampled using systematic cluster sampling method, with an applied and experimental nature. The research tools were the paintings obtained from children both before and after the education. Based on these paintings, a questionnaire with 20-question was designed. The results indicated that using instructional technology and media in a correct and sophisticated manner would facilitate and accelerate better and more efficient teaching of painting to children particularly special kids.

Keywords: Instructional Technology; Media; Painting; Special Kids

1. Introduction

Advancement in science and technology has led to the advent of new sciences, which creates new demands and challenges for human being. One of the most important areas which experienced fundamental transformations through the advent of new technologies is in the field of education and training. Thus, many psychologists and experts in the case of education have recommended the use of instructional technologies, because these technologies cause the easiness, speed and accuracy in teaching and learning. What makes the perception of new education systems as a modern

* Corresponding author. Tel: +98-9121762735.

E-mail address: alimohammadi@usc.ac.ir.

instructional technology and a challenge in education system is the effect of these technologies on applying instructional media in educational system to enhance and promote the quality of learning for the learners (Basaza, 2014).

Instructional technology is a branch of human applied knowledge that deals with events constituting education with an integrated and systematic view. This provides specific solutions, procedures and patterns to perform instructional operations in different situations for different students (Far Danesh, 1998). Today's students are growing up in a technological society and the application of technology is comprehensively observable in business, industry and society. Therefore knowledge of technology among students is deeper and more realistic than adults, and the most important thing is that these groups have accepted the technology and are depended on it (Zophan, and Lotfipour, 2006).

The rapid progress and development of technology and sciences on one hand and vital individual and public demands to better living and reaching to self-reliance at the other hand, urges all social institutions, especially schools, to use new technology to enhance the efficiency and to meet the demands. From this point of view, research results indicated that materials and methods of education can be of substantial contribution to extol the qualitative and quantitative learning that can provide a sensible base for thinking and creation of concepts for students; and besides attracting and absorbing the interest of students they also can lead to faster, more efficient and stable learning (Ahadian, 2014). The fundamental issue raised in education and training field is lack of accessibility to information, but on the contrary it is a matter of "understanding and comprehending the information that learners are continuously exposed to" (Garison, 2006).

Learners may encompass all individuals in a society from infants to elders as well as special kids who are not exceptional and there is an urgent need for their education. With these explanations, it seems necessary to have an educational approach through which one can optimally use physical strength, kinetic energy, sensations, cognitive and mental strength of these kids so that they can reach a higher level of growth, creativity and innovation; and in this way one can train artistic kids. The lack of these educations will inevitably and certainly have an effect on the treatment, creativity and lack of focus among the special kids.

Hence, this study aims to investigate the impact of instructional technology and media on the painting skill of special kids to make their mind more productive and open a new world with a different look to their eyes. In order to achieve this goal, a fundamental question has been raised; to what extent the instructional technology and media be effective on teaching painting to special kids?

The research conducted on this topic so far has indicated that instructional technology and media as a mediator can be helpful to develop teaching painting to special kids, who at first glance seem to be un-educable an un-trainable, and guided instructional planning can have more impact on their teaching and learning process. With regard to the research subject and its objective, this study has been done using a descriptive-analytical method and it is of an applied (practical) nature. The population sample selection consists of 40 male and female special (mentally retarded) students from grades 1-6 at elementary school (Hazrat Zahra school), in Ahwaz, Khuzistan, Iran using a systematic cluster sampling method.

The data collection tools were based on the pre-test and post-test designed by the researcher that included questions related to educational technology, media and painting. In the first step, the students were asked to draw and paint; the later post-test step was performed with many practicing sessions with these students (using variety of technological tools, different types of media and painting tools). This enhanced their level of perception, understanding and abilities. In the final

step, to answer the main research question, this study analyzed the implemented research design of the proposed method using descriptive statistics including measuring frequency, average percentage and inferential statistics.

In addition to the comprehensive definition of instructional technology presented in Far Danesh's study (1998) entitled "Instructional technology and its importance", the reasons and necessities are provided to solve problems by using instructional technology, a step to increase the productivity and deal the limited hours of training for all those involved in the education and training. To improve the efficiency coefficient, training alone was possible through the application of scientific findings taken from the research for education, and this is an undeniable necessity.

Instructional technology and media make a sufficient learning ground for students who will be participating in teaching and learning process. Different instructional media have been extensively used as tools for facilitating teaching and learning in education systems. By combining theoretical and practical matters, these tools will help in persistent learning and maintain the sense of diversity in classes. With regard to the scientific and technological advancement in the last century, instructional tools, as mediators, played their roles appropriately. Nowadays, educational systems are trying to provide learners with a more desirable learning environment through instructional technology (Siadati, and Taghi Yare, 2006). Learning is something that results from teaching. Learning is not only the process that appears through behavioral changes, but also it is a process that will be inseparable from the learner's mind and it will be used to learn new materials. Gagne believes that what we observe as "behavioral change" in a learner is not all of learning outcome. In other words, a change in behavior is simply a part of learning outcome. A piece of information which will be learnt is a new material that will become a part of learner's mind and will appear as a new set of abilities that students are incapable of understanding before that time (Kenani et al., 1995).

Educational psychologists have found that one of the important factor affecting the speed and level of learning among students are their mental structure and previous knowledge about any given educational subject. Technology of any kind of science is based on the latest applied results of that science; without doubt instructional technology had the greatest influence from behavioral psychology, where educational psychology was highly reliable on the scientific results. This process was in progress until 1950s. But after that time, science related to educational psychology developed and grew in new fields, and it was in 1960s that the results of cognitive psychology were published and reported. Cognitive psychology emphasized on mental processes and how to acquire, learn and restore the information in mind. It is clear that along with the advent and growth of this branch of psychology, instructional technology had also a great impact on this science (for more details refer to Robert Gagne, 1987, as an expert and pioneer in instructional technology). In regard to psychology, Arnheim (2011), in his book entitled "art and visual perception" refers to art - in general and kids painting in particular - as the most popular application of Gestalt Perceptual Psychology. Arnheim theory provides with us one of the comprehensive accounts related to kids painting along with perceptual, emotional – expressional and cognitive – and evolutionary (developmental) considerations in a single framework. In one of his latter works, Arnheim asks the researchers to have more emphasis on visual ideas in the realm of culture and education. The other important principle proposed by Strauss, Lowenfeld and other instructionalists, is that encouraging spontaneous self-expression in art leads to cognitive evolution and self-growth (personal growth). Art is equally important in special (mentally retarded) kids as in comparison with normal children, and teaching art through art and painting therapy can facilitate teaching and learning social skills, assertion skills, confidence, stress and anxiety reduction, role-playing and also enhancing cognitive

and perception power in special kids. In addition to the role of painting to increase the perception and cognition in mentally retarded kids, this visual art – having the flexibility and aesthetic sense – can bring flexibility in educational programs designed for mentally retarded kids and also enhance their learning skills such as reading, writing and calculation (Case and Dalley, 2008; Andreas, 2005).

Many neurologists believe that painting skill will enhance a child's growth, and it can affect cerebral hemispheres. The reported evidence showed that teaching painting and coloring can enhance the operation of cerebral occipital lobe which serves to process visual-spatial stimuli; and consequently this teaching causes the kid to have a better perception of shapes and colors. Based on the other studies which have been performed to shed a light on the effect of painting skill on left and right cerebral hemispheres, it turns out that both cerebral hemispheres deal with perception of artwork; teaching and learning painting can activate both hemispheres and remarkably reduce the perceptual and cognitive problems of mentally retarded children (Zaidel, 2005). Many research studies have been done on subjects such as art therapy, the effect of painting on special kids, and the effect of instructional technology on teaching and learning process. Here, to verify and validate the proposed hypothesis, the authors have made great efforts to study some related studies, and have proposed a questionnaire compatible with criteria and important study elements to be used.

2. Data Analysis and Results

The following statistical method has been used for data analysis in this study:

- Descriptive statistics method i.e. calculation of frequency, percentage, average, standard deviation and statistical tests
- Inferential statistics
- Cronbach's alpha methods to calculate the reliability coefficient

The study has used a questionnaire to collect the data, SPSS software was used to perform statistical operations on the data. Researchers who use SPSS for data analysis can calculate the reliability of their measuring tool by Cronbach's alpha method, by using a formula for this type of calculation (Moghimi, 1998). Likewise, the reliability of applied questionnaire was tested using Cronbach's alpha. This method is used to calculate the internal consistency of measuring tools including the questionnaire or tests that measure different attributes. To calculate Cronbach's alpha coefficient, first the scores of each question subsets contained in questionnaire and then the total variance of these scores are calculated. Cronbach's alpha coefficient is calculated using equation 1:

$$\alpha = \left(\frac{n}{n-1}\right) \times \left(1 - \frac{\sum s_i^2}{S_t^2}\right) \quad (1)$$

where,

n = the number of test questions

S_i^2 = variance of i^{th} question

S_t^2 = total test variance (Sarmad et al., 2016)

In this study, the value of alpha was 82% which indicates reliability of the applied questionnaire. Among the multiple procedure applied for data analysis, only three procedures are important. First, the description and preparing of the required data for testing the hypothesis, then analyzing the relationships between variables and finally comparing the results with the expected results considered in the hypotheses (Kivi and Kampenhoud, 2006). In general, data are representatives of

facts, concepts or instructions. If the data describe the facts in words (not in numbers) then we call them qualitative data. These types of data will be collected through observation, interview, extraction from documents and texts (Sarmad et al., 2016). In this study, descriptive statistics method is used to analyze the research data which includes frequency table, bar charts; also different statistical tests are used in this study to verify and validate the research hypothesis. The main purpose of statistics is to extract some conclusions from a lot of observations made in a defined population. Thus, the first question is whether we can describe this large set of observations and how we can organize these multiple observations in a specified framework (Azar and Momeni, 2011). In this analysis, the statistical samples of the collected data have been analyzed using appropriate descriptive analysis tools. Thus, the descriptive analysis of data has been performed using tables and diagrams. The results of above-mentioned analysis are as follows:

2.1. Gender Distribution of Respondents

Table 1 Frequency of respondents based on gender

Gender	Frequency	Percentage of frequency	cumulative frequency
Girl	20	50	50
Boy	20	50	100
Sum	40	100	

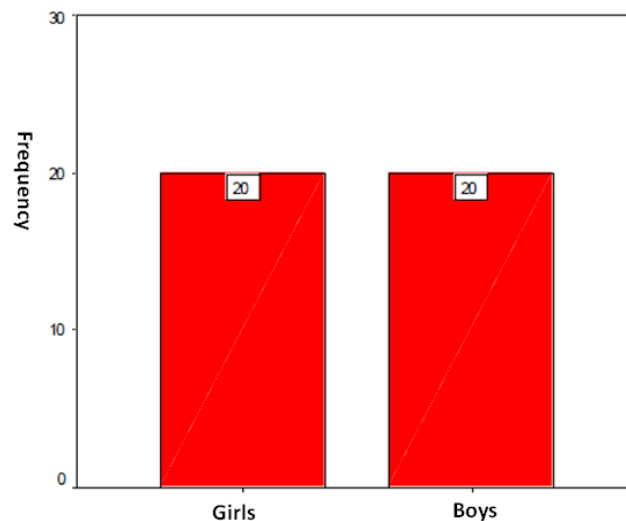


Fig 1 Frequency of respondents based on gender

As seen in Table 1 and Fig 1, the number of female and male respondents is the same ($n=20$).

2.2. Educational Grade of Respondents

Table 2 Frequency of respondents based on educational grade

Age	Frequency	Percentage of Frequency	Cumulative Frequency
First Grade	14	35	35
Second Grade	18	45	80
Third Grade	6	15	95
Fourth Grade	2	5	100
Sum	40	100	

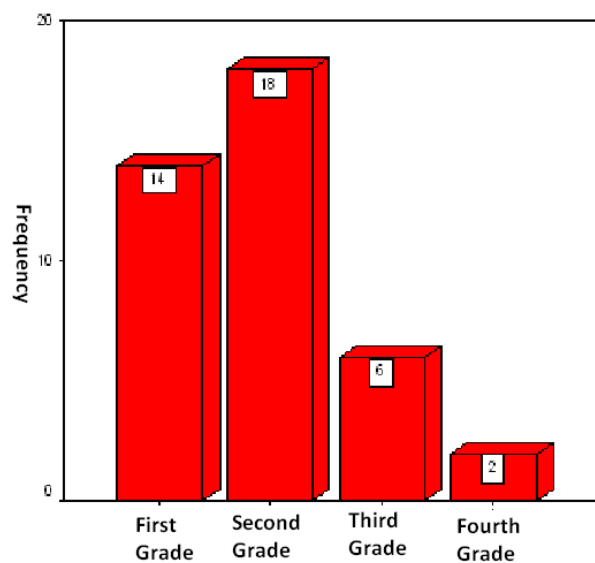


Fig 2 Frequency of respondents based on educational grade

As it is observed from Table 2 and Fig 2, for educational grade, the highest number of frequency was in the second grade of elementary school with 18 students (45%) and the lowest number of frequency was observed in the fourth grade of elementary school with two students (5%).

2.3. Data Analysis using Inferential Statistics

Hypothesis: Instructional technology and media are effective in painting skill of special kids

Table 3 Result of t-test of research hypothesis

Variable	Step	Average	standard deviation	mean difference	df	t statistic	sig
Instructional technology and media	Pre-test	21.900	2.228	-13.200	39	-20.667	0.000
	Post-test	35.100	3.334				

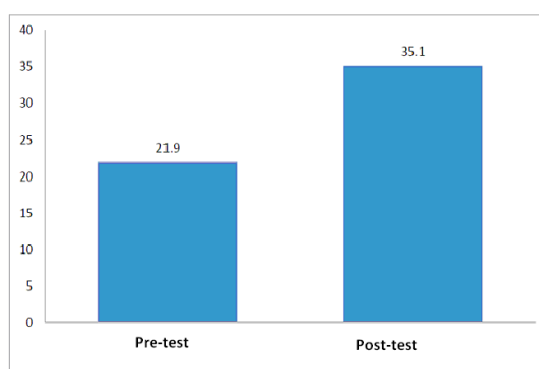


Fig 3 Histogram for comparison of averages of first hypothesis

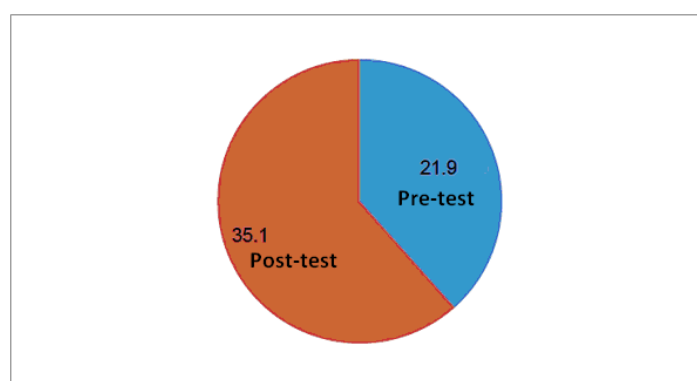


Fig 4 Pie diagram for comparison of averages of first hypothesis

According to the results of descriptive and inferential statistics, figures and diagrams for pre-test and post-test scenarios, this study showed that instructional technology and media had a positive effect on painting skill and achievement of special kids. Thus, in this regard the proposed hypothesis is validated and verified.

3. Discussion and Conclusion

Today technology has a remarkable role in all activities of human beings. The ever developing of technology makes the possibility to extend the human abilities; and fictions and illusions are somehow accessible now. Nowadays, one believes that living on the earth will be subject to difficulties without technology, and even our living will be endangered by present population growth rates. Instructional technology has also the ability to clarify, accelerate and facilitate the learning process and to deepen the learning and make it more meaningful. As technology has an important role in our life, instructional technology is also invaluable. Through appropriate, right and timely application of methods, techniques, tools and facilities provided by instructional technology, we can maximize the rate of learning and instructional efficiency.

Normal people will communicate through language and words, but special kids – lacking this ability and devices – can more often communicate using pictures, movies, music and other types of media. In other words, communication of a human with his/her surrounded environment is so much of a visual-aural type than any lingual or verbal means; these are the main communication interfacing media between the inner world of human and his/her external world. In fact,

communication is one of the necessities of human; a picture, for instance, as a simplest medium is an important factor for facilitating and accelerating this communication. The results of this study confirmed the hypothesis, and the impact of instructional technology and media was verified through data analysis. Thus, one can use instructional technology and different types of media for teaching painting to kids based on their needs, so that one can have better communication with these kids, to gain more knowledge of their inner world, and to help them to reach their educational targets and goals. The hope is to help the development and growth of the special kids through appropriate and right teaching approaches, making their world full of hope, happiness and success.

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Investigating the Reasons for the Growth of Mural Paintings of Merchants' Houses in Yazd in the Qajar Era Based on the Constructed Model of Durability Process of Symbolic Capital

Ali Akbar Sharifi Mehrjardi^{a*}

^aAssistant Professor in Art Research, Faculty of Art & Architecture, Yazd University, Yazd, Iran

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Abstract

One way of looking at art is the sociological view. It means looking from the social sciences view, which includes sociology, economics, anthropology, law, and cultural studies. Analyses of mural paintings and decorations in Iranian architecture could also be carried out through a sociological view. This paper aims at presenting an analytical model to evaluate mural paintings and decorations in traditional houses in Yazd in the Qajar era in terms of growth and development by using sociological ideas of Pierre Bourdieu and Thorstein Veblen. The purpose of this paper is therefore to figure out the reasons for the growing of mural paintings of Merchants' houses in Yazd during the Qajar era and the outcome for their owners. This is done in this paper through a descriptive-analytic technique, which represents the expansion of mural painting of merchants' houses in Yazd because of the growth in economic capital, cultural capital, and flamboyant consumption of their owners that have led to durability of symbolic capital in that class.

Keywords: Qajar Era; Mural Painting; merchants' class in Yazd; Economic Capital; Cultural Capital; Symbolic Capital; Flamboyant Consumption

* Corresponding author. Tel: +98-9363518081.

E-mail address: sharifimehr@yazd.ac.ir.

1. Introduction

In Qajar era, major changes occurred in the social and economic aspects in Iran. Consequently, many changes happened in the art, taste, aesthetics, and art supporters. One of the key cities that were affected under these changes was “Yazd City”, which encountered the formation of a new class of merchants. The formation of this class caused life transfer based on life and production to the life based on business, which also led the business to flourish in the city. In this period, city communication increased with the outside world and this new class via having wealth, social and political relationships competed with each other and tried to show their own social status. Thus, a series of large houses were built and in most of them, non-noble and non-religious art in the form of paintings on plaster and various themes developed. Decorations and mural paintings in Yazd houses in Qajar era, were not apart from the influence of Europe, and home decorating style has been influenced by the Zand and Qajar era. The chain-like relationship between the interior design Qajar houses in Yazd showed a range of technical and aesthetic continuity.

These paintings (plaster mural painting) are the work of artists who were involved in the other artistic activities (painting, carpet design, textile design, cover making, and pen paintings). The assumption is also the recession of some specialties like comic books and the emergence of new supporters from the urban wealthy class as a factor in the promotion of painting on plaster. In these buildings, decorations are sometimes exclusive to the painting and often a combination of several decorative factors, including mirror work and the plastering that has been used in the decorating corner of architecture space or paintings in all interior and exterior surfaces and the ceiling.

Although the designed paintings at first glance reminds one of the Qajar style and have been affected by Europe, the impact of the goods’ paintings brought from India to Yazd should not be neglected because traveling of Yazdi traders and merchants to India had an impact of those culture on the painting and the mural painting. What remains from the mural painting, relates to the homes and buildings of the wealthy people and rich people of the city, based on their financial resources which gained particular entity.

Late in the Naseri period, Yazdi merchants had a high social status and power. Social and prominent figures and merchants in the late Qajar era along with big businesspersons had a special social status and were in top of pyramid and social hierarchy of the market. In this period, homes and buildings related to the wealthy merchants and rich traders due to financial resources have gained particular entity, and mural decorations are in different levels and quality. The aesthetic aspect of the houses in Yazd in Qajar era is actually due to the decoration implemented because of culture and taste of client (city traders and the noble class). Qajar era as an expansion period for mural and decoration paintings in the house is one of the main strategies to shape the architectural space. Yazd also, due to the economic and social developments and expansion of trade in rich classes of traders, has been affected by relationship with outside, cultural metamorphosis created via this method, and the decorations and spaces of their houses in a competitive way. Therefore, these competitions led to building and developing of houses including mural paintings in the Qajar era. The main question of this paper is the competition and house development. The present paper seeks to answer the main question to reasons of growing the painting and mural painting of merchants’ houses in Yazd in the Qajar era.

The answer to this question seems to be the development of mural painting in Yazd merchants’ houses in the Qajar era because of the economic capital growth, lifestyle changes, taste change and gain distinction and dignity, and ultimately to achieve greater growth and durability of symbolic

capital of homeowners. In this paper, the above-mentioned theory with sociological approach is analyzed using a constructed model “durability process of the symbolic capital”.

2. Theoretical Framework

2.1. Cultural capital and its results

Looking at individuals and their behavior, there are different levels of cultural capital in many classes compatible with their economic capital. Obviously, high economic capital is needed for the development of cultural capital; otherwise, the cultural capital remains abstract and undervalued. According to Bourdieu's emphasis on the rejection of any inherent analysis and present functional-relational analyses, it is noted that economic capital does not include cultural capital inherently, but there is a direct relationship between them.

Economic capital provides a condition in support to the person with his diligence and effort is mainly time consuming and long-term which can achieve cultural capital. Institutionalization and knowledge is a fundamental principle in cultural capital. According to Bourdieu, cultural capital is a set of symbolic capital that at one hand refers to internalized acquired knowledge, and on the other hand material success; materialized capital and cultural heritage in the form of property will appear. This investment is not achieved without personal effort, but long lasting working, learning and acculturation as a part of one's purpose is required. Acquisition of cultural capital requires time and then material facilities needs to be especially financed (Chauvire and Fontaine, 2006: 97). Economic capital through cultural capital can change taste and lifestyle, and increase the distinction and dignity. In other word, cultural capital appears in three forms of taste, lifestyle, distinction and dignity; and changing any of these factors will affect the same amount of cultural capital (Fig 1).

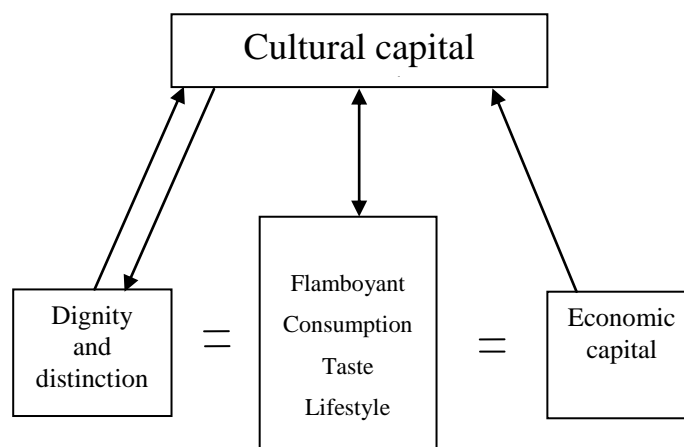


Fig 1 Diagram of the relationships between cultural capitals

Increasing the cultural capital, the first change occurs in taste. Taste appears more in aesthetic category that Bourdieu noticed to existing variations in the aesthetic taste means acquired willingness to distinguish between the different cultural products aesthetically and valuing them differently. Perception of each person in social discipline is among the functions of taste (Ritzer and Douglas, 2011: 598). It is more in terms of cultural product in a dialectical relationship between nature of cultural products and taste. Change in cultural goods leads to changes in taste and this change results in reformation in cultural products. Field structure is not only subject to consumers'

desire of cultural goods, but also what producers meet their demands (Ritzer and Douglas, 2011: 601). According to Bourdieu, taste acts as signs of class (Bourdieu, 2011: 24).

By changing taste, lifestyle will also change. Generally, lifestyle refers to the usage patterns of symbolic and material goods among different social groups and classes. However, in cultural studies, this is a reflection of individual and group identity that a person expresses himself through some specific behavioral patterns. It is expected that communities with a high status (above-four capitals) have distinct ways of life, including behavior patterns, belief system, and consumption and choice patterns (Edgar and Sedgwick, 2007).

Bourdieu believes that lifestyles are always resulted in habitus that in their mutual relations and based on the accustomed format it has received and converted to the system of signs that have been credited socially (such as distinguish or vulgar), (Bourdieu, 2001: 73). Habitus in the Bourdieu's terminology means conditioned and internalized features that are producer and organizer of meaningful behaviors. Simply, unconscious behaviors and emotions of individuals who have internalized through the processes of socialization and based on that the individual enters an action process. Habitus regulates the behavior of individuals in each class and field (Bourdieu, 1986: 40-44). This generalized characteristics and Habitus in shaping the tastes and lifestyle are more than opinions and appearance claims.

Increasing the cultural capital and taste and lifestyle change will prepare the conditions for increase the distinction and dignity. On the other hand, according to Bourdieu, taste and lifestyle is a real factor to convert anything to the dignity and distinction signal (Bourdieu, 2011: 244). Distinction and dignity are those strategies of being different that exist at the heart of social life. Most of these strategies are shown in the use of cultural products, especially their art works. Due to Bourdieu, consumption of art works has an individuated function (Bourdieu, 2011: 383). For instance, using art and art works by a bourgeois is distinguished from other social classes that show keeping distance, welfare and cultural delicacy (Chauvire and Fontaine, 2006: 59).

It is obvious that not all works or objects can have a dignity efficiency function. In Bourdieu view, things that are given the highest power of dignity are those that, in an obvious way, show this ownership quality and thus show the owner's quality, because ownership of these objects which requires long-term investment also demands time and abilities. The importance of art consumption is individuating the people; hence, an unnecessary budget must be allocated to them basically, especially the rarest and most precious thing which is time for these activities (Bourdieu, 2011: 385).

2.2. Cultural capital and flamboyant consumption

The relationship between the flamboyant consumption and cultural capital can be considered as a public logic; a type of an individual that means some kinds of cultural capital is a sort of flamboyant consumption (appearing) and the other is not. Some flamboyant consumptions are based on cultural capital, and some other lack this cultural capital and vulgar showing cultural capital that is more common among upstart people who are deprived of education and knowledge. In fact, speaking about the cultural capital is a sort of entering the intellectual analysis and even hermeneutics. It means having a deep knowledge of the content, style, history, personality of the artist and the formation space of produced cultural work. If an individual gaining the cultural capital, buys the original "Van Gogh sunflowers painting", but is unaware of the painter, style and its form and is unable to decode that artwork, he, in fact, does not participate in that cultural capital, but he is a participant of flamboyant consumption. On the other hand, if a person buys the copy of

that art work which is much cheaper than the original one and has a deep knowledge to it, he has shared the flamboyant consumption based on a cultural capital.

Flamboyant consumption is of key concepts of Thorstein Veblen thought (1929-1857) in theory of the Leisure class in his book; he expresses an idea about flamboyant consumption as a type of commodities used, not for living but to achieve the dignity of those who use them and this creates a basis for discriminating distinctions between people (Ritzer, 2010: 110). The lavish and extravagant luxury turns to be a necessity and a display of wealth and the source of funding included in the cost of capital representation (Marx, 1975: 741). Flamboyant consumption is an attempt and strategy for distinguish which Bourdieu (2011: 60) mentions as “clumsy glaring” and calls it non-deliberate and inappropriate luxury show just to acquire dignity. Bourdieu attempts to show Veblen's theory merely (flamboyant consumption) does not argue that the driving force of all human behaviors were an attempt for distinguish. However, he believes that the fundamental note of his theory is living in a certain social environment, residence in a particular location or presence in a particular social space is all for having difference and being different. Individuals' residing in the specific space enjoyed certain understandings, schemes related to the classification and certain taste. Moreover, given the possibility to discern, distinguish and differentiate (Ritzer and Douglas, 2011: 601-600), this fact shows the structure of Bourdieu's intellectual structure opposing with nature orientations in dealing with tastes, habitus and behaviors of various classes and present functional and relational analyses. Because of the investment, place and time condition of each person is different with differentiated species. Bourdieu says:

“However, it should be a feature of particular circumstances of time and position in space. Social and behavioral features in the context of a certain wealth linked to the intrinsic characteristics that can avoid introducing. In every community, every time we face a series of social situations in a form-like relationship with a series of activities or wealth together. It means the relationship between social behavior networks, hobby habitus and choices that the social actors do in diverse field of behaviors” (Bourdieu, 2001: 31-32).

2.3. Symbolic capital

Symbolic capital is nothing but the recognition of cultural and economic capital. Once this capital is recognized on categories that impose the symbolic power relations, it tends to reproduce and reinforce the social space (Bourdieu, 1986: 192). Bourdieu's definition reflects the changing relationship between power and dignity of such a semantic relationship. Bourdieu talks about works related to symbolic capital that have had a principle emphasized on the nature of this capital and it is recognition by others. Symbolic capital is a capital that has an etymological root that relies on the identification, recognition, and validity (Bourdieu, 2001: 217-218). For example, capital of the artist is a symbolic capital, or the name of ancestral holders of that name is a capital carrying symbolically all the virtues of the tribe.

Bourdieu believes that the possession of the symbolic objects has also a material existence such as paintings; the dignity of the property will be too. Possession of an artistic work means the sole owner of the original work and the original taste for it, thus denying substantiality has become all those who do not deserve to possess. Because it lacked financial compliance or symbolic adequacy, or merely because it lacked a strong desire to possess, it is not severe enough to “sacrifice everything for it” (Bourdieu, 2011: 383). Among all the methods and techniques for creating and accumulating symbolic capital that are designed, buying artworks is considered as an objective document of a personal taste which, more than others, is close to the lowest and the most non-imitative form of capital accumulation. It means internalizing the signs and the dignity symbols of

the power in the form of natural dignity of authority or personal culture. Exclusive possession of precious works is like mere splurge flamboyant wealth. Inviolable show of wealth that is possible through this way, however, is a challenge to all those who are unable to separate themselves from their possession (Bourdieu, 2011: 386).

3. Reasons of Merchants' Houses Mural Painting Development

3.1. Mural painting and its flourish in the Qajar time

Iranian art in Qajar era (1794-1925), was not a direct continuation of the art in the previous period but also the art with features: the increasing separation of Iranian culture from the great tradition of Islam resulted in the Shiite victory and rivalry with the Ottoman Empire, entering an increasingly popular and folk art elements, and the dependence of the growing influence of western art. However, the art of this period has the lower level of quality rather than the art in the former times; it was not comparable in terms of elegance, but did demonstrate refined features and a completely independent identity (Ajand, 2006: 35).

To recognize the mural painting in Qajar times, first there is need to review the features of paintings from this period. Following the transfer of the Zandi sovereignty to the Qajar kings, and Safavid art tradition in the late 17th century, the influence of European art made it the most apparent art theme for artists' activities (Kamali, 2006: 186). Composition and arrangement of the Qajar era reveals the influence of European art; for example, the Russian glass vases design, drawing and painting roses on Chinese bowls and plates from the Britain, the French feminine clothes, and above all the gestures of Fath Ali Shah, the king standing with crutches, perfectly imitating the western countries such as Britain and Russia. The portrait of torso, sitting on a chair, is a painting inspired by Russian and French painting. Perspective science, especially the Italian one, has a renaissance manifestation. The design and painting of most painted fabric samples are from eighteenth-century in France. The modes of replication with normal tissues are frequently seen in these works that attempts to represent a foreign-like one where the representation of portrait painting reaches its peak (Jalali Jafari, 2003: 44).

Painting in the Qajar era is an important step to cross-traditional Iranian painting through a new style and the development of a school that is combined with painting traditions and western art achievements. The visual approach of the Qajar drawing period is based on drawing human figures and faces with an extreme decoration. Perhaps the root of some of these tendencies is in favor of Iran's ancient glory, recreating the brilliant Iranian culture and history and introducing the power and splendor of the Qajar court, adding decorative elements to the body especially jewelry, design and painting, westernizing style, predominance with warm colors. Perspectives, trees and sky in the background tend to have a structural symmetry and replace most of the body in the middle of painting. The limited use of highlight and volume making, soft and smooth shadows in the faces and connected eyebrows are among Qajar features (Dibaj Goudarzi, 2009: 138).

Influencing from the western art in Iran started since the Safavid time and became more flourished in the Qajar and Zand period, when different aspects of art and culture got affected especially mural painting. The west influence, especially in the court and on the king and entourage, occurred with paintings that did not exist among Iranians and was based on self-love instinct; they were interested in real images and appearing faces drawn to remain memorable. Therefore, the subject of Iranian painting changed and the nature and imitation thereof became important and was sometimes copied from western works and free nature properties such as perspective, highlight, portraits. Mural painting features in the Qajar and Zand periods, using seven

colors of tiles painted with flowers, birds, and plants with iris flowers and examples of soldiers and servants design are found in a lot of buildings of this period. Also, rooms with floral motifs, arabesques, and *Anglica silvestris* with gold fields on the ornate plaster can be mentioned. Zand architecture impacts and its related arts in the early Qajar era are drastic and last until the middle of the Qajar era. However, the manner in which the roof painting on wood is common in the Qajar era, is completely different from the mural paintings in the Zand period. Because in the Zand period, ceilings of the buildings are generally muqarnas, plastered and painting of flowers, birds, arabesque and *Anglica silvestris*, while paintings of the Qajar era are influenced by west paintings. In wall decorating, mirror work becomes more common in Qajar era and we observe various methods of mirror work (Sharif and Syed, 2002: 180).

Unlike other nations' mural paintings, which accounts for the registration of religious stories and other assemblies, drawings of human, animals and birds paintings on the body of temples, churches and palaces, Iran muralist artists, except a small number of cases, inspired by nature, plants, flowers, ivy leaves, continued Iranian design and painting as their main job. The combination with arabesque and *Anglica silvestris* flowers, leaves, bergamot and decorative lines created beautiful paintings. This choice along with perfection of portrait and human design, tashir and assembly layout in the manuscript book by Islamic artists could witness the artist's coordination of the interior design trying to create a communion atmosphere and to depict this space to the viewer.

Evidently, the mural painting art, gradually along with building decoration, stucco, and tiles, plays a significant role in coating the interior surfaces. These works acquired high status until the Qajar era, using oily glaze, semi-oily, mental and physical colors, "Tempera" gold plate or gold water in shaping the geometric and decorative arabesques and *Anglica silvestris* lines, rosette and bergamots and tashir (Jahan and Sadrosadat, 1993: 79). Various examples of mural paintings in Qajar era are the mural paintings of court (palaces), mural paintings of princes' houses (classes and associates to the court), and mural paintings of the merchants, traders, city rich people and folks or popular mural painting (baths, religious sites, aqua hall, hospice, coffee shops).

3.2. Growth of the merchant class and their economic capital

In the Qajar era, important changes occurred in the economic and social aspects, which consequently led to important changes in art, taste, aesthetics, and art supporters. One of the most important cities, not excluded from these changes, was Yazd where in this period faced the formation of a new class of merchants that began the transition of land and production-based life to transaction-based life and caused commercial flourishing in the city. In this period, city communication with the outside world increased and through wealth, social and political connections this new class played an important role in the city, simultaneously trying to compete with each other to show their social status. Hence, in this period, a series of large houses were built that developed the non-noble and non-religious art in plaster paintings on various themes.

Consolidation of power in the Qajar dynasty, along with economic and political developments in Europe, created a specific situation in Iran which brought about a barrier-like intense insecurity feeling and a tyrant government with pressure on business expansion and growth capitalism (Ashraf, 1980: 39-38). But despite these conditions, Yazd gained particular popularity in the economy due to several factors as follows:

- The existence of domestic industries, industrial units and exporting products to other areas
- Zoroastrian religious minority and their relationship with the corporation of India, both were working in the business field

- Relative security and the removal of acute social unrest placed in the trade route (Tashakori, 1998: 171).

Yazd was a place for business people and wealth. Yazd had a transnational fame in textile manufacturing; it had national reputation in the production of sweets and an exclusive power in the manufacturing and distribution of certain goods (Pollack, 1982: 377). In addition, Yazd was the major trading center for goods from different regions. The centrality of Yazd was a major advantage where most of marginal areas' goods were taken there and then to be distributed. This city was in center of Iran, and the confluence area of three normal and major highways. Before then, no commercial credit flourishing was in Yazd for export of goods. During the Naseri period, Yazd reached its commercial boom peak (Nyvkamn, 1997: 139).

One of the features of Yazd during Qajar era, until the constitution entered this city, was a relative security like other areas. Considering the political situation in Yazd until 1945, AH / 1285 SB, it becomes clear that the rulers of the time were mostly selected from Isfahan government, but it was the duration that was a guarantee of security and of prevention of local riots. Regarding the political changes of Yazd before entering the Constitution, it seems that people had to deal with only one dominant person. So all the political developments in Yazd were the political representation of Iran and seemed calmer than other parts of the country. This fact about the economic growth of Yazd proved useful and led traders to commerce safely easier (than in the days following the Constitution) and meet their affairs.

In terms of geographic location, Yazd was located in the confluence area of major highways. Short distances to major commercial centers had a particular privilege that fewer cities of Iran could compete with. Such importance is revealed when transportation problems such as lack of proper roads, roads insecurity, and generally natural and artificial barriers that existed in other trade routes. Redirection of European trade with Iran had played a significant role in business development in Yazd. Flourishing in the southern parts of Iran encouraged Yazd traders for commodity exchanges to other parts of the country and other countries. This expanded the Yazdi traders' activities business in those areas and some of industrial men became involved in converting some of them into consumable goods.

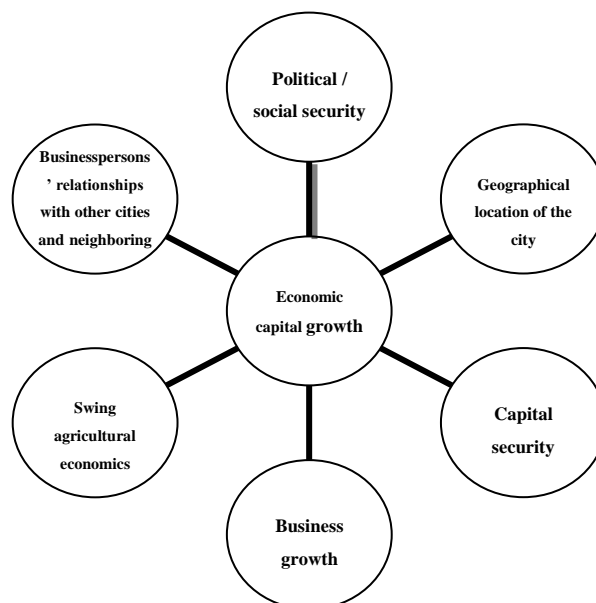


Fig 2 Growth factors of economic capital

In summary, in light of the above factors (Fig 2), formation of a class of merchants in Yazd consistent with trends console Britain in Yazd (1893 AD) made the amount of their business capital reach about two million dollars (Flora, 1986: 171). Although the scale of this amount was unimportant, economic indicators have been developed but at the local level with a remarkable growth of domestic trade. According to the writings of foreign travelers, Yazd was the main center of goods distribution sold in markets of northern Iran. In Yazd, there were two categories of traders, who imported their goods from Mumbai and south of Iran, and others who bought these goods exported them to Khorasan. Some 150 people were in the first group that had agents in Mumbai, while the second group included 75 (Flora, 1986: 168). According to what was said during the reign of the Nasser al-Din Shah, Yazd commerce had undergone tremendous changes the result of which was a long standing Yazd that could attract the attention of many observers.

3.3. Cultural capital and flamboyant consumption in the business-class

Due to the rich financial capital, merchant class has been at the top of the hierarchy of social status; access to the wealth and resources was the basic principles of the classification status in the society. Social credit of this class in Iran was always because of their being in the head of power pyramid, prestige, and market wealth and intertwined relationships they had with government leaders. Prior to the Qajar era, due to the social and political situation of the society, and low progress in the commercial and economic development, businesspersons were not into investment in the construction, expansion, and decoration of houses. However, in Qajar era, the representation of economic capital of business class in the field of art and culture is widely seen in the form of mural painting houses that are due to changing taste and lifestyle and willingness to be distinguished. The housing index recorded in Yazd does not show any house painting related prior to Qajar era. Hence, the Qajar era marks the formation and growth of mural paintings and buildings in Yazd. In this study, the analysis has focused on commercial houses' mural paintings.

As previously mentioned, the economic capital does not follow the cultural capital, but the way of using it starts the wealth and knowledge. Sociological, psychological and economic principles accepted the need for wealth; it underlies the formation that led to the increase of dignity, social status and glory against other low social classes and even its fellows. Before the Qajar and at the beginning of Fath Ali Shah period, mural painting and wall decorations was largely monopolized by the state and court applied in palaces and public places such as markets and mosques for glory and power of the King. In other words, art was a means to express the glory of the king. It was shown in the paintings, decoration and arts paintings of palaces identified in public places like the paintings of half-body portrait of King. But in the Qajar era, mural paintings to the houses and buildings outside the court, especially merchants' house in Yazd were examples of such houses like: Malekotjar, Malekzadeh house, home of Mirza Shafi, Shafipour house, and Sadooghi houses.

Financial possession with travel, relations with foreign countries in order to have trade provided especially for those business people who were free from religious intolerance, awareness of the cultural, intellectual, and artistic field and following foreigners were the motives. In this view, Yazdi merchants' interaction with foreign businesses or their representatives have long-term impact on changing attitudes to traditional trades. Businesspersons in general and particularly Yazdi traders were analyzed in this paper because of having relationships with west merchants, traveling abroad, sending their children abroad to study, and learning western languages. Other sections and social classes who were familiar with western culture and especially some of the characteristics, behaviors and western ideas that would fit their class interests were also receptive and responsive to these effects (Momen, 1979:179). Most traveling people were merchants who had more information

about the outside world as compared to other people in the community (Flora, 1977: 38-37). Contact with court in one hand, the other side relations and traveling abroad and having capital and literacy by merchants were factors to change their tastes and lifestyles than other sections of society. Hence, the need for distinction and dignity was hanging over the traders' class. As mentioned, distinction and dignity are those different strategies that beat the heart of social life. Most of these strategies and their use of art are shown in the form of cultural products especially art works in most of houses. To decorate their homes, Yazd merchants had the master painters of the period, including Farrokh Khan, to do mural paintings that lasted for several years. While the taste and talent of the artist's themes or information and tastes of the homeowner was unknown, but probably had more impact on the homeowner's tastes and opinions; the painter was not usually an artist but a servant working under businessman's taste. Paintings' themes is a collection of plants, animals and human paintings that suit with the tastes and beliefs of merchants at home. For example, businesspersons who had interacted with clergymen and had pretending to the religion tried not to use human motifs and girls or used only in the bedrooms. Of course, there were businesspersons such as Rasoulian who had high wealth, but because of religion never used paintings for home decoration, instead he used plaster and a bit mirror work to show the glory. Emulation and simulation of mural paintings in the homes of merchants and medallion western Yazdi is a clear sign of that interaction and taste change. An example of this is the influence from the Europe paintings seen in the Malekotojar house painting and Shafipoor. Fresco ceiling of the throne room of the Malekotojar house includes portraits of young maidens adopted from the stamp print imported from Europe.

However, in some homes, a merchant might order paintings and wall decorations with religious themes and non-emulation of the west, such as the prophet Muhammad in their homes. An example of this is visible in Yazd Amity home. According to Bourdieu, artistic works possession is a cultural capital indicator. However, Yazdi merchants turned their home into an artwork piece. It seems that the merchants had little knowledge and familiarity of merchants due to the art and formed designs on the walls of the house; the trader's aim was only painting and mural paintings. Moreover, the content was not often stressed. It is to be noted that imitation of western works shows lack of knowledge. If there was a cultural capital, businessperson stressed or installed the painted image of the west or the initiative and provided a new theme in paintings, but emulation, and simulation had another analysis and it was flamboyant consumption. It was argued that merchants did not have an understanding and knowledge of art, awareness of the world artists, paintings and various art styles, without the support of the cultural capital. Their economic capital, changing taste and lifestyle, although provided the field for cultural capital development for our children and next generations, didn't enter the cultural capital, and all cultural and artistic appropriation attempts were due to their flamboyant consumption and to create a glory and distinction against other sections of society, foreign merchants, and their fellows. It was believed that those buildings that were magnificent were admired in the public mind, society, and even courtiers where homeowners had more wealth; dignity and prestige were hence more modernized in the late Qajar era.

3.4. Genesis and persistence of symbolic capital in merchant class

As mentioned before, symbolic capital is etymological and relies on identification and authentication. The businesspersons in Iran, because of having contact and interaction with court, the clergy, wealth and possession, construction and having titles like Malekotojar, Aminotojar, Nazomotojar and Moeinotojar, in the eyes of the public, were highly credited. Their credits were to

the extent that many people keep their money and possessions buried with them. This credit and respect from the people was their greatest asset. However, these are the symbolic capital that merchants had at the time of their lives. Moreover, at that time this class expanded to symbolic capital, the idea of investment durability during the years after his death to keep its name and provide cultural heritage for their children. Hence, for the growth and expansion of the house, mural painting and its decoration was the best solution for the above ideas in order to turn the building into a cultural artwork.

It was important that the glory of the merchant house were not just his living area. It was also a place to meet fellow traders, foreign traders, representatives, and associates of the court, holding friendly gathering celebrations and ceremonies, religious ceremonies, preaching and other items. Hence, largeness and beauty of the house for merchant was considered as a credit, social status, dignity, and distinction requirements. In addition, the use of art and painting was considered as the accumulating symbolic capital and taste for trader to objectively document the life and death over the years.

As shown in Fig 3, durability of symbolic capital is the result of economic capital and flamboyant consumption besides which traders had no other purpose. House, as the well-known outer shape for the dignity and distinction, was kept as the symbolic capital of the homeowner during the later years after his death.

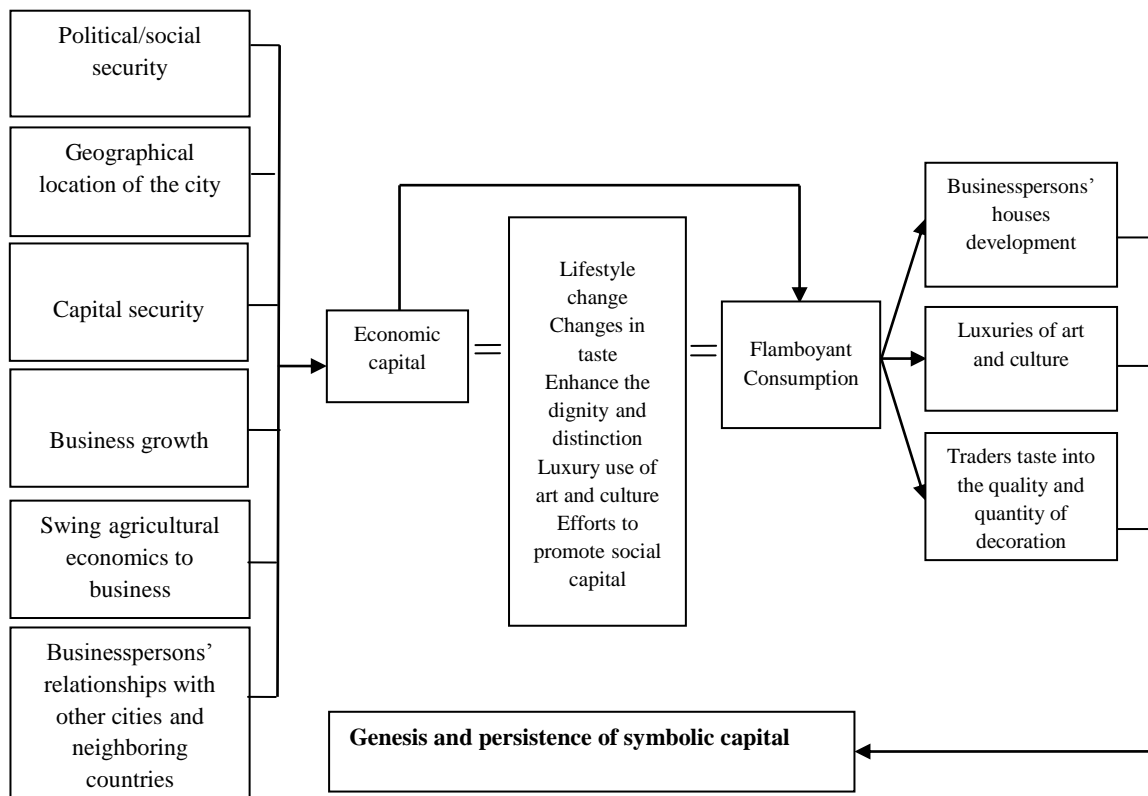


Fig 3 Constructed and lasting model process of symbolic capital in merchant class

4. Conclusion

Social, political and economic development of Yazd city and the formation of a new merchant class in Yazd, are the main factors for the expansion of mural paintings. Yazd business during the rule of Naser-Din Shah underwent dramatic changes, and reached high status that could attract

much attention of its observers. Development of decorations and mural paintings in the noble houses of Yazd had a direct connection with the thought, culture, and beliefs of business class and homeowners. Yazd has great noble houses, but there is no effect of any decorations or figure paintings, portraits and even flowers and bushes. This manifests the social, religious, and occupational status of homeowners and also the function of the noble houses over the years which were the location of various social classes. It was the family and relatives' beliefs and their business relations among the lower class of society that made them avoid decorate and mural paintings of their homes. This is visible in the house of Shafipour, Malikotojar and Mavedat in contrast with house of Rasoulian, Kolahdouzha, and even the home of Malekzadeh.

Social relations of merchants' class with other city class of Yazd society in the Qajar era depend on many factors. The first factor was the relationships of this class of society with other fellow businesspersons, city trade people, merchants, and traders in which they competed with each other. The second factor was the relationships and interactions of business class society with public class society the basic purpose of which was obtaining a public status and promoting their social status. The third factor was the interaction and communication of this business class with their fellow traders in other cities and even other countries in trade and economic relations. The fourth factor was interactions of this class of society with special urban classes such as clergymen, bureaucratic and administrative figures who were trying to show their religious affiliation and beliefs through mourning ceremonies in Ashoura and annual preaches.

This paper attempts to shed light on the reasons for the development of painting and mural paintings in the merchants' house in Yazd in the Qajar era. The process was discussed in this paper to verify the hypothesis that the mural paintings in the merchant's houses in Yazd in the Qajar era was due to economic capital growth, lifestyle changes, taste change and gained distinction and dignity, and ultimately for the achievement of greater growth and durability of the homeowner's symbolic capital. The results of this study based on the theoretical framework and constructed model, "durability of the merchant class symbolic capital process" indicates that in certain periods of economic growth and suitable social-political conditions, Yazd and its architecture have faced significant development. This development has led to the growth of mural paintings and decoration of houses in Yazd in the Qajar era. The reasons for this expansion are the orientations that these homeowners had like dignity and distinction between the public and their fellow merchants and city traders, showing the competitive and flamboyant consumption of this class to demonstrate their economic capital to gain social status and increase symbolic capital. Hence, largeness and beauty of the house for merchant is considered as credit, social status, dignity, and distinction requirements. Moreover, use of art and painting is considered as the accumulating symbolic capital and taste of the trader objectified in the documents of the life and death over the years. On the other hand, via the mural painting of their house, the merchant spiritually indicates that other classes or the individuals of the society that are deprived from the magnificent houses, do not have practically the financial and social competence and adequacy of the possession and cannot enjoy the art which necessarily belong to a higher-status class.

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