

**YAŞAR UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

MASTER THESIS

**DOCUMENTATION AND EVALUATION OF THE
COMPONENTS OF INTERIOR DESIGN IN PERSIAN
TRADITIONAL HOUSES**

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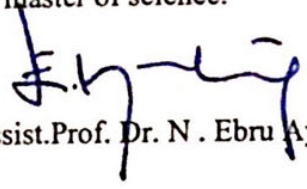
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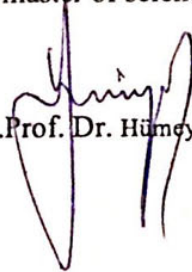
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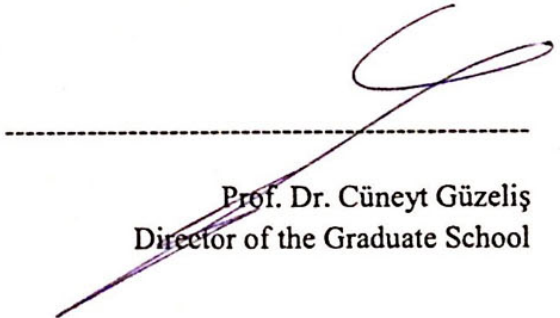

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ABSTRACT

DOCUMENTATION AND EVALUATION OF THE COMPONENT OF THE PERSIAN INTERIOR DESIGN IN TRADITIONAL HOUSES

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MSc in Interior Architecture and Environmental Design

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The main concern with contemporary architecture in Persia is in the fact that it is losing its ancient architectural identity which contained Islamic architectural motives alongside Persia's rich traditions and architecture. Traditional architecture was designed according to culture and climate. Old Persian architecture had a reason behind every feature used in its architectural buildings, whereas contemporary buildings do not own these characteristics. Today's architecture has lost its fundamental values and it no longer holds to its traditions and identity. Looking at today's architectural ornamentation and comparing them with traditional architecture we witness that traditional ornaments and decorations once used in ancient Persian architecture has been forgotten. The aim of this study is to research traditional architecture in order to form a framework that can benefit contemporary architecture. Thus today's architecture can inspire from the beneficial, intelligent traditional architecture and find its identity again. To reach this goal, traditional houses are good examples, since we can study the reasons behind every feature used in their architecture. Therefore five traditional houses of Qajar period were chosen in Kashan city of Isfahan Province to be studied thoroughly with the focus being on their, Mirror Work, Stucco Work, Mural Paintings and Orosi Windows.

Keywords: Persia, Isfahan Province, Kashan City, Qajar Era, Persian House Interiors, Orosi Window, Stucco Work, Mural Paintings, Mirror Work

ÖZET

GELENEKSEL İRAN KONUT STOKUNDA İÇ MEKAN BİLEŞENLERİNİN BELGELENMESİ VE İNCELENMESİ

Mana Adib Nafisi

Yüksek Lisans Tezi, İç Mimarlık

Tez Danışmanı: Yrd.Dr.N.Ebru Aydeniz

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Zengin kültürel ve mimari birikimlere sahip olan İran'daki çağdaş mimarlık uygulamalarının en büyük eksiği İslam mimarisi açısından çok değerli öğeler barındıran geleneksel mimari kimliğiyle bağlantı kuramamış olmalarıdır. Geleneksel mimarlık kültürel ve iklimsel koşullar altında şekillenir ve eski İran mimarisinde alınmış her tasarım kararının arkasında bu koşullarla ilişkili bir sebep bulunmaktadır. Günümüzde bu etkileşimin çağdaş İran mimarisinin karakteristik özelliklerinden biri olduğundan söz etmek güçtür. Günümüz mimarlık uygulamaları temel değerlerini kaybetmiş, tarihten gelen gelenekler ve tarihsel kimlikle bağlantısını koparmıştır. Bugünün mimari süslemeleri incelenip, geleneksel mimariyle karşılaştırıldığında, İran'ın geleneksel süsleme sanatlarının tamamen unutulmuş olduğu görülmektedir. Bu çalışmanın amacı geleneksel mimari öğeleri inceleyerek, çağdaş mimariye altlık oluşturabilecek bir rehber hazırlamaktır. Böylelikle geleneksel mimari kimliğin, günümüz mimarlık uygulamalarına faydalı ve akılcı bir esin kaynağı olması hedeflenmektedir. Geleneksel konut stokunda, her bir mimari elemanın ayrı ayrı çözümlenebilir olması, bu hedefe ulaşılması açısından önemlidir. Bu nedenle İsfahan'a bağlı Kaşan şehrindeki, Kaçar Hanedanlığı Dönemi'ne ait seçilen beş farklı geleneksel konut yapısı, ayna işçiliği, sıva işçiliği, vitray pencereler (Orosi) ve duvar resimleri gibi mimari öğeleriyle beraber incelenecektir.

Anahtar Sözcükler: İran, İsfahan Eyaleti, Kaşan, Kaçar Hanedanlığı, İran Konutunda İç Mekan, Vitray (Orosi), Sıva İşçiliği, Duvar Resimleri, Ayna İşçiliği

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Mana Adib Nafisi
İzmir, 2016

TEXT OF OATH

I declare and honestly confirm that my study, titled "Documantation and Evaluation of the Component of Persian Interior Design in Traditional Houses" and presented as a Master's Thesis, has been written without applying to any assistance inconsistent with scientific ethics and traditions, that all sources from which I have benefited are listed in the bibliography, and that I have benefited from these sources by means of making references.

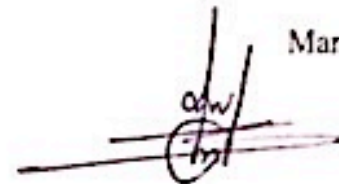

Mana Adib Nafisi
01/09/2016

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1 INTRODUCTION

1.1 Subject of the Thesis

The subject of this thesis consists of the interior design elements of traditional houses in Persia. Interior design of houses can be considered as one of the most accomplished elements of traditional architecture of Persia which needs to be discussed and analyzed.

There are several factors like human behaviors and environmental aspects which affect architecture and interior design of traditional houses :

- Climate
- Geography and Topography
- Available materials of the region
- Cultural beliefs
- Vernacular traditions

Also since Islam became the religion in Persia, certain rules and regulations were changed and new methods in architecture were introduced to comply with Islamic rules. The need for privacy created a change in the design of houses, adding new elements and factors to traditional Persian architecture. In order to understand the traditional, architectural methods in historical designs, a review needs to be done to better figure out these architectural transitions.

Today Persian architecture is losing its identity. Namely contemporary architecture has lost the connection with the traditional architectural style. This has caused an unfounded architecture. By analyzing and understanding traditional architecture, it is possible to increase the creativity of architects in bringing new ideas to their designs. Thus the subject of the thesis is to analyze the type of houses that can

link and inspire traditional architecture to contemporary life. These houses are expected to create a base for future development of Persian architecture.

Therefore, interior design components of traditional houses were investigated and reviewed. This study puts an emphasis on the architectural components that were formed by traditional factors such as Mirror Work, Mural Painting, Stucco Work and lattice windows named Orosi Windows.

1.2 Problem Definition

Each country has its own types of thinking which comes from its culture and that in turn leaves a strong impact on its architecture (Mirmiran 1995, 19).

It is clear that dwellings are a reflection of socio-cultural and traditional structure of people who spend most of their time in these houses. Also the design of a dwelling is certainly the reflection of beliefs and shows the background and cultural values which have been formed in thousands of year.

At the present time in the new era of architecture and boundless formation in modeling of elements in buildings, architects follow and create styles and new methods in designs which have caused a large confusion in architectural identity. They tend to have some similarities with western architecture and more contemporary types of the place.

However, under the influence of modern architecture, some changes in developed societies have produced a new architectural style, which we know today as a “new architecture”. This kind of architecture, may have addressed, for example, the housing needs of people, but it has failed to satisfy the socio-cultural values of a place and has created a multitude of problems.

The traditional architectural culture has just become like a lifeless figure these days and is losing its value. Also traditional building design techniques and

traditional materials have been neglected. Through these changes Persian contemporary architecture is now losing its identity. Thus Persian contemporary architecture needs to go through a great change.

Hence the present society of architecture needs to figure out the traditional techniques which have become forgotten over a period of time and start using them in their contemporary designs.

1.3 Research Questions

Without understanding the interior design components, tradition, culture and their role in historical designs, contemporary evaluation of historic designs and continuity of cultural sustainability may not be convenient to apply.

In the proceeding discussion of the traditional and contemporary housing in Persia it is necessary to examine some points. Three important interrelated questions that will be answered during the course of the research are:

- What are the important socio-cultural values that influence interior design?
- What are the components of traditional interior architecture in houses ?
- How can we reconnect ancient architecture with the present one?

1.4 Aims and General Approache of the Study

The purpose of this study is to identify the interior design components of traditional houses in order to understand the old techniques, thoughts, design methods in order to inspire new designs from old architecture and use the points to set as guidelines for the future houses in Persia.

Research has denote that there is a need for the study of traditional Persian houses, their role, variety and values in order to find useful features and suitable

patterns as solution in current problems. There can be applied to the contemporary architecture of Persian houses.

The architecture of traditional houses is just a small part of the entire culture of the country. However, it is significant starting point in the recovery of cultural identity. Even today, upon entering traditional houses, one is impressed by a feeling of engender by years of history and culture. It reflects the identification and their style of their residents.

The study also tries to find out the interior factors which influence the convenience of the houses, residents and the elements contributed to design aesthetics. This investigation will also provide an adequate understanding of cultural values, an architectural feature in order to determine some principles to develop, a framework for Persian contemporary housing. Studying the traditional houses may provide solutions for the problems in the design of contemporary houses.

1.5 Scope of the Research

Thesis subject is limited to the years 1789-1925 during Qajar dynasty in Kashan, a city of Isfahan province, in order to understand the interior designs components and interior design features. The province of Isfahan and Qajar period is an important period and region in Persian architecture because of its historical backgrounds. In this case Isfahan province is one of the most prominent places where the Qajar historical houses still survive. In fact this period was the start of transformation to modernity through communication by western countries.

This thesis examined five traditional houses, in the city of Kashan. The houses are selected based on their municipality registration. Also these five houses were chosen due to their good preservation. They stand as live symbols of Qajar architecture. They are still in a relatively good condition and it is possible to see and feel the organization in them.

1.6 Methodology

Methodology of the thesis is based on different methods, which can be categorized as:

- 1) Documentary Research
- 2) Data collection on Site
- 3) Analysis of Data
- 4) Comparisons of Analyses

1.6.1 Documentary Research

In this part of the research the relevant sources such as (books, journals, magazines, conferences, seminars, articles) about the subject were referred and reviewed. Sample houses were collected based on the well-known surviving traditional houses of Kashan city in Persia. These are located in hot and dry climate part of the country.

This literature survey concentrates on the following topics:

- A) Documents and these study that are related to
 - Qajarian/Persian Houses
 - Historical and Architectural features of Qajar era
 - Traditional Houses of Kashan city
- B) Documents, reports and thesis studies related to interior components
 - Windows / lattice Orosi windows
 - Mirror Art

- Stucco Art
- Mural Paintings
- The Interior Components in traditional houses
- The Function of interior components in Kashan houses

Information obtained at the end of the literature survey was used throughout the study. General information related to Qajar houses and Qajar techniques are presented in chapter two and those related to interior components are presented in chapter three. Other information about Kashan houses and interior components of these houses are presented in chapter four which is a case study.

1.6.2 Data Collection on Site

A) Documents:

Data and documents about traditional houses date back to the 1781 and reach until 1925, during the Qajar dynasty. Data cover most important architectural elements of interior design such as; Lattice Windows named Orosi, Mirror art work, Mural paintings and Stucco decoration. The study was carried out on five traditional houses of Kashan city.

B) Observation

In addition to data collection, information was provided by visiting the sites, making sketches of spaces in these chosen houses and collecting visual information like photo shoots.

1.6.3 Analysis on Data

Analyses were completed according to the information which was collected from data and documentation and observation on design components of selected

houses. Analyses over interior features of the buildings, such as decoration elements were examined.

1.6.4 Comparisons of Analysis

Data collection of five houses in city of Kashan were compared with each other, in order to examine their differences and similarities. This was done in order to understand old architecture and form guidelines for the design of new houses for cultural sustainability.

1.7 Structure of the Thesis

This thesis consists of four major chapters. First chapter explains the aims, problems, context and the methods of research. The second chapter briefly investigates the historical background of Persia and the Isfahan province. History of the Qajar dynasty and architectural features of the period are also studied. Third chapter examines the interior designs components such as Lattice Orosi Windows, Mirror art, Stucco art and Mural painting. Fourth chapter examines five houses as a case study. Evaluation on these features was done in order to understand the interior design components of traditional houses in order to provide a conceptual framework contemporary architecture can be inspired.

2 HISTORICAL AND ARCHITECTURAL BACKGROUND OF PERSIA, ISFAHAN DURING QAJAR ERA AND THE DWELLING TYPOLOGY OF QAJAR PERIOD

2.1 Geography and Climatology of Persia

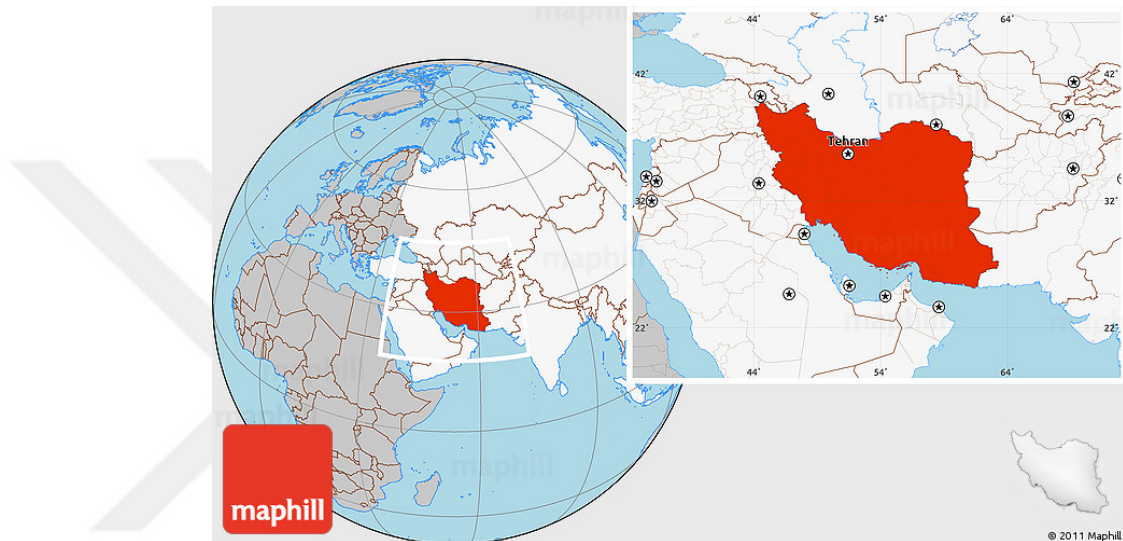


Figure 2.1 Location of Persia (www.maphill.com)

Persia is located in southwestern Asia also called the Middle-East. The largest lake of the world is situated at the North (Caspian Sea) and The Persian Gulf and Oman Sea are in the south. Persia is bordered with Iraq and Turkey at the east. At the west are Afghanistan and Pakistan. At the south are Azerbaijan, Armenia and Turkmenistan (Gellen, 2008, xxiii).

Area of 1,648,195 square kilometers makes it the second largest country in the Middle East after Saudi Arabia and the 18th largest in the world. The Caspian coastline on the north is 650 KM and the southern coastline, the Persian Gulf and Oman Sea is approximately 1770 KM. The total population was approximately 78.4 million inhabitants in 2011 (Gellen, 2008, xxiii).

As it is obvious from the map that Persia has a variable climate. These distractions show that persia has the complete four seasons. These multi climates include:

- Very cold
- Cold
- Moderate & Rainy
- Semi Moderate & Rainy
- Semi Arid
- Hot & Dry
- Very Hot & Dry
- Very Hot & Humid

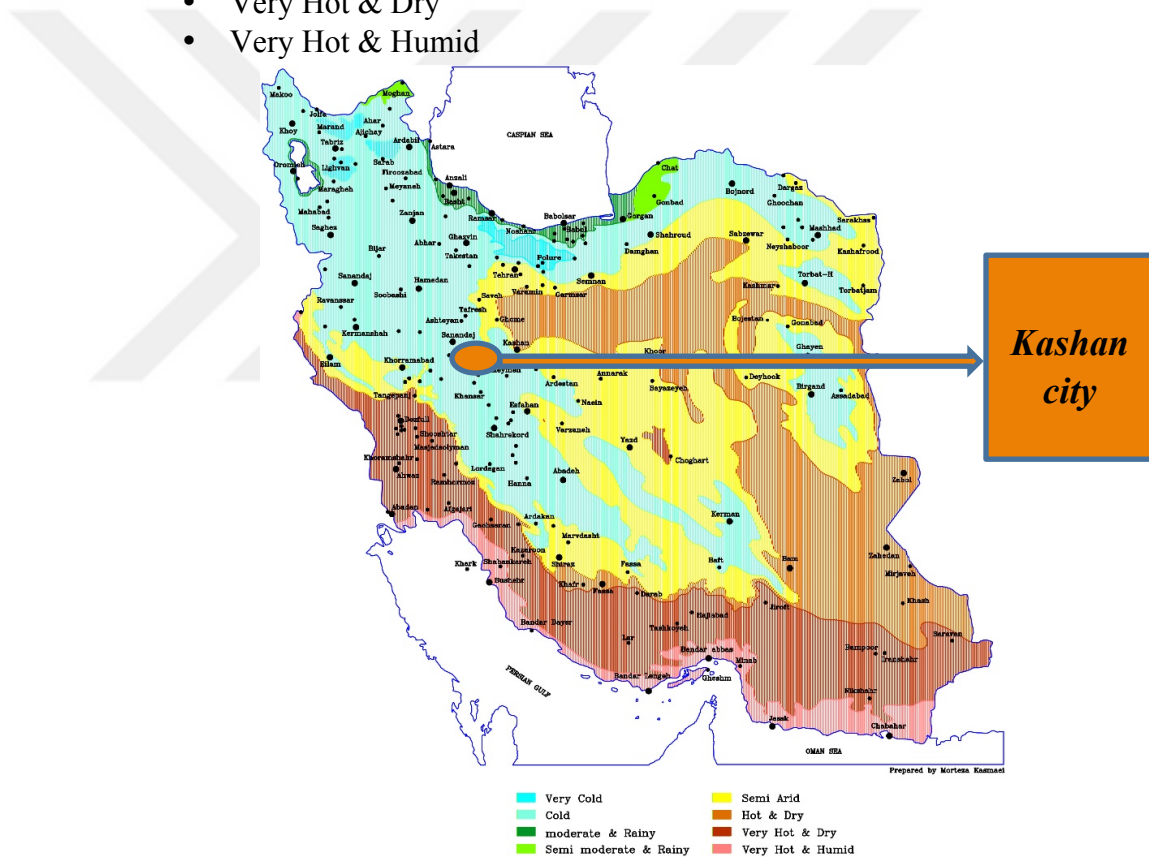


Figure 2.2 Climate division of Persia (www.lahistoriaconmapas.com)

In general Persia has an arid and semi-arid climate during the year, in its central and eastern parts. The yearly precipitation averages 250 millimeters (9.8 in) or less. The Caspian coast, in the north of the country is humid all year round due to being close to the sea. Areas on the west of country have cold winters that are usually below the freezing point. The southern coast of Persia has mild winters, but very hot and

extremely humid summer days. Temperatures could exceed 48 C during July in the southern Persia (Pourvahidi, 2010, 32).

2.2 Historical Background of Persia

Persia is one of the world's oldest civilization. It has been inhabited since pre-historic times. History of ancient Persia is dates back to 4000 BC. The written history of Persia begins about 3200 BC to 2500 BC with Proto-Elamite civilization. Proto - Elamite is an Early Bronze Age. Then by the arrival of the Aryans and establishment of the Median dynasty, the Achaemenid Empire was culminated as the first Persian Empire by Cyrus (Eskandari, 2011, 37).

The history of architecture in Persia dates back to the pre-Islamic era which means the Elamites, Achaemenids, Parthians and Sassaneid. This type of architecture created over these ages was great. When the Sassaneid Empire collapdsed Islam became as the main religion in Persia. After the arrival of Islam in Persia arts such as calligraphy, stuccowork, mirror work and mosaic work became very much tied with architecture in the new era (Eskandari, 2011, 37).

Islamic architecture has taken in a wide range of religious architectural style, and has influenced the designs and structures of the buildings. Islamic culture and beliefs valued privacy highly.



Figure 2.3 Achaemenids Empire (www.wikipedia.org)

2.3 Social and Cultural Background

The Persian culture and civilization has been one of the most ancient and deep-rooted cultures and civilizations in the world. The historical background of this ancient culture and citizenship dates back to Persian ideas that are thousands of years old. *“At that time, the rite of Mehr (Mithraism) and the religion of Zoroaster (Zoroastrianism or Mazdaism) were guiding lights that endeavored to lead the entire mankind toward the lofty position that every human being should have”* (Behzad Ahmadi Lafuraki, 2014, 1).

“Zoroastrianism is the ancient religion of Persia. It was founded in the sixth century B.C by Prophet Zoroaster” (Dinshow & Hutoxy, 2003).

The continuation of Mithraism rite in parallel to the religion of Mazda (God) in ancient Persia provided a good ground for the further advancement of the brilliant citizenship culture. It was prevalent in Persian society at that time. *“The main bounty for the great Persia over such a vast geographical expanse was promotion of religions which invited people to worship a single God, whether it was Zoroastrianism’s Ahura Mazda, or Islam’s Allah”*. Therefore, from a religious viewpoint, the country of Persia has always been the heartland of the great plateau of Persia, under the influence of such monotheistic religions. What Zoroaster did was to purify and revise the ancient religious rites of Aryans. Gradually people gathered around him as his followers and came to be known as Zoroastrians. According to sacred scriptures of the Zoroastrians, the world was a battleground between the forces of the Good and the Evil. They believe that people and those who are committed to righteous thinking should help the forces of the Good in their battle, against the Evil by following the principle of observing “good thoughts, good words and good deeds” at all times (Ahmadi Lafuraki, 2014, 12).

God (Ahura Mazda) is, according to Zoroaster’s teachings, the creator of heaven and earth. He is the source of the alternation of light and darkness. Fire is the major symbol in Zoroastrianism and has a central role in the most important religious

ceremonies. It has a special significance, being the supreme symbol of God and the divine Life. In Zoroastrian scriptures, Ahura Mazda is described as “*full of luster, full of glory*” and hence his luminous creations fire, sun, stars, and light are regarded as visible tokens of the divine and of the inner light. That inner light is the divine spark that burns within each of us. Fire is also physical representations of the illumined mind. Zoroastrians are not fire-worshippers, as some Westerners wrongly believe. Zoroastrians believe that the elements are pure and that fire represents God's light or wisdom. In Islam light carries a profound symbolic meaning, chapter 24, verse 35 of the Quran, known as a “*light verse, God is Light of heavens and earth*”. Moreover, Prophet Mohammad has added a cosmological aspect to the mentioned verse the first creation of God was Light. In religion light represents the divinity of God; it is symbol of divine wisdom and source of all purities (Dinshow & Hutoxy, 2003).

One of the important point in the culture of Persia after arrival of Islam is the aspect of privacy which has been reflected in architecture. The traditional design system of historic cities in Iran never allowed direct connection of private and public spaces. Therefore there has always been a respectful separation between these two spaces (Ghasemi, 2010, 88).

2.4 Isfahan Province Historical Background

One of the most significant Islamic cities of Persia is Isfahan (also called Esfahan or Hispahan). At present, it is the third largest city in Persia. And was awarded by UNESCO, the world heritage status due to its architectural significance and as a reflection of the tangible link between its design. Islamic beliefs and customs (Mehdipour & Rashidi Nia, 2013,12).

The city of Isfahan is one of the most magnificent in Persia; therefore it has become one of the most appreciated places in the world. The provience of the city goes back at least two millennium, but it became the most important city of the country when it was chosen as the capital during 11-12th centuries and again in 16-17th centuries (Saraf, 2010, 69).

The main conversion of the city started in 1597, when Shah Abbas, the Safavid king moved the capital of his kingdom to Isfahan. During this time a large number of new buildings and urban spaces were established. But more importantly, a great work on urban master planning occurred in this period. With the invasion of Afghan hordes in 1722, the Safavid dynasty collapsed and Isfahan experienced years of urban stagnation in its history under Afghan occupation. Isfahan lost its significant role, and was never again chosen as the capital city of Persia. In fact, from the fall of the Safavid in 1722 to the Qajar era (1779-1924), little physical changes occurred in Isfahan's urban framework and the city has encountered a period of decline. Over this time Isfahan lost most of its population, and its urban life faded to a great extent (Saraf, 2010, 69).

By the late eighteenth century, the Qajar dynasty came to power and gained control over Persia. Therefore, Isfahan as an especially important provincial center moved towards modernization.

2.4.1 Geography of Isfahan Province

Isfahan province is located at the centre of the Islamic Republic of Persia. Its total area is 106,179 square kilometers, about 6.25 percent of whole Persian's area. Regarding population, it is third biggest in the country. The city is located in the lush Zayandeh Roud River plain at the foothills of the Zagros Mountains Range. Isfahan is about 1580 meters high from the sea level. It has a mild climate. The average rain fall is about 60 to 100 millimeters (Zali, ZamaniPoor & Arghash, 2014, 212).



Figure 2.4 Location of Isfahan province in Persia (www.rrh.org)

Isfahan is also located at the edge of the deserts (Dashte Kavir & Dashte Loot). Desert is situated at the east and north of Isfahan. The Zagros Range of mountains is located at the west and south of Isfahan. Zayandeh Roud River is the main source and element of Isfahan’s development and beauty. The river rises from eastern slopes of Zagros Range of mountains. *“Zayandeh Roud River plus rich soil of Isfahan’s plain has created a wonderful opportunity for agricultural activities and fruit orchards”*. As mentioned on the east of Isfahan waste Lander desert is located. There are three types of deserts. The first kind is called Dasht, *“which has fertile soils at the hillsides. The second is called Kavir with a salt- slime surface and the third is called Loot, which is dry and inhabitable wasteland. The hot desert is empty of any nomadic activity. Deserts have hot and dry days, and cool and cold nights”*. The climate at the west of Isfahan is completely different: long cold winters and short cool summers. High slopes of the west such as Zardkuh are covered with deep snow and hundreds of water streams, which are original sources of Zayandeh Roud River are flowing at mountains hills (Zali, ZamaniPoor & Arghash,2014, 212).

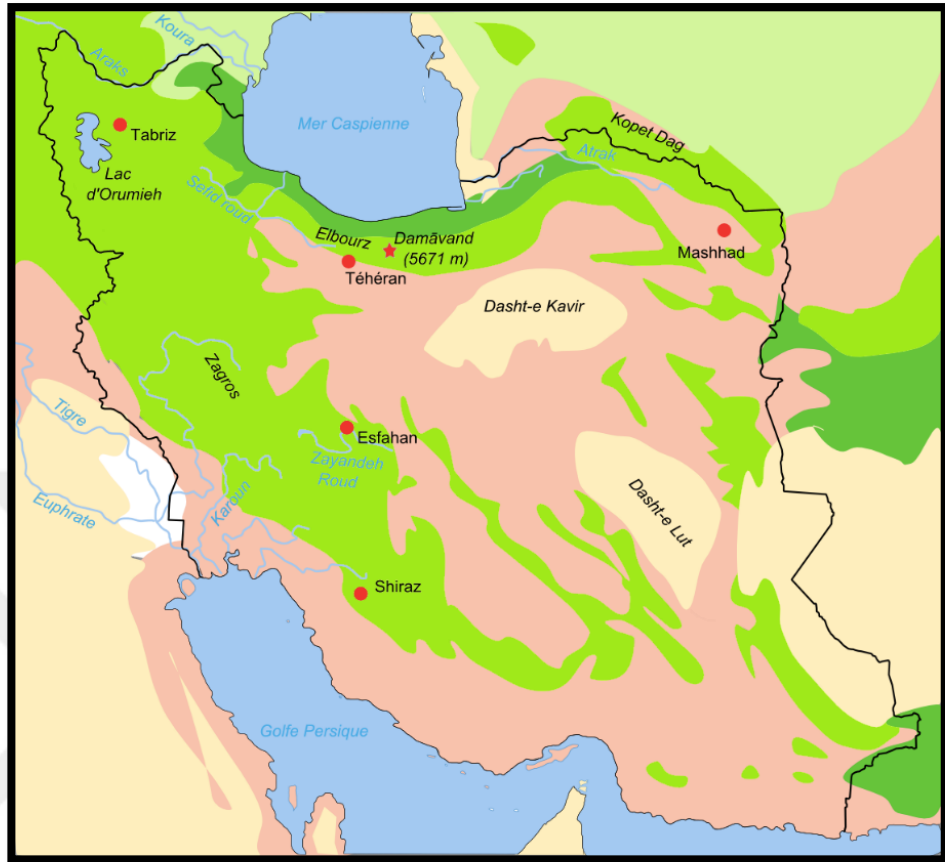


Figure 2.5 Location of Zayandehrood, Zagros Mountain & Deserts of Persia

(www.wikipedia.com)

2.4.2 The Social and Cultural Background of Isfahan Province

Isfahan, because of its special location, its importance in politics, being placed on commercial road and between different religions like Zoroastrians, Jewish, Muslims, Armenians was influenced by different beliefs. This research shows these differences in their houses. For example, in the muslim houses, holding the idea of heaven, we could see tall trees with large shades in their yards and ponds of water in the middle of their yards. They also had heavenly decorations such as patterns of flowers and birds. Blessed name of God on the walls of the rooms and verses of Quran on the top of their door entrances and elsewhere in the house. On the other hand in Armenian houses we could observe decorations and human paintings mentioning the story of the holy Gospels (Ghasemi, 2010, 89).

According to the result of cultural evaluation of Isfahan city, infrastructure of handcraft arts and historical works are at the same level. On all evaluations and assessments, however, historical buildings and monuments have gained the highest average through five other indexes. This means that although there are almost equally suitable infrastructures for handcraft arts and for historical monuments, historical works have been understood better by audiences (foreign visitors, domestic visitors, and residents). In other words, according to the ideas of the people and visitors of Isfahan, the most manifest cultural and identity element of the city are buildings and historical works compared to handcraft and lifestyle (Zali, ZamaniPoor & Arghash, 2014, 212).

2.4.3 The Climate of Isfahan Province

One of the effective points in field of forming architecture at a region is the climate. In the traditional architecture of Persia climate is a very effective factor in space organization, form and material elements in different parts of a building. Based on Isfahan placed in the semi-hot and arid climate, the minimum temperature is - 4 and maximum is 37.5 centigrade. In this dry area, summer days are very hot and nights are cool and winter days are moderate and nights vey cold. From November until April there is enough humidity, but the rest of the year it is dry. The average annual rainfall is just 82 mm (Prof.Dr.Ing & Prof.Dr.Ribbeck, 2002 ,111).

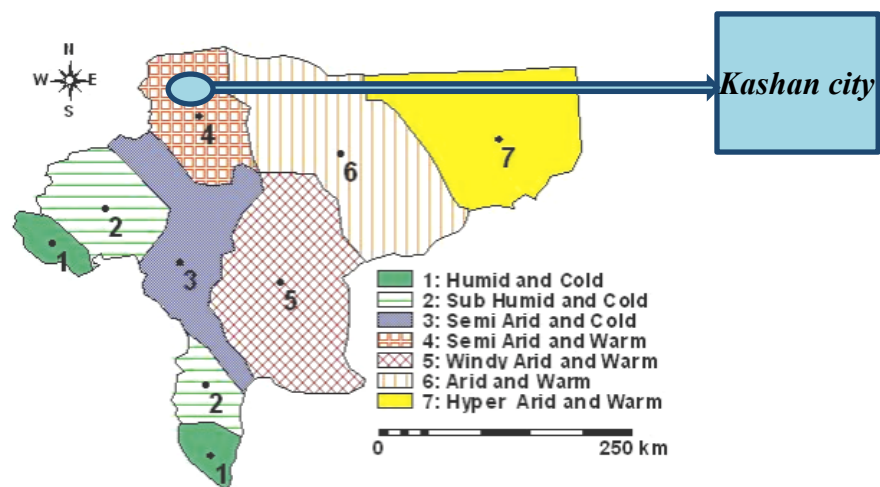


Figure 2.6 Bioclimatic zones of Isfahan province (Yaghmaei, Soltania & Khodagholib, 2009, 1856)

In the region of Isfahan there are two main kinds of winds. The first is the permanent east-west winds which originate in the desert. They never carry humidity, do not have an important effect on the climate and the amount of rainfall in the area. The second one is the winter wind which blows from northwest. It is cold and humid. It receives its humidity mostly from the Atlantic Ocean and the Mediterranean Sea. It reaches the area through the western and northwestern mountains (Prof.Dr.Ing& Prof.Dr.Ribbeck, 2002 ,111).

2.5 Historical Background of Qajar Dynasty

One of the periods which highlighted Persian history is Qajar dynasty during (1789 -1925) years. Beginning with the reign of Mohammad Khan. Persia started a movement toward modernizing reforms in many fields including architecture. During Qajar era the world wars happened and, because of the weak management of kings of Persia, lost many parts of the country despite some treaties with Russia and England (Eiraji, Boukani & Sabounch, 2011, 355).

However, that Qajar era was one of the unpleasant periods of the time due to its political aspects. Many innovations and events occurred in Persian's culture, art and architecture during this period. In Qajar architecture, the west, Europe and even some Eastern countries had some effects on Persian culture, architecture and art and Persians were propelled to the modern world. Therefore in conjunction with this condition, Persia dealt with some great changes. Based on the traditional architecture, for more balance in methods, spatial creativities were seen as creative new architectural ornaments and building constructions during this period. Such as diverse spaces, open spaces according to persian design patterns of architecture and natural elements (Poursoleiman & Khakpur, 2013, 855).

As mentioned above Qajar, period started a conversion from traditional to modern architectural designs.

In fact the architecture of Persia in Qajar era faced an incorporation of pre-Islamic style and European neo-classical forms. However, because of the Islamic beliefs and architects wishing to keep the old architecture elements in each building, plus having the new western ones, they mixed the new and the eastern elements in new buildings according to the owner's interests. The main changes were seen in their

personal places like their own houses not in public places(Eiraji, Boukani&Sabounch, 2011, 356).

These mixtures of concepts, having the old and new architecture together affected the heritage of Persia created a new style of architecture, but also kept the originality of Persian architecture.

Generally Qajar dynasty is divided in to three periods politically, which is not unrelated to architecture. Also architecture and designs of houses had a strong effect on the political issues and was divided in to three different types of designs (AzimiYekta, 2015, 282).

2.5.1 The First Period of Qajar Dynasty

This period lasted about 40 years. Kingship started by Agha Mohammad Khan (1789 to 1790) and continued by Fath Ali Shah (1791- 1829). Over this period unfortunately, Qajar state, through the signing of two Golestan and Torkamanchay treaties, concede a large area of Iran to Russia (AzimiYekta, 2015,282).

2.5.2 The Second Period of Qajar Dynasty

During this period, Mohammad Shah and Nasir al-Din Shah ruled from (1830 to 1892). The significant events during this period are dismissal and the murder of Ghaem Magham Farahani and rebellion of Agha Khan, the head of Islamic sect of Ismaili during the reign of Mohammad Shah (AzimiYekta, 2015, 284).

2.5.3 The Third Period of Qajar Dynasty

In this period, Muzaffar al-Din Shah ruled Persia from 1893to 1925 (Azimi Yekta, 2015, 284).

2.6 Background of Qajar Houses

During Qajar period, the architectural features promoted went into more detail. A lot of work was done during this period remarkably. Qajar architecture style, reflects its features also in the constructor of houses, which many researchers believe

it is the culmination of Persian architecture considering the usage of spaces. According to some experts, the most important architectural feature of Qajar houses was miniaturization (seeing details in architecture), which means that the architecture was seen as a kind of decoration (Bahramzadel & Heidari, 2013, 485).

In terms of construction, the houses are divided into three categories as houses of the first, second and the third period. Different architectural structures, used in houses often occur in the form of the vaulted roofs and ornamentation. It should be noted that in all Qajar houses built with a variety of models, there is a strong link with the previous tradition, and architectural principles are similar to each other. Many elements, such as the corridors and central courtyard of houses were completely a continuation of earlier traditions (Bahramzadel & Heidari, 2013, 485).

2.6.1 Qajar Houses Period I (Called Isfahani Style Houses)

Houses built in the first period were affected by mainstream of politics and economics of that time. Generally houses of this period are similar, in organization of space and architecture to those of Safavid houses, but the impact of live paintings in their decoration can be seen (Bahramzadel & Heidari, 2013, 486).

During the Qajar Period I, symmetry in facades and plans of houses can be seen. The most decorative parts of a house is the living room. The further a space was from the living room, the less decoration it had. This period was known as the era of decorations such as stucco work, brick work and painting on the stucco (Ghasemi, 2010, 92) (See Figure 2.7).



Figure 2.7 Haghghi Houses In Isfahan Qajar period I (Ghasemi, 2010, 92)

2.6.2 Qajar Houses Period II

Houses built in the second Qajar period were also affected by the ruling power of politics and economy of that period. The beginning of massive and unilateral impacts of west on Persia can be seen in this period. The most important historical features combine traditional architecture with classical western architecture. These effects were seen also in decorating the houses (Bahramzadel & Heidari, 2013, 487).

These effects first left an impact on building decorations, and then on architecture. This period was the beginning of using mural painting for the decoration of the house with arabesque pattern. They also used stucco work in semi-embossed size, pro-pounded mirror work in decoration of the extensive spaces. Heavy decoration Orosi windows are the masterpiece of this period of Qajar (Ghasemi, 2010, 92) (See Figure2.8).



Figure 2.8 Charmi House In Isfahan Qajar Period II (Ghasemi, 2010, 92)

2.6.3 Qajar Houses Period III (Well-Known as Kordi)

The houses of the third period, coincided with the victory of the Constitutional Revolution and the rule of deposed Sultan's. In the third period of Qajar with a lot of building houses on the northern side, building houses named Kordi houses got popular (Bahramzadel & Heidari, 2013, 489).

Kordi model homes in the mountainous areas have the two parts: the winter stay and summer stay roof put together. It was also the first shots of the exotic tastes (much attention paid to the views of the courtyard) revealed in façades. And the design and organization of interior space were affected, but the emphasis was still on maintaining the traditional architectural roots (Bahramzadel & Heidari, 2013, 490).

Long one piece porches in front of the main facades of the buildings became very common during this period. This was to prevent the straight shining of the sun or the fall of the rain. Heavy Orosi windows were also developed, together with the stucco work, and mural paintings were inspired from western architecture (Ghasemi, 2010, 93) (See Figure 2.9).



Figure 2.9 Golparvar House in Isfahan Qajar period III (Ghasemi, 2010, 93)

2.6.4 Typology of Qajar Houses

Typology of Qajar houses was affected by Islamic and Christian cultural influences, which made changes or formed new features in architecture of that time. These characteristics were highlighted matter and founded considerable value during Qajar period (1789-1925). These factors involved the architectural and decorative objects. As Bahramzadel, Heydari, Gasemi and Azimiyekta presented the features are summarized in following:

A) Architectural Features

- The architecture of the clear sky and the broken sky line creating a broad forehead and upper edge
- Using a semi-circular or hemispherical arc
- Minifying the building by interpretation of the sublime proportions (for dominance of western culture)
- Introducing the pot room in the blind point
- Symmetry in plan and facade
- Usage of vault roofs
- Minimizing the dimension of clay and brick
- Popularizing the conventional flat and gable roof inspired by western architecture (Bahramzadel & Heydari, 2013,490).
- Making large and high Iwans (porch) in entrances
- The centrality of buildings with pillars and columns
- Creating a staircase in the main axis
- Construct the houses on the ground level and using the basement
- Using the three kinds of spaces , open, semi-open, closed spaces(Yard, Balcony, Room)
- Construction of an area to the front and to the back of the sun (most of the areas to front the sun from the main facade of the house)
- Arranging spaces as summer places and winter places in the horizontal and height level that makes possible the migration in a house during different seasons.
- Non- availability of the direct entrance from the open spaces to close spaces (Ghasemi, 2010, 90).

B) Decoration Features

- The use of lattice Orosi windows named Orosi window and colored glass
- Using lively colors generally and the use of red or purple colors in seven-color brick tiles
- Using the London flower pattern in tiling
- Using the picture of Persepolis
- Material such as stone, cement and iron
- Postcard architecture¹
- Turning three-door rooms to two-doors
- Seven -color tiling and colorful glazes
- Using wooden arrays in decoration
- Interior view with stucco work, tiling and influence by rococo art flat decoration and cursive stucco with forms of animals, birds, pine trees (AzimiYekta , 2015,284).
- The use of template decorative brick
- Using mirror work decoration that include also small triangular, polygonal mirror art.
- Using painted tiles
- Using cut brick configuration in decoration of religious places
- Rasmibandi and Karbandi (Ribbed Vault, Stellate Vault)
- Using the Mural Paintings (AzimiYekta , 2015,284).

1. Postcard Architecture: It was a kind of architecture which formed by inspiration from postcards of different countries that brought to Persia in the past.

These items, show that special attention was given to the details of design in the houses. And considerable emphasis was developed in aesthetic factors in interior spaces in comparison with the previous periods. Some of these decorative factors were more valuable than others based on their utilized in houses and their potency on beautification, such as Lattice Orosi Windows, Stucco Decoration, Mirror Decoration with small tringular polygonal and using the Mural Paintings.



3 IDENTITY AND ANALYSIS OF INTERIOR DESIGN COMPONENTS OF TRADITIONAL HOUSES

As mentioned earlier the houses of the Qajar period have different decoration features. Among these decorative components the more valuable, significant and applied elements are chosen. Also by considered of those elements, which were only used in Persian architecture or were more magnificence in compare with other countries during that period.

This study was done to understand the old techniques and design methods of the interior of the houses to get inspiration to benefit the contemporary architecture of Persia. To reach this aim, houses that have these factors highlighter than other houses of the region were chosen.

3.1 The Colored Lattice Orosi Windows

In some texts on Islamic architecture of Persia, written by Pirnia ² some have assumed Orosi as a type of window, which is an imitation of Russian architecture which became popular in Persia (Fathi & Rohanian, 2015, 1285) (See Figure 3.1).

It is observed that we had very intersting samples of Orosi in buildings and pictures, long before any sophisticated architecture was formed in Russia. There are disagreements about the origins of the Orosi (Fathi & Rohanian, 2015, 1285).

According to Pirnia's description, "Or" means "up", "Si" means "ray" in Farsi and "Orosi" means a window with mates and small doors opening upwards (Fathi & Rohanian, 2015, 1285).

2.Pirnia : He was a prominent Persian architectural historian and architect (1920 – 1997)



Figure 3.1 The Orosi Windows of Mashrutiat House in Isfahan (www.makanbin.com)

3.1.1 Components and Structure of Orosi Windows

According to the remaining Orosi windows and this research, it could be concluded that Orosi is an extensive window including the window frame (the main construction of the Orosi), two upper and lower fractions that the upper one includes PATAQ or KATIBE (inscription) and lower one usually includes DARAKS (small doors), glasses, VADAR (Vertical and Horizontal Timber) (Fathi & Rohanian, 2015,1285) (See Figure 3.2).

3.1.1.1 Orosi Frame

The window frame is the main construction of the window that includes the vertical and horizontal timber inside which are named Vadar. That was generally made with button wood. The Vadar constitute the main part of the frame, and was used as the divisive .The vertical ones divided the windows equally for DARAKS or small doors (Amrayi, 2012, 118).

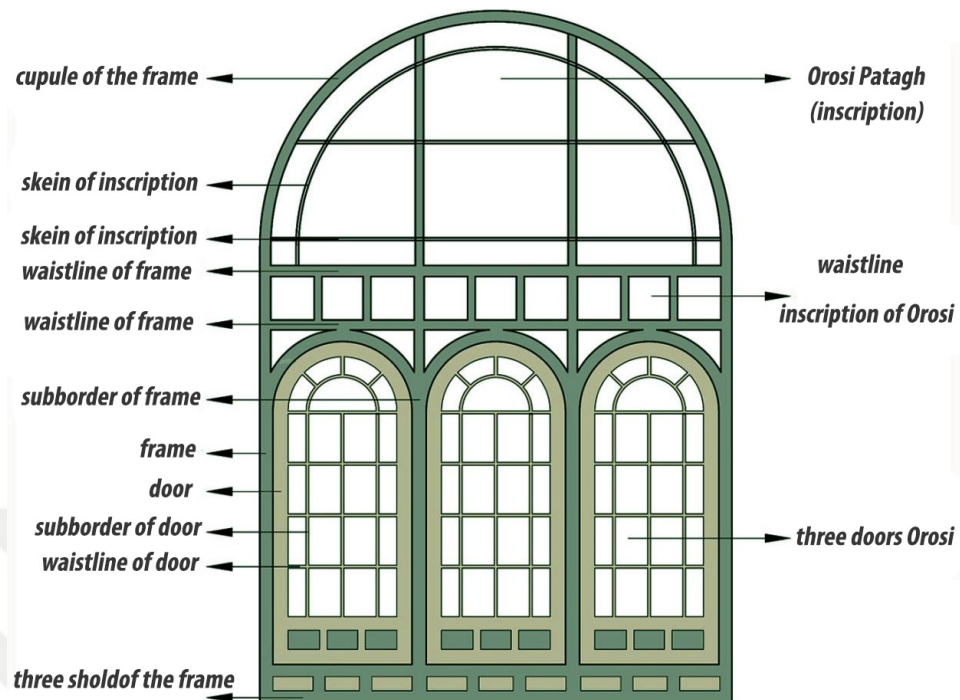


Figure 3.2 Details of the Persian window or Orosi (H.A, Agha-Sharifian, 2015)

3.1.1.2 Patagh or Katibeh (Inscription)

The upper part of the Orosi is named Patagh or Katibeh. It is the main part of the window for decoration as is the most difficult part of the construction of the window. As is mentioned, Orosi is the window that opens up wards so these doors need a case to stand. For this purpose Patagh is the best and right place and are decorated with some geometric patterns and colorful glasses. There are different kinds of patagh. The first type is closed with no sky light. In this case the space of the upper part of the orosi window is built by structural materials which are parts of the main frame of the building that consist of two layer wall and small doors, (daraks) that stand inside the wall and are not visible. Most of the time this kind of Pataghs, are used for one door to three door Orosi. The closed pataghs are used in the places where the temperature of inside the building is more important than the skylight (Amrayi, 2012,118) (See Figure 3.3).

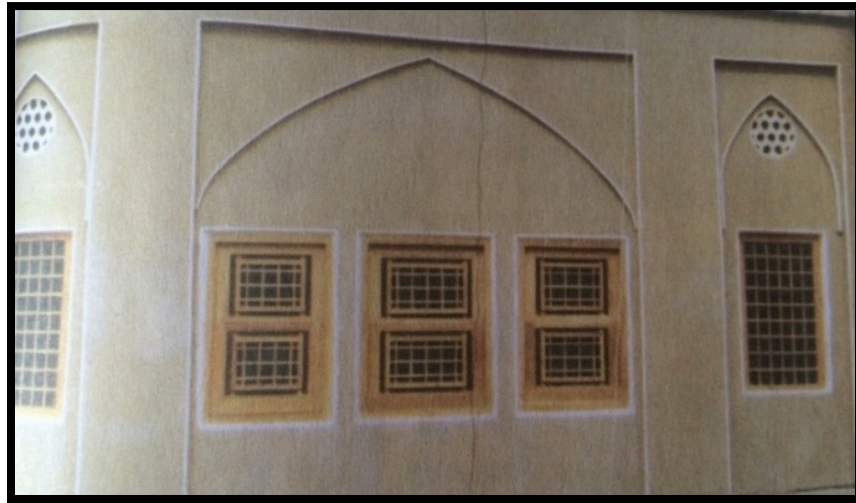


Figure 3.3 Ameriha House in Kashan Closed and No Skylight Patagh (Amrayi, 2012,118)

The second kind of Patagh is skylight which is not connected to the frame . In this sort of windows Patagh is used as the small skylight that sets up on the doors separating Orosi doors by some structural shad material. The shads are two layers when the doors are open they move inside the structural shades. In some of this kind of Orosies ,Vadars are made of structural materials and their Pataghs are made of wood and glasses or made of plaster and colorful glass (Amrayi, 2012, 119) (See Figure 3.4).



Figure 3.4 Ameriha house in Kashan skylight and seprated Patagh (M.Adib,2016)

The third type of Patagh is the skylight connected to the frame. This skylight is reticulated with colorful glasses and elegant patterns. Pataghs are capable of making an ineffability esthetic shining light of the sun inside the house and create a magnificent and glorious space (Amrayi, 2012, 119) (See Figure 3.5).



Figure 3.5 Tabatabaei house in Kashan skylight and connected Patagh (M.Adib, 2016)

In some cases the maximum height of pataghs are the size of the doors named short pataghs. In the case where the glory and magnificence are more important and require the embellishment of that part, the best arrangements, were to use clew work and colorful glasses. In some case these Pataghs arranged around eight to ten meters and were defined as long pataghs (Amrayi, 2012, 119).

Based on the facade of the buildings and the size of the windows using the shape of the Patagh were different. In some cases curved pataghs were used where the roof was flat. In general windows with curved patagh were used by two doors or three doors, but in some special cases five or seven doors were used (Amrayi, 2012,119).

In most of the houses with flat roofs, windows that have straight Patagh were used. It can be said the most of the seven or nine doors windows have straight pataghs and in some cases have two or three or five doors. Windows have straight rectangular and foursquare pataghs. The idea of the designer in these flat patagh windows was based on the using the numeral more than arabesque (Eslimi) patterns. Also in some cases there is a compound of both patterns. This kind of Orosi windows that have wide and long pataghs are arranged in the central place and in main living room which was called the king accommodation (Shahneshin) (Amrayi, 2012, 119).

3.1.2 Background and the Role of the Orosi Windows

Orosi is the kind of art which has a specific value and role in different society. Because of abundant background for progress they were different for various social classes and except of heads and governors. Or a many people could also use this windows in their houses or their buildings. People, based on their social status, were using different Orosi windows. Most of the Orosi windows were opening to the hall or were used in big salons of palaces and buildings. And always the masterpiece of Orosi belonged to the king's accommodation (shahneshin). The Orosi's function is divided to two categories: one is that of plain Orosi. In this group the small doors of Orosi are lightweight for comfortable displacement and are partly kept open and closed easily. The second groups are counterweight Orosis that in this kind of Orosis in addition to the drawer status of plain Orosis inside of the frame is empty and there are lead weghits which by a rope is connected to small doors. They are made pulled up and down easier (Amrayi, 2012, 122).

In some houses Orosi windows are also used inside the house, in fact, except of the function of windows also Orosi was play the role of division of the interior space. Based on the Islamic culture the house people in the situation of privacy or secrecy were using Orosi as a partition by closing down the small doors. When they needed more space, they were totally opening the small doors and thus having more vast space (Amrayi, 2012, 122).

3.1.3 Effect and Reason for Using Orosi Windows

There are different reason which provide colorful glasses in Orosi windows: Aesthetic features and functional reasons are summerized as the folowing :

A) Aesthetic Features

- **Light** : This kind of window provides enough sunlight to the interior space; not too much, not too little (Ahani, 2011, 5).
- **Colorful space**: By reflection the light on colorful glasses it is possible to creat a masterpiece space (Ahani, 2011, 5).
- **Beauty**: The surface of orosi windows was prettified by using different kinds of (Girih) Tiles patterns and plain colorful glasses and created an adorable combination. So the mixture of geometrical lattice and colorful light makes graceful beauty (Ahani, 2011, 5) (See Figure 3.6).



Figure 3.6 Mashroutiat House Isfahan (<http://www.makanbin.com/isfahan>)

B) Functional Features

Psychology of colors: From the view point of psychology, different colors of glasses have different affects on humans. Each color beside other colors counteract. Also adjust and glaze enough of colorful light it was affect on people. The most used colors in orosi glasses are azure (dark blue), red, green and yellow and each color has a partly different affect (Amrayi, 2012,123).

Azure (dark blue): This color is a biological need of humans. In psychology it has the meaning of calmness , peace and happines (Amrayi, 2012,123).

Green: it is the sign of power in work, diligence and perseverance and makes you young, with good spirit (Amrayi, 2012,123).

Red: Indicates vital nervous system, power activity and it also means eagerness. It is a sign of high activity, sports, battle and competition. Red means effect of volition or power of volition. Green is a sign of flexiblility of volition and this two colors complete each other by being beside each other (Amrayi, 2012,123).

Yellow: This color makes luminance and cheerfulness. It means reflection, brilliant quality, impermanent cheerfulness and a sign of relief. Yellow is counterpoint of green. The anxiety of green can be reduced by yellow. While yellow is a sign of relief, yellow color in comparasion with red color is lighter and has less density, so it has similar features (Amrayi, 2012,123).

- **Geometrical pattern** : Replaced the imitation of human and animal patterns and faces in paintings and other figures. During the Islamic period ,usage of painting and pattern of human and animal was replaced by nature, geometric and abstract patterns (Fathi & Rohanian, 2015, 1289).

- **Confidentiality (Mahramiat):** based on Islamic culture, Orosi windows banned inside view from outside and provided a kind of privacy (Fathi & Rohanian, 2015, 1289).
- **Acoustics :** These kind of windows kept all sounds outside the building (Fathi & Rohanian, 2015, 1289).
- **Remove the obtrusive insect :** The reflection of light in the colors of windows kept the insects away from the house (Fathi & Rohanian, 2015, 1289).
- **Decrease the heat and sunshine :** Due to the colored glasses , the sunshine could not enter the house very much. Thus the house was kept cool (Fathi & Rohanian, 2015, 1289).

3.1.4 Implementation and Construction of the Orosi Windows

The Orosi's function is divided to two categories; one of them is plain Orosi. In this group the small doors of Orosi are lightweight, which made it comfortable displacement and are opened and closed easily. The second group are counterweight Orosi that in this kind of Orosi in addition to the drawer status of plain Orosi inside of the frame is empty and there are leaden sinkers which by a rope is connected to the small doors and made pulling up and down more easy (Zarei, 2013,114).

In construction of the Orosi windows, the components of the frame of Orosi were connected by bridle joint technique. And the frame was installed in the walls by blisters method also the frame was consolidated by some wood slices in the wall. In construction of the Orosi parts was not used nails or glue. Additionally when the doors of the window were opened for holding the doors up, was used of some wooden or metal slice (Zarei, 2013,112) (See Figure3.7 & 3.8).



Figure 3.7 Metal Slice for Holding Up the doors (M.Adib,2016)



Figure 3.8 Metal slice for holding up the doors (M.Adib,2016)

3.2 Mirror Work

The people of Persia have always paid great attention to fine arts, architecture and beautification of buildings. Throughout the ages, Persian architects have used many techniques to beautify both the interior and exterior of buildings, using locally-available building materials. The result of this endeavor has produced masterpieces of Persian architecture. One of the arts used extensively to decorate and sparkle the interior of a building is decoration made with mirrors or mirror work.



Figure 3.9 Mirror Work Ameriha House in Kashan (M.Adib,2016)

As IRIB ³ reported, art of mirrors is surely one of the most elegant architectural decorations in Islamic-Persian civilization. It is an art defined as forming regulated shapes in various designs and images with small and big pieces of mirror, for decorating interior surfaces of a construction. This kind of deliberate decorations, gives way to a bright and highly shining atmosphere created upon consecutive reflections of light in numerous mirror pieces. In Persian culture water and mirror has always symbolized purity and illumination and it is believed the art of mirror work probably had its origin in this culture. As historical texts testify, this fine and delicate art is surely an invention of Persian architectures (Dr Aliabadi & Jamalian, 2012,27).

3- IRIB : Islamic Republic of Persia (Iran) Broadcasting

3.2.1 Background and the Role of Mirror Work

It seems that based on some researchers attribute the first appearance of art of mirrors in Persian architecture in decorating the Porch House of Shah Tahmasib Safavid (921-984 Hejira/1524-1576 A.D) in the city of Qazvin. As a skill, the vast spread of art of mirrors in the ruling domain of the Safavid dynasty and particularly Isfahan, as a leading center for art of mirrors in architecture, cannot be ignored. This art kept moving in the post Safavid era and reached its climax at Qajar era . During the reign of Shah Tahmasb, Qazvin was the capital city of Persia for a number of years. But when the capital was moved from Qazvin to Isfahan, the role of mirror work was extensively used to decorate royal palaces and mansions. Thus, many craftsmen used the technique of mirror work in Isfahan, which helped turn the city into the center of this art (Pourzarin & Javani, 2014, 83).

The most beautiful and famous of these palaces was “Ayeneh Khaneh” (Palace of Mirrors), so called because a very large number of mirrors were used to decorate the interior of this palace. The palace had a very large veranda that faced the main entrance to the palace (Pourzarin & Javani, 2014, 83) (See Figure 3.10).



Figure 3.10 Ayeneh Khaneh The Palac of Mirrors in Isfahan (Ganjnameh book, 2014)

All the columns, walls and ceilings of the veranda and main reception hall were covered with small pieces of mirror. It is built on the bank of Zayandeh Roud River, which flows through Isfahan and the reflection of flowing water, trees and greenery in the mirrors of the palace walls and columns produces a magical and magnificent scene (Pourzarin & Javani, 2014,85).



Figure 3.11 Ayeneh Khaneh The Palac of Mirrors in Isfahan (Ganjnameh book, 2014)

3.2.2 Effect and Reason for Using Mirror Work

No clear information can be found on the effective factors in the formation of this marvelous art in historical documentation. Some have attributed the formation of art of mirrors in Persian architecture to economic and religious reasons. One of the reasons that caused the used of mirrors was the need for light (Rahimabbadi,2012,36).

By having the minimum light and mirrors its possible to make extraordinary brightness (Rahimabbadi,2012,36).



Figure 3.12 Takhte marmar Palace in Tehran, Extraordinary Brightness by Using Mirrors (Ganjnameh book, 2014)

Based on religious rules it's forbidden to see your face during worship and praying. Due to these regulations, broken mirrors were used to create patterns on the wall so that worshipers would not be able to see their faces if they stood even directly in front of the walls. Also in Islam it is not appropriate to use live creatures such as animals and humans in holy places as part of their design. Therefore decoration by mirrors had propounded (Rahimabbadi, 2012,36).

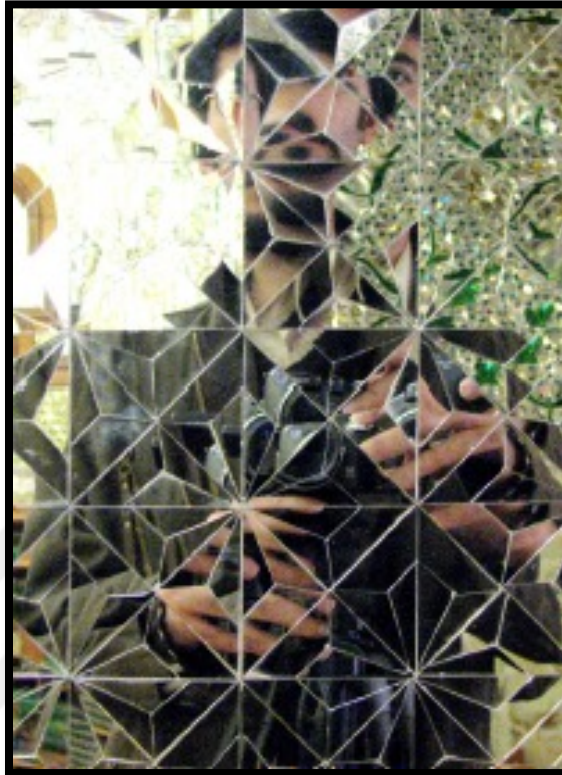


Figure 3.13 Broken Mirrors (Fine Arts Journal, 2014)

Economic issues were the most important reason behind the creation of mirror works. Decoration by mirrors originated when glass mirrors were being transported from other country to Persia. Since 10th century of Hejria 16th century of A.D, glass mirrors were being imported from Europe, especially Venice. During the transportation of these glasses, they were easily broken on the way. Persian artists came up with solution of using these pieces as art of mirrors. However, settling merely to such reason to justify the appearance of such amazing and deliberate art, particularly considering the vast symbolic and figurative application of mirrors in the field of Islamic-Persian wisdom, mysticism and literature is highly unfair. Surely, as a motive dominating all Islamic arts and architecture, geometry has played a significant role in various forms such as muqarnas, plasterwork, knot works and some spiritual elements like light and water next to ornamental forms. Using mirrors as well, should be taken into consideration in the course of amazing religious and

traditional concepts in the form of ornaments and the like elements (Dr.Aliabadi & Jamalian, 2012,27).

3.2.3 Implementation and Construction of Mirror Work

Before decorating and installing the mirrors, the designer first drew the patterns on paper. Then by using the template they were cut the mirrors by special needle. After the cut out, the piece of mirrors were glued one by one onto the surface of walls or ceilings skillfully (Flat technic). These processes required proficiency because the piece of mirrors should be about one millimeter thick (Dr.Aliabadi&Jamalian, 2012,27).



Figure 3.14 Cut of the Mirrors (www.Shbestan.ir)

There are two techniques for mirror work, namely flat and relief. The most common design used in mirror work is knotted or relief design. To provide the relief method full sized mirrors were often glued on the walls and various designs were drawn or painted onto the mirrors (Dr.Aliabadi & Jamalian, 2012, 27).

Then craftsmen glued small pieces of mirrors onto the surfaces of the full sized mirror. Also to have beautification in design combination of mirror with stucco, wood, painting was used (Dr.Aliabadi & Jamalian, 2012, 27).



Figure 3.15 Installation of Mirrors (www.Shbestan.ir)

3.3 Stucco, Plaster Decoration Work

Islamic architecture is one of the most important art periods of art in Persia. During that era varied arts were affected by the Islamic standards and had significant transformations and progression. One of the arts that to take into consideration is stucco decoration works. This decorative art is one that is dependent to architecture which has had specific form, style and a certain look in different regions and time period. During different historical periods of Persia, stucco work transformed and evolved with time (Aslani, Olumi, 2013,2).



Figure 3.16 Tabatabaei Houses in Kashan (M.Adib,2016)

During the Islamic period, the art of stucco attracted more attention than ever. Artists in different eras have brought art into the service of the holy religion and faith of Islam. Such as carving Islamic verses, designs and patterns through the art of stucco in different buildings that were used in Islamic art for the first time. It is considered as the progressive peak for decorative methods. Thereafter it was distributed throughout the world of Islam and became one of the most important elements of Islamic art (Aslani, Olumi,2013, 2).

Stucco in addition to having an adhesive property, appropriate color, easy application, availability, low cost and applications such as plaster-coating walls, it is one of the most important arts in the matter in architectural aesthetics. In archeological studies, examples and signs of the prevalence of this art is seen in the ancient times (Aslani, Olumi, 2013, 2).

3.3.1 Background and the Role of Stucco Work

According to the archeological evidence in Persia, the oldest usage of plaster in architecture of Persia was as plasterboard. The oldest cases of plaster use dates back to the Elam period in Haft Tepe, Khouzestan. In this area the surface of walls whether adobe or brick, in most cases were covered with plaster. The curved brick arches had a plaster coating. The halls flooring was covered with brick and plaster coating. In Gavara tape (Gavara hills), different colorful plaster coating in red, brown and white are observable. Also, in the Achaemenid era, plaster was used for coating wooden pillars of the famous hall called the “Dariush’s Treasury” at the Persepolis palace. Further, in the baseboard, platform and infrastructure sections of Kouros’h Tomb in Pasargad, plaster has been used. Moreover, in Pasargad reports that plaster decoration has been mentioned as having been seen in the earthworks of the central hall and it seems that they belong to the highest parts of the stone pillars (Dr.Ahmadi &Shekofteh, 2012, 128) (See Figure 3.17).



Figure 3.17 Pasargad (<http://takagasht.com>)

In addition to this, in the Palaces of Persepolis, plaster engraved pieces have been also seen, which probably belong to the body of the wooden pillars .In the Persepolis palace among the different building materials, pieces of stucco in the colors of green, gray, light blue and white have also been found, which have a thin

coating of a crystallized material and have been used for covering adobe walls (Dr.Ahmadi & Shekofteh, 2012,128).

With the emergence of Islam, Persian civilization was affected by Islamic culture and art. Industries came when the service of this religion in such manner that with the entrance of the Islamic culture these arts were inspired with a new spirit. The Sassanid art is the continuation of the ancient arts before itself, such as the Ashkanian and Achaemenian arts. It developed some changes and was completed through Achaemenian arts it developed some changes and was completed through different types of arts. During the period when Islam emerged and during Islamic art eras, this movement led to the use of this method and with some religious and customary changes turned this method into a valuable heritage. Therefore by understanding art concepts and subjects that has been observed in all Sassanid artworks, we realize that during the Islamic periods how these subjects were welcomed. Especially the fact that Muslim artists of the Islamic period tried their best to consciously imitate Sassanid designs in mosques, schools and even public buildings to the point that it led to inventing in new designs such as Arabesque and Hatyi patterns in the Islamic periods (Dr.Ahmadi & Shekofteh, 2012,128).

3.3.2 Effect and Reason for Using Stucco Work

In architecture, the stucco is one of the most prominent decorative arts which in every region and during every time period has had a certain look and style. During the Sasanid era all arts had great prosperity and progression , but some of the arts like architecture, sculpture and stucco work which had direct connection by ceremonial and courtier, got more attention and creativity (Dr.Ahmadi & Ashekofteh, 2012, 128).

During the Islamic periods, the role of stucco work was, for decorating the interior surfaces of buildings, scripting inscriptions, decorating mihrabs, inside of domes and porches. Stucco was so important in the Islamic buildings that artists of

this field were called “Stucco-makers” and many of these artists names still remain in the inscriptions of these buildings (Dr.Ahmadi & Shekofteh, 2012,128).



Figure 3.18 Ceiling of Ameriha House 's porch in Kashan (M.Adib,2016)

In addition stucco is known as one of the old building material which has great features such as having an adhesive property, appropriate color, easy application, availability and low cost. Because of these characteristic, it is one of the most important arts in the matter of aesthetics in architecture. In archeological studies, examples and signs of the prevalence of this art is seen in the ancient times (Aslani, Mirniam & Olumi,2011, 2)

3.3.3 Implementation and Construction of Stucco Work

The techniques of performance of stucco can be categorized in four types:

The first method:

Plaster is prepared on the surface in the thickness needed. When the plaster was dries a little, the patterns are drawn on and then they carved by a special tool (Shkofteh & Dr. Salehi, 2014,68).



Figure 3.19 First Method of Stucco Performance (www.gachboriran.blogfa.com)

The second method:

At first plaster is developed separately and then they are installed on surfaces. This method known as precast procedure (Shkofteh & Dr. Salehi, 2014,73).



Figure 3.20 Second Method of Stucco Performance (www.gachboriran.blogfa.com)

At third method first plaster is covered on surfaces then some parts are carved out. After that were filled by different objects. For instance were filled with colorful stucco or gold affix (Shkofteh & Dr. Salehi, 2014,74).



Figure 3.21 Third Method of Stucco Performance (www.skyscrapercity.com)

The fourth method: this technique was performed in two serrated layers. There was a empty space between two layers which cause the upon layer shown like a grid. Sometimes the background layer was plain and sometimes was designed (Shkofteh & Dr. Salehi, 2014,71).

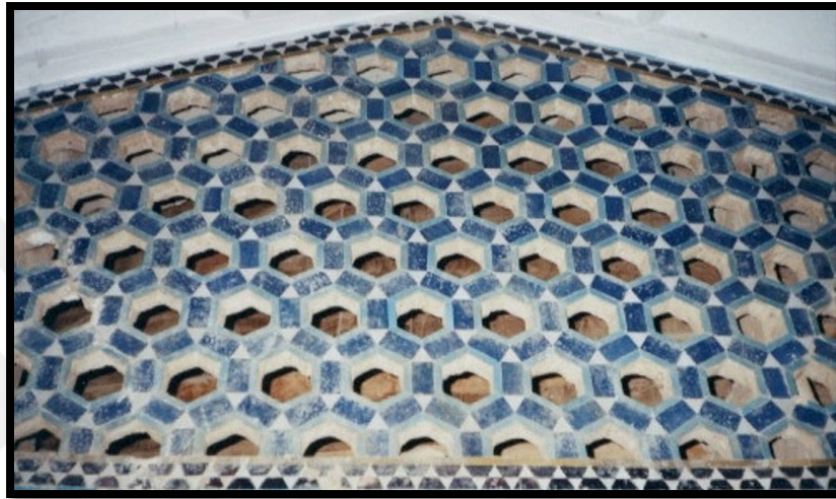


Figure 3.22 Fourth Methode of Stucco Performance (www.sinapress.ir)

3.4 Mural Paintings

Painting on a wall, either directly on to the surface as a fresco, or on a panel which is mounted in a permanent position, is a type of architectural decoration which can either exploit the flat character of a wall or create the effect of a new area of space. This kind of painting which is used for decoration of the walls and roofs of buildings, are elements that most of the time has harmony. They incorporate with architecture, colors and subjects of mural paintings all of which are linked by architectural proportion. Thus this sort of painting is the only tridimensional painting that attempts to coordinate the space in which it is placed in (Alavinejad, 2008, 20).



Figure 3.23 Borujerdi House in Kashan (M.Adib, 2016)

There is an extensive difference between mural and tripod painting . The mural painting exist by having an appropriateness to its surrounding space through architecture. Its patterns create the oneness of walls to the whole building. This art have their own quality of architecture like stability, durability and does not belong to a specific period. In contrast with tripod painting, mural paintings are not privy art, it's on the general category, like square statues or historical buildings which are located in the public places (Alavinejad, 2008, 21).

This kind of painting relates the components of walls or roofs to the total architecture of the building. It requires a decorative style. In mural painting patterns should be painted on an appropriate surface of the building by having rational principle for staring at the visitors which complements the architecture and not like something which has just been added to the building. If arbitrary images were used in mural paintings as a method of covering the wall surfaces then the intention of the painter would have had a different connotation. It would be as though the artist had tried to paint a large piece on a canvas or wall, as a result having negative and harmful effect on quality of mural painting (Alavinejad, 2008, 21).

3.4.1 Background and the Role of Mural Paintings

The history of mural painting in Persia dates back to “ *eight thousand years BC; the Neolithic period (Stone Age)* . *The first remaining designs of mural paintings have been found on the cave walls of Lorestan*”(See Figure 3.24). The major design images which were used in these paintings were of animal patterns and the subject of the stories that were portrayed was of war and hunting. “*The assumption behind the figure of these kinds of patterns on the cave walls is that they relate to the important role of the life of the cavemen, their religion and the subject of war in ancient times. As the period of farming and urbanization came to light, mural paintings started having a larger significance and role in people's social, religious, and political life. History has shown the significant affect of mural painting on the arts*” (Moradi, 2010,14).

“*During this period mural paintings portrayed on the walls were of governmental and religious subjects such as king's portrait and abstract forms that had mysterious meaning in religious worships*”. By the progression of urban life and architecture, mural painting has found its special role as a decorative element, which still exists today. “*The palace and the temple of Assyrian, Achaemenid, Parthian, Sasanian empires were withers of courtier art and were closely linked to religion*”. In total mural painting in Persia has propounded during the Parthian (Moradi, 2010,14).



Figure 3.24 Mural painting of Doshe cave in Lorestan (Neolithic period) (www.pinterest.com)

After the pilgrimage and settlement of the Arabs in Persia and bringing the religion of Islam to the region through the Moslem caliphs on this ancient land, mural painting became subject to extreme limitations as a result of Islamic rules. Islamic rules proceeded by disallowing portraits to be painted on walls since as portraiture of the face was considered as being paganism. Therefore the painting and pattern on walls and surfaces for years were limited to plant and abstract pattern of animals. During the Safavid period the life of mural paintings was renewed. During this period once again we witness the use of portraits in mural paintings and the beautification of the architecture in the palaces of Safavian kings in the cities of Persia. In this era, in addition to the palace paintings, mural painting were used in the residences of affluent Armenians, who resided in Isfahan (Moradi, 2010,14).

During the Qajar period Persia underwent drastic changes in its cultural and socio-political environment. The roles of cultural factors in developing Persian mural decorations particularly having been apparent during the Qajarid period. The sources were varied and redefined under the intensive influence of Europe, which opened up an absolutely new phase in Persian architecture and mural decoration. Reform of the cultural environment imposed new characteristics and styles. The pattern of social and cultural advancement established over a century of development had a profound influence on art. The process of modernization was accompanied by foreign political penetration and a reduction of national self-confidence (Mohammadi & Mohammadi, 2015,136) (See Figure 3.25).



Figure 3.25 Mahinestan Raheb House in Kashan (M.Adib,2016)

The gradual domination of European cultural and artistic values was seen as a national humiliation. The modernization of Persia is widely held to have been started by Abbas Mirza the Crown Prince of Fat'H Ali Shah. This changed the traditional social, commercial and political climates and led art in new directions (Mohammadi & Mohammadi, 2015,136).

Modernization of art, architecture and mural decoration and painting which had begun during the Safavid period continued in the Qajar period. *“After the long period of the 18th century in which Persia suffered from invasion no remarkable architectural projects were produced. The rise of the Qajar powers initiated architectural projects and the production of art and mural decoration throughout the country. Qajar wall paintings and mural decorations, like the setting for which they were designed, conveyed a sense of grandeur and opulence. Visitors approached the images through a series of ceremonial spaces, courtyards, gardens and gateways. In this matter early Qajarid art followed pre-Islamic art. Just as Achaemenid or Sasanid art expressed the glories of the Shah and the court the art of Fat'H Ali Shah functioned in the same way”*. Images were designed to be viewed from a suitable distance; proportions were elongated, features highly stylized, colors saturated, patterns multiplied, and jeweled effects achieved with gilding, built-up gesso and lacquer. In royal residences painting functioned as units with a rich array of decorative programs (Mohammadi& Mohammadi, 2015,136).

3.4.2 Effect and the Reason for Using Mural paintings

Decorating and beautification of buildings has been described as one of the main purpose of mural paintings. Beautification of space,the expression of emotions, and opinion of humans has been the source behind the motivation and creation the mural painting. One of the major features of mural paintings besides the link of architecture is the extensive and general correlation it has with people (Moradi, 2010,14) (See Figure 3.26).



Figure 3.26 Broujerdi House in Kashan (M.Adib,2016)

3.4.3 Implementation and Construction of Mural Paintings

Through communication with Europe, oil painting on canvas was promoted among Persian painters. During the Qajar period Persian artists started to inspire from European artistic knowledge. Therefore oil painting had more validity than other methods, became common during this period. However, the technique of performance

of mural paintings had correlation with the western method, but the content of the painting kept its originality (Hajabadi, 2013, 59-60) (See Figure 3.27 & 3.28).



Figure 3.27 Mural Painting of Living Room of Ameriha House (M.Adib,2016)



Figure 3.28 Mural Painting of the Living Room of Brujerdi House in Kashan (M.Adib,2016)

CHAPTER FOUR- ANALYSIS OF TRADITIONAL HOUSES IN CITY OF KASHAN

In this chapter, five traditional houses of Isfahan province in the city of Kashan are analyzed. Evaluation on these houses was done in order to understand the design components of the houses in order to provide a conceptual framework to inspire contemporary architecture from old architecture.

These five houses are selected based on the municipality registration and their nice preservation. They stand as the live symbol of Qajar architecture in a city which is still in a relatively good condition and it is possible to see and feel the organization in them.

4.1 Location of the City

Kashan is one of the famous architectural cities of Isfahan province before and since Qajar dynasty. The city is in the central part of Persia. As was mentioned before climate of this central region of Persia is hot-arid with extreme temperature changes between day and night.



Figure 4.1 Persia



Figure 4.2 Isfahan Province

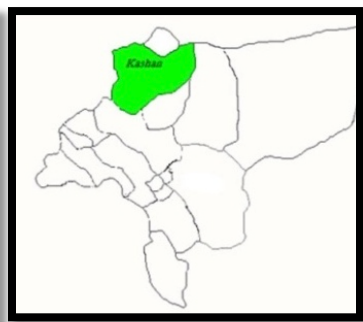


Figure 4.3 Kashan City

4.2 Location of Kashan Houses

The map below shows the location of the five houses selected for the case study.

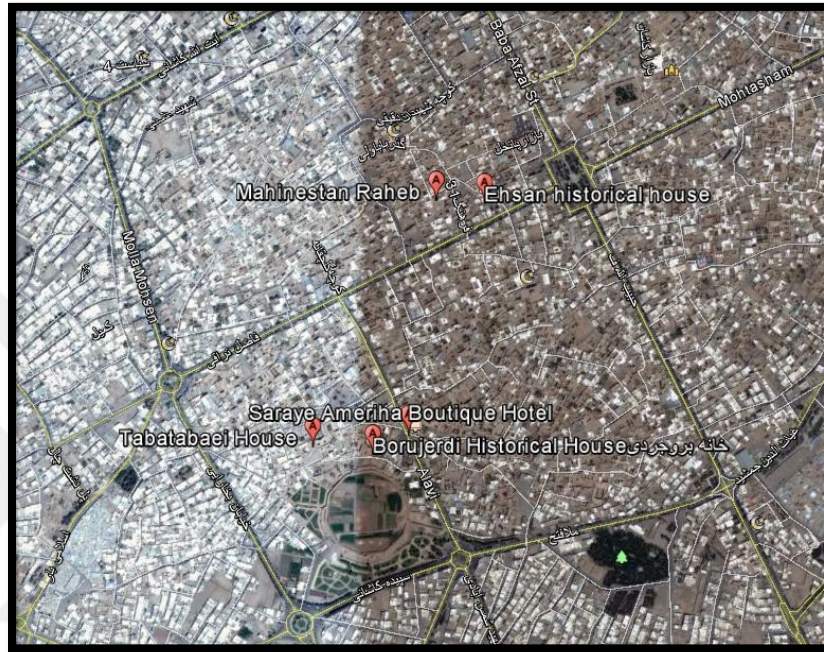


Figure 4.4 Location of Five Houses on the Map

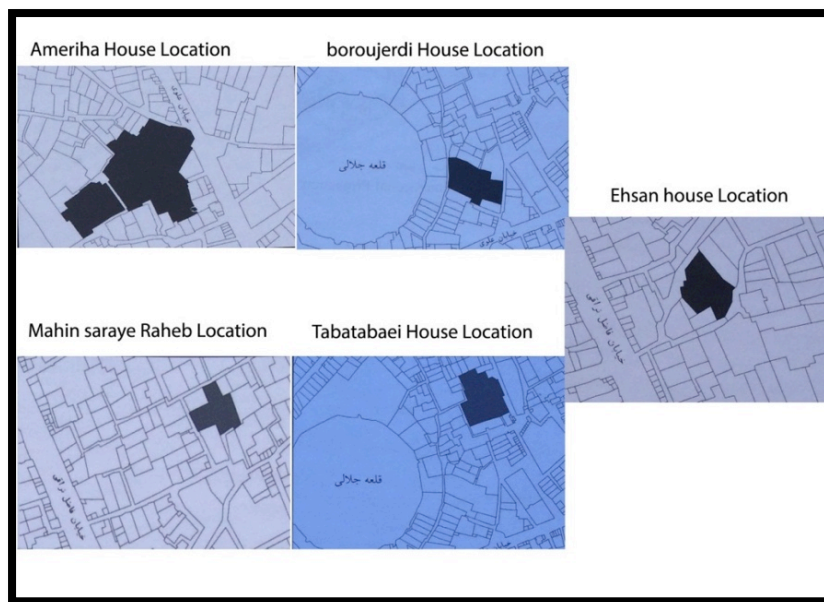


Figure 4.5 Location of Five Houses on the Map

4.3 Analysis of Five Historical Houses of Kashan City

Houses of Qajar period stand as a historical symbol all over Persia. Whereas Kashan is known as a historical city, particularly about traditional houses, it is an appropriate place for search. One reason, which made this city more important than others, is its location, which placed on the Silk Road. This condition caused rich merchants to settle in the city. Also at the past financial issues had a direct relation with decoration. Additionally still the houses of Qajar are on a good condition and well-known surviving in the city. Therefore the Qajarian traditional houses of Kashan are chosen to study.

In the city of Kashan partly there is twenty two Qajarian period houses which still are survived. Between the houses, those consist of the interior decoration elements, highlighter than others are chosen which confined to five option. Also these five houses are the most valuable houses of Kashan city.

The houses are analyzed based on proper places, which consist the desired five decoration elements. Discussed parts of the houses are highlighted on the plans.

4.3.1 Mahinestan Raheb Historical House

This house is one of the most valuable buildings of Qajar period. The first owner of this house was Mr. Shah Yalani who was a carpet and nuts businessman. After he passed away his grandchild bought the house in order to protect it. She repaired and restored the house.

Nowadays this building is used as a residence. Popularity of this house is because of its delicate stucco work.

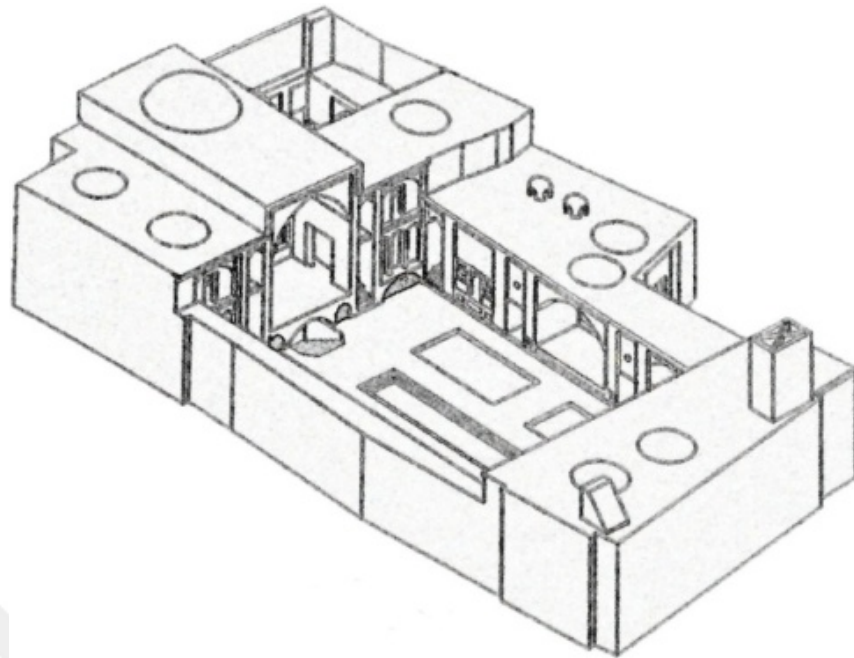


Figure 4.6 Tridimensional View of Mahinestan Raheb House

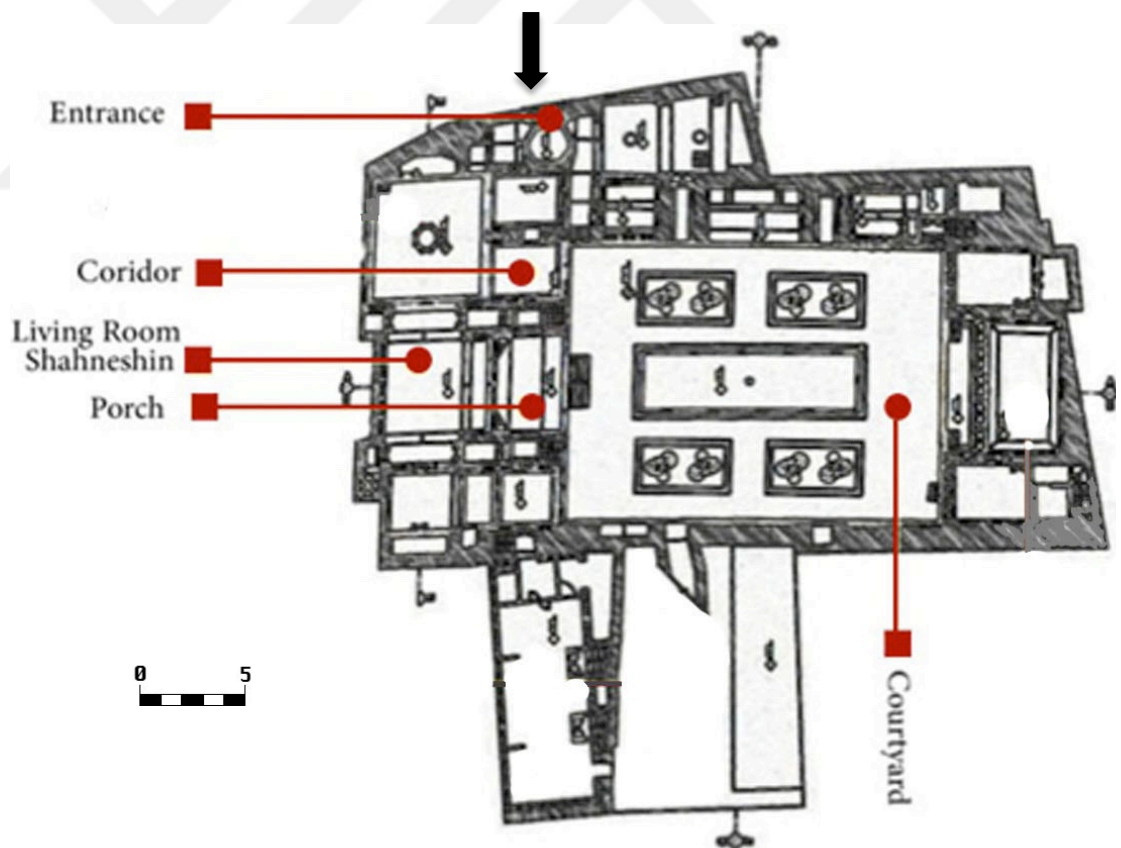


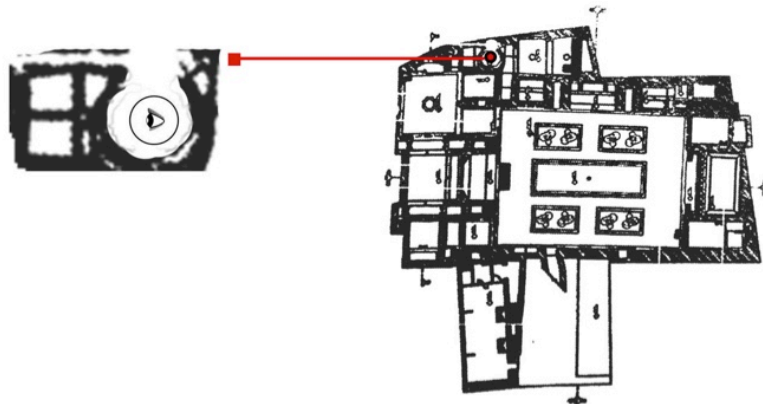
Figure 4.7 Plan of Mahinestan Raheb House

4.3.1.1 Yard

As you enter the small front yard which leads to the house, you are able to witness mural paintings on the left wall. This wall is painted in patterns of flowers, leaves, birds, pots and human beings (See Figure 4.8).



Figure 4.8 Mural Painting (M.Adib,2016)

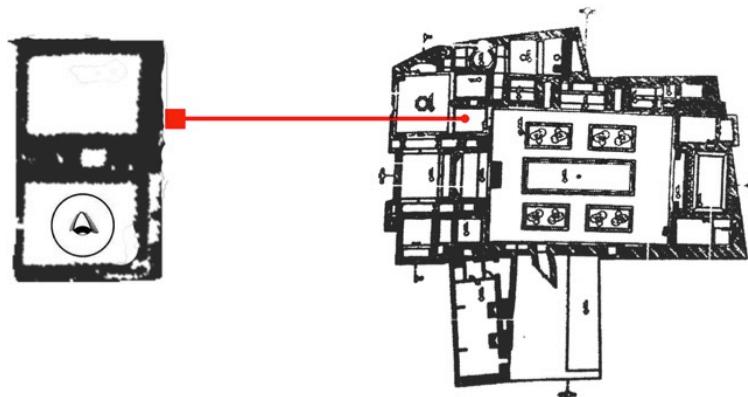


4.3.1.2 Corridor

In order to access the main courtyard of the house there is a small hall with simple stucco design which serves as a corridor. One of the walls of the corridor consists of Orosi windows which connect the living room to the hall (See Figure 4.9).



Figure 4.9 Stucco and Orosi Windows (M.Adib,2016)



4.3.1.3 Living Room (Shahneshin)

Living room (Shahneshin) is the most important part of the house. Therefore the most beautiful decorations were done in this part of the house. This house's living room includes Four Doors skylight separated Orosi Window, which the part of upper side of the window (clerestory), named Patagh or Katibeh is designed by stucco work embedded with colorful glass in the colors of dark blue, red, green and transparent glasses. The doors of the Orosi are without woodcarving design and decorated by dark blue, red and transparent glasses (See Figure 4.10).

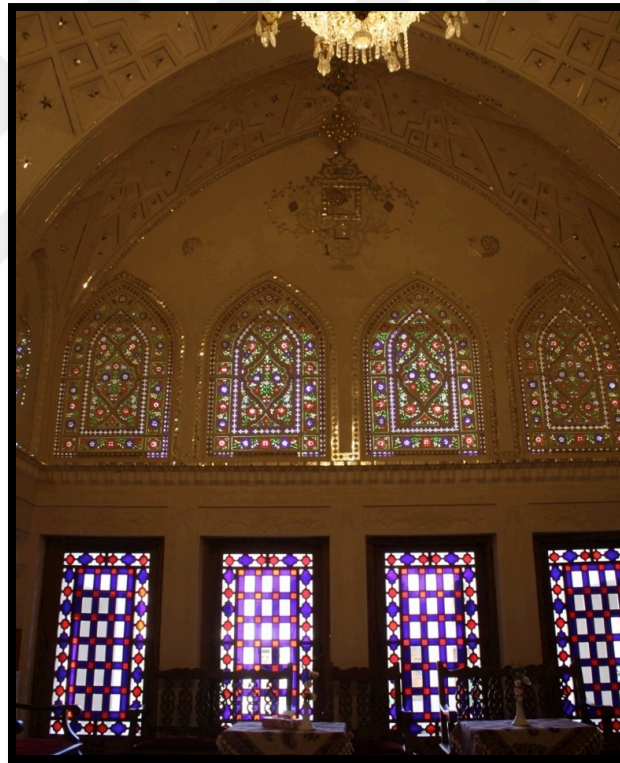
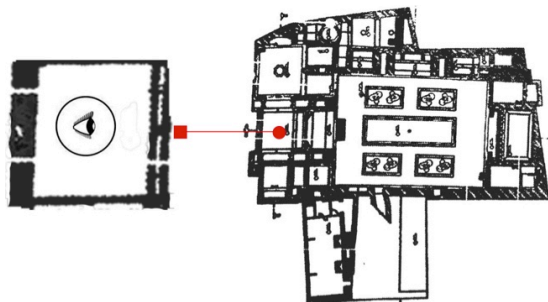


Figure 4.10 Skylight, Separated Patagh, Orosi window (M.Adib,2016)



Also there is another three door Orosi windows on the other side of the living room which has the same design as Orosi windows. The walls are decorated with mirrors and stucco work. The pattern of stucco is flowers and the patterns of mirrors are pots, birds and flowers(See Figure 4.11, 4.12, 4.13 & 4.14).



Figure 4.11 Three doors Skylight and Separated Patagh, Orosi window (M.Adib, 2016)

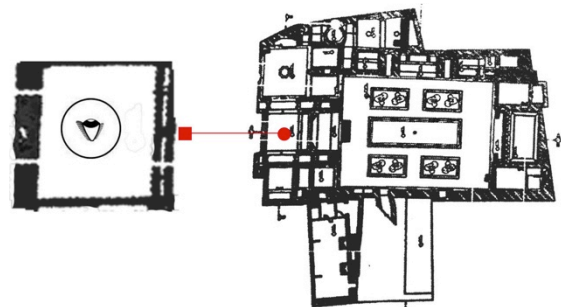


Figure 4.12 Stucco decoration of Orosi's Patagh (M.Adib, 2016)



Figure 4.13 Roof Mirror Decoration(M.Adib, 2016)

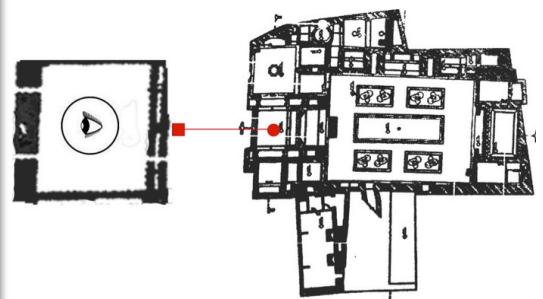


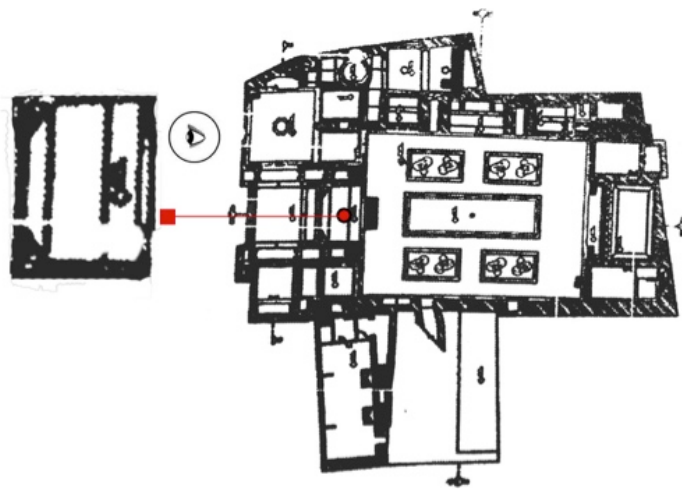
Figure 4.14 Wall Mirror Decoration (M.Adib, 2016)

4.3.1.4 Porch

In front of the living room there is a porch. Here the ceiling is designed by mural paintings in pattern of flowers and pots.



Figure 4.15 Mural Paintings of Porch's Roof (M.Adib, 2016)



4.3.1.5 Main Courtyard

There is a pool in the middle of the courtyard. On the north side of the courtyard is the living room which is decorated with Orosi Windows. All over the courtyard is designed with stucco works which give fame and recognition to the house. The stucco works are performed elegantly and embossed slightly with patterns of flowers, leaves and pots in brown color.



Figure 4.16 Courtyard view of living Room (M.Adib, 2016)

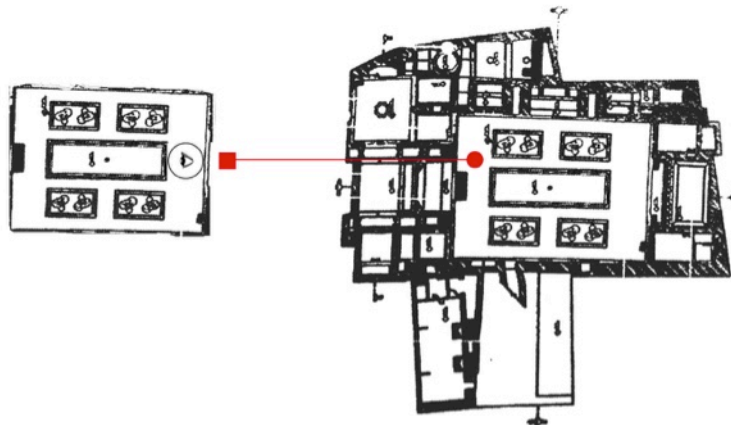
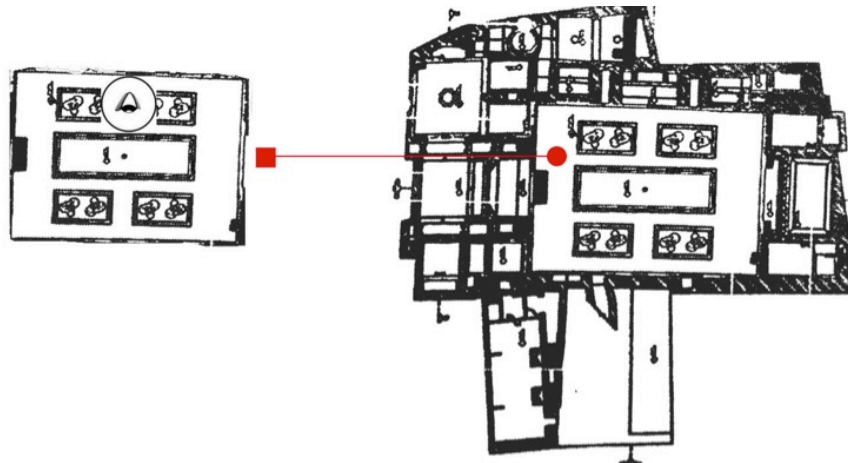




Figure 4. 17 Stucco of Courtyard (M.Adib, 2016)



4.3.2 Ameriha Historical House

This house is one of the biggest traditional houses of Kashan with area of 9.000 square meters. It includes seven courtyards and a special part of this house is an amazing hall of mirrors.

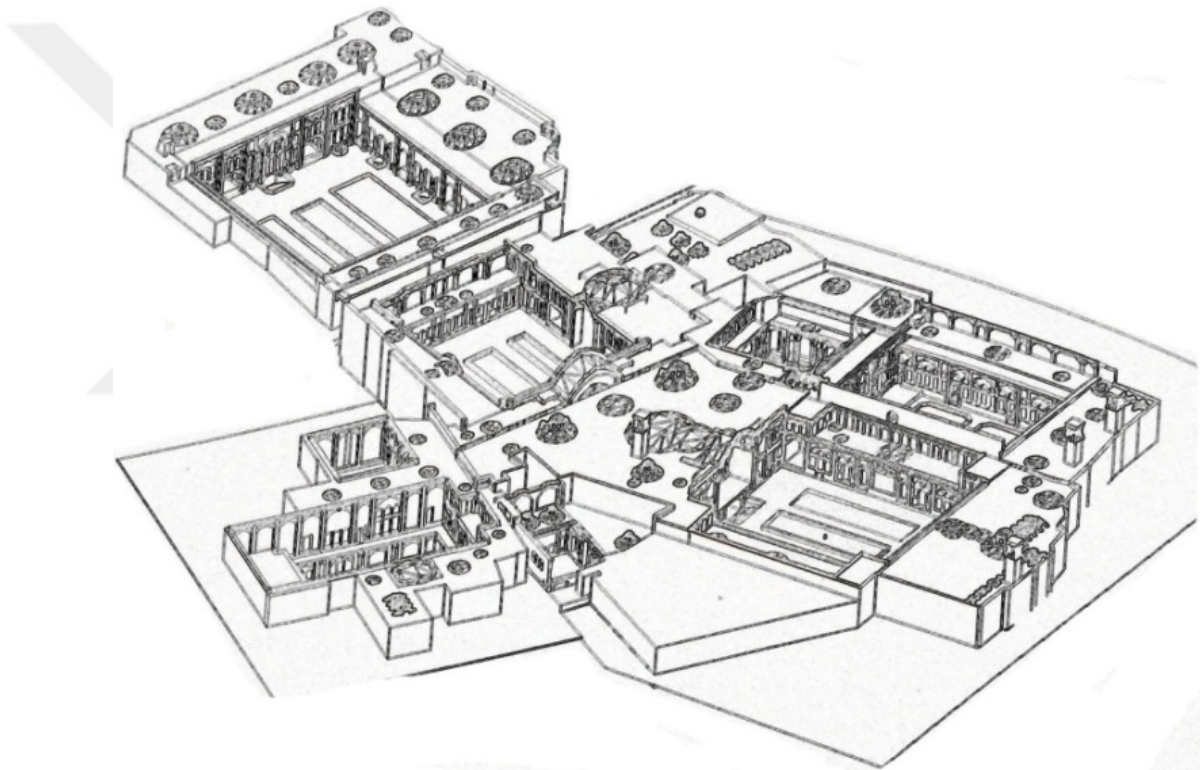


Figure 4.18 Tridimensional View of Ameriha House

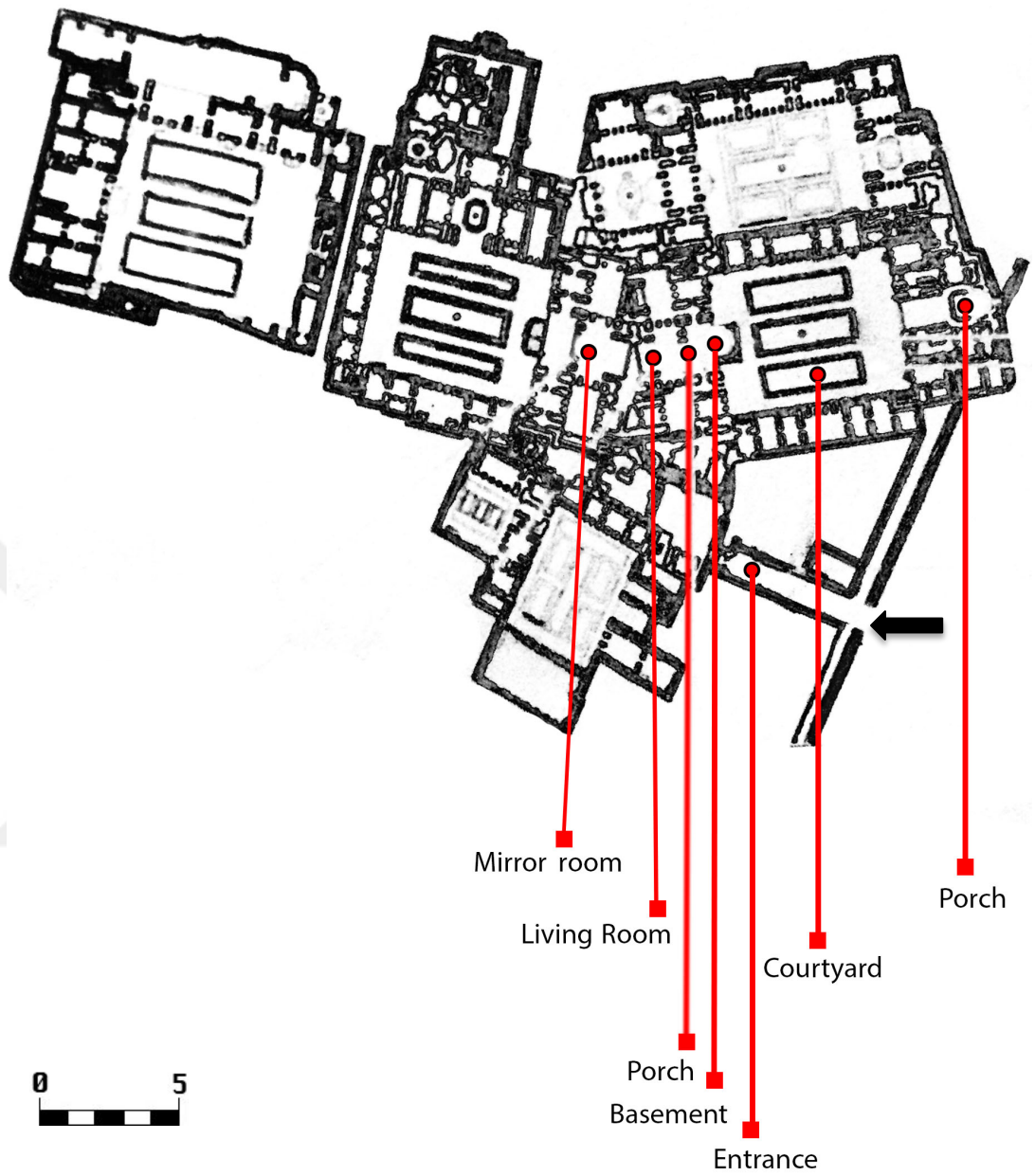


Figure 4.19 Plan of Ameriha House

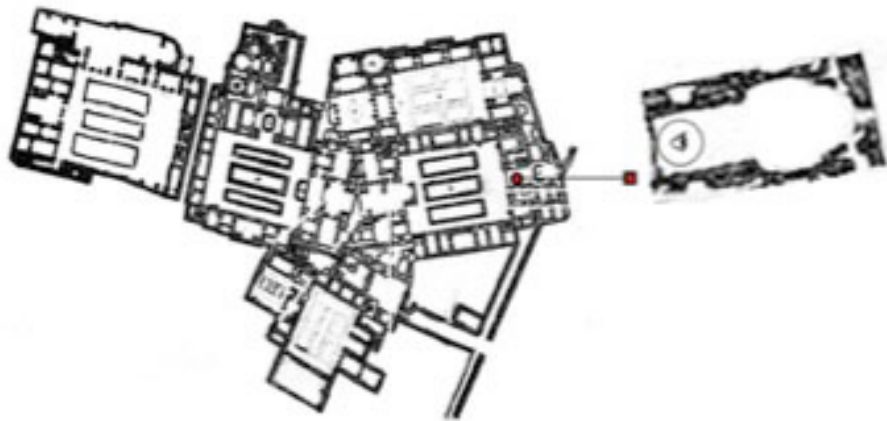
4.3.2.1 Porch

In Ameriha historical house there are two porches facing each other. There is a small pool in the middle of one which was used during the hot weather of summers. The porche's ceiling is decorated with simple stucco work.



Figure 4.20 Stucco work of summer porch (M.Adib,2016)

Figure 4.21 Summer Porch (M.Adib, 2016)



There is another porch in front of the living room the ceiling of which is decorated with stucco works.

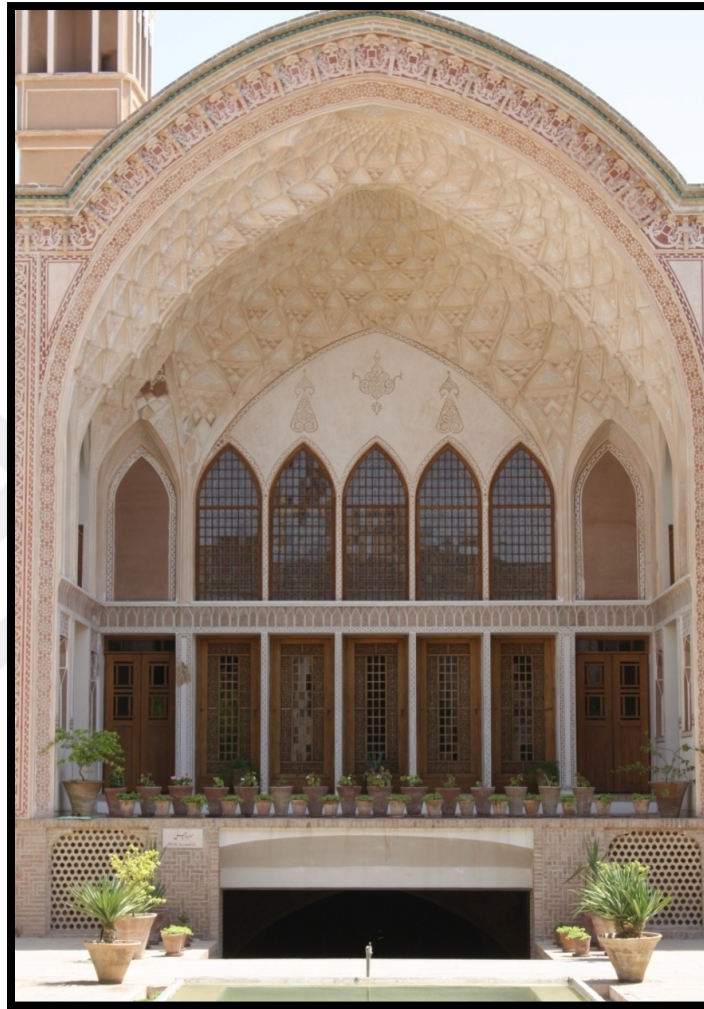


Figure 4.22 Living Room'sPorch (M.Adib, 2016)

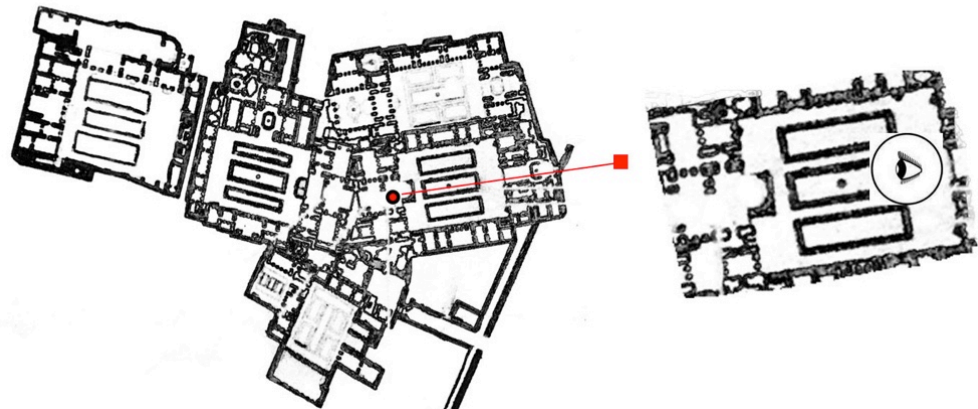
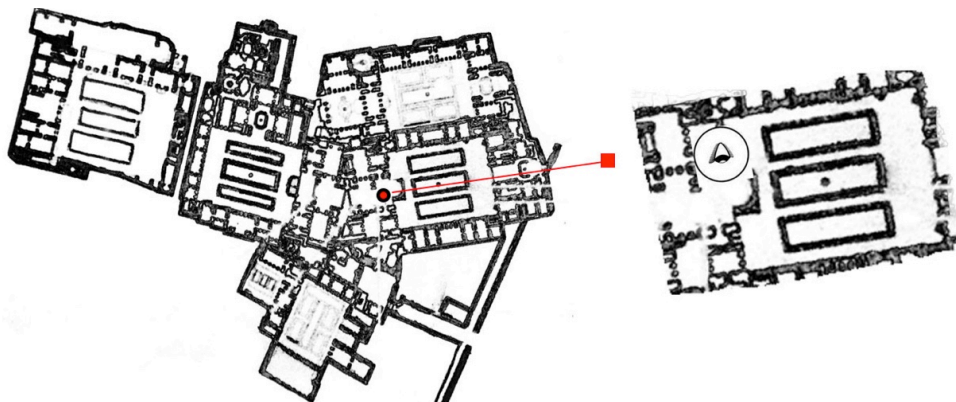




Figure 4.23 Stucco Work of Living Room's porch (M.Adib, 2016)



4.3.2.2 Basement

The basement of this house is located under the living room. In the old days it was used as a cooler, a place for keeping food refrigerated. Because this place was under the ground it was cooler than other locations of the house. The whole basement is designed by mural paintings.

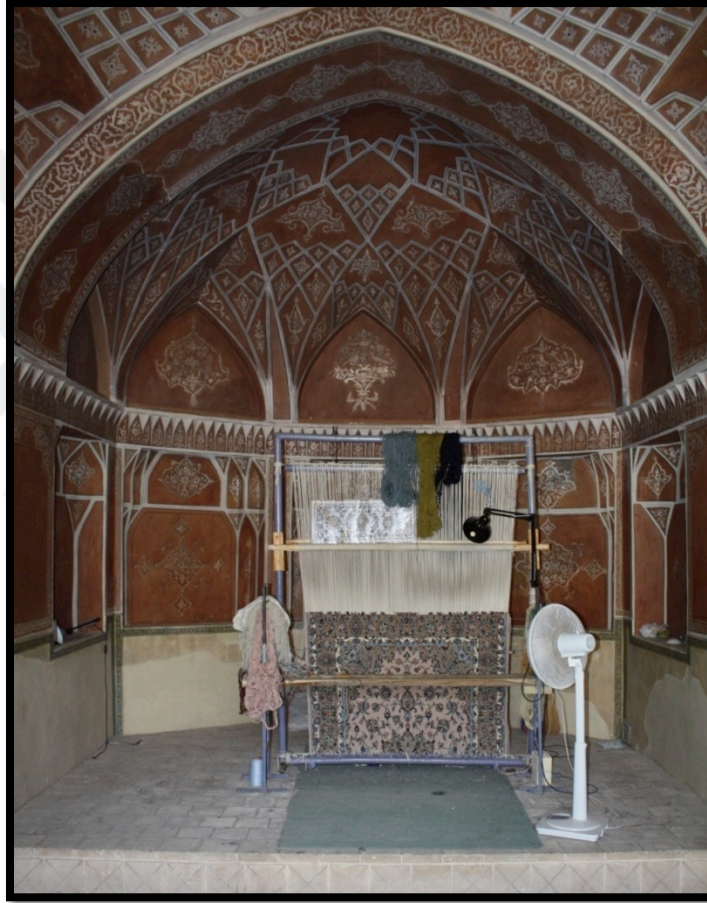
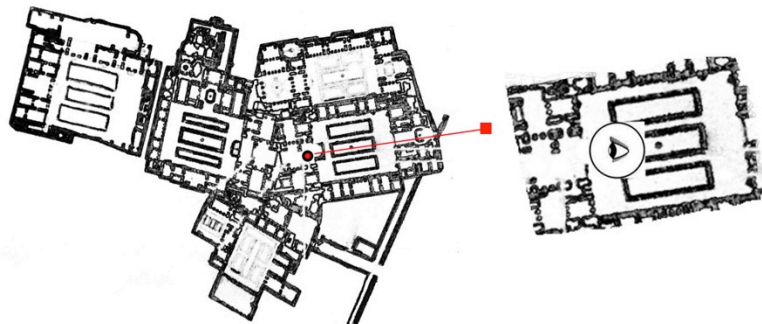


Figure 4.24 Mural Paintings of Basement (M.Adib, 2016)



4.3.2.3 Main Courtyard

This house has seven courts but just one of them is the main courtyard where in one side there is a living room and on the other side is the summer porch. There is also a pool in the middle of the courtyard. All of the courtyard walls are decorated with stucco patterns of flower, leaves and pots in brown color.



Figure 4.25 Stucco Work of Courtyard (M.Adib, 2016)



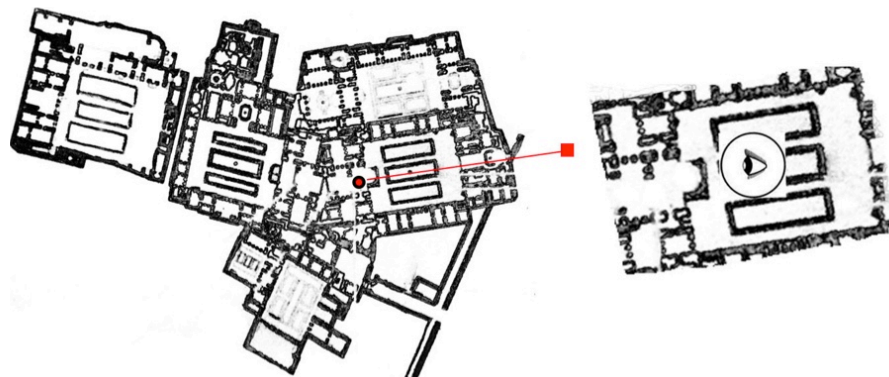
Figure 4.26 Stucco Work of Courtyard (M.Adib, 2016)

4.3.2.4 Living Room (Shahneshin)

The living room of this house includes the five doors and skylight Orosi windows which are decorated by colorful glasses, in colors of yellow, red, blue and green. The doors have no woodcarvings. The adjacent wall has three doors separated and sky light Orosi windows. The walls and the ceiling are designed by simple and embossed stucco work.



Figure 4.27 Orosi windows of LivingRoom (M.Adib, 2016)



4.3.2.5 Mirror Room

As the living room was the most important place of the traditional houses, generally most of the decoration was done in the living room like Orosi Windows, Stucco and Mirror Work. But in Ameriha historical house, there is no mirror decoration in the living room. Instead there is a room dedicated to Mirror Work named Mirror Hall and all mirror decoration was done in that place by pattern of flowers, pots and birds. Also this hall has three, Orosi Windows with three doors. Its doors are designed with curved Patagh and colorful glasses and its no woodcarving.



Figure 4.28 Mirror Works of Mirror Hall (M.Adib, 2016)

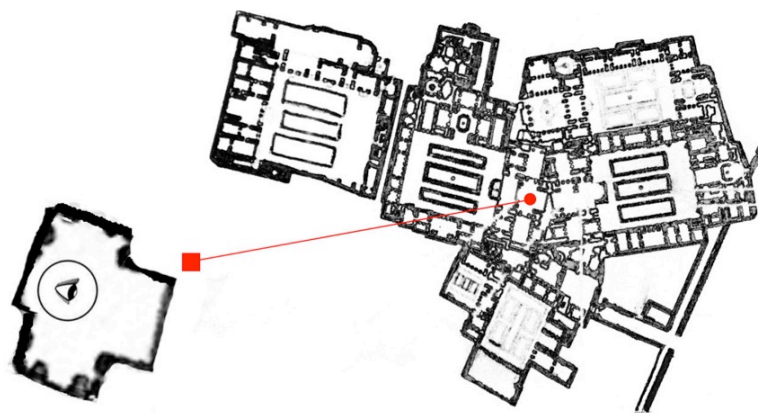
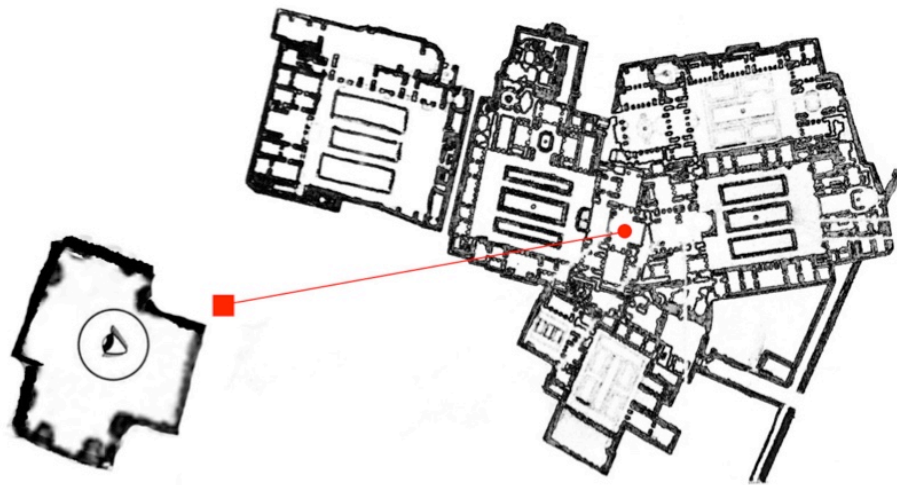




Figure 4.29 Orosi Windows of Mirror Hall (M.Adib, 2016)



4.3.3 Tabatabaei Historical House

This traditional house is located in the historical quarter of Kashan city. It is around 5000 meters and has four courtyard. The fame of this house is because of its mural paintings and stained glass windows which are placed in its living room.

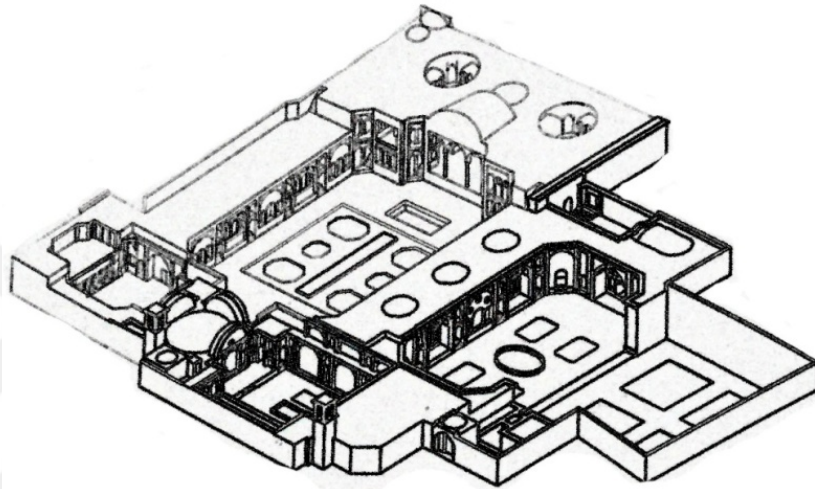
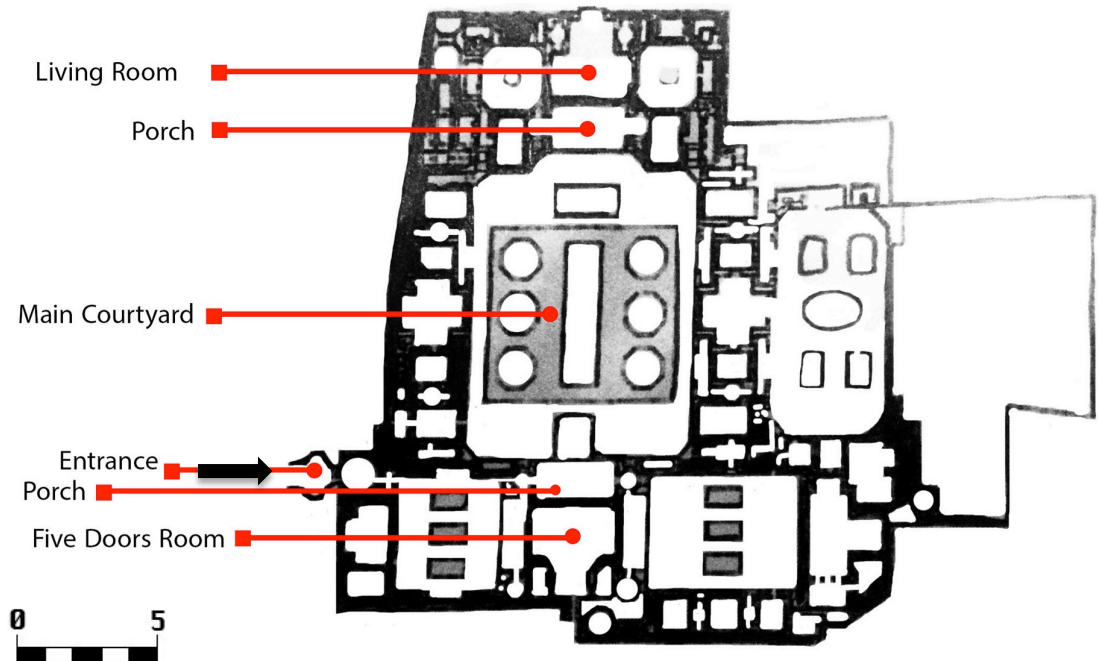


Figure 4.30

Tridimensional View of Tabatabaei House



Living Room

Porch

Main Courtyard

Entrance

Porch

Five Doors Room



Figure 4.31 Plan of Tabatabaei House

4.3.3.1 Main Porch

In this house there are two important porches. Similar to the other houses, their porches face each other. One porch is more important than the other and is distinguished by its walls being decorated by mirrors and its ceiling decorated by mirrors and stucco. A special feature of the porch is its carpet pattern painted on the ceiling. It is said that this carpet pattern was inspired by the real carpet which was laid on the floor of the porch in the old days. This Architectural idea was showing a concept of mirror like reflection of the ground on the ceiling. The other porch is built in front of the five doors room and just the wall of that is designed by stucco work.



Figure 4.32 Porch by Stucco and Mirror Work and Carpet Design on ceiling (M.Adib, 2016)

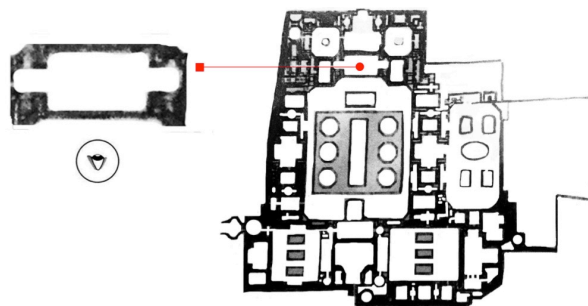




Figure 4.33 Carpet Design on the ceiling of porch (M.Adib, 2016)



Figure 4.34 Stucco and Mirror Decoration of porch (M.Adib, 2016)

4.3.3.2 Main Courtyard

This house's courtyard is also decorated by stucco work in pattern of flowers, leaves and pots. But in comparison with other houses the stucco works are more embossed and the colors are white and gray.



Figure 4.35 Courtyard view of Five Doors Room (M.Adib, 2016)

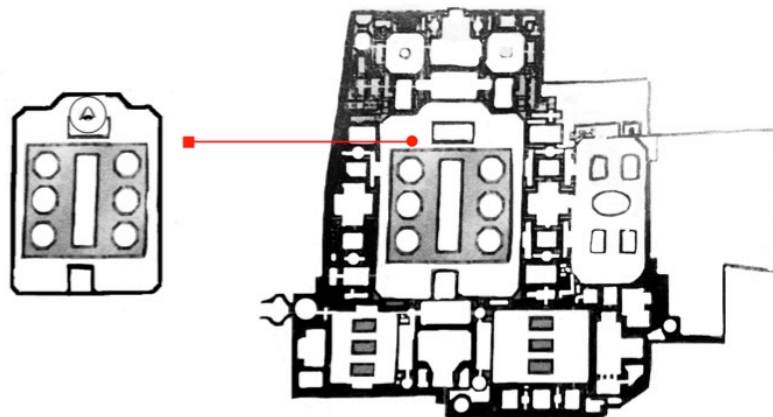




Figure 4.36 Stucco Work of Courtyard
(M.Adib, 2016)



Figure 4.37 Stucco Work of Courtyard
(M.Adib, 2016)



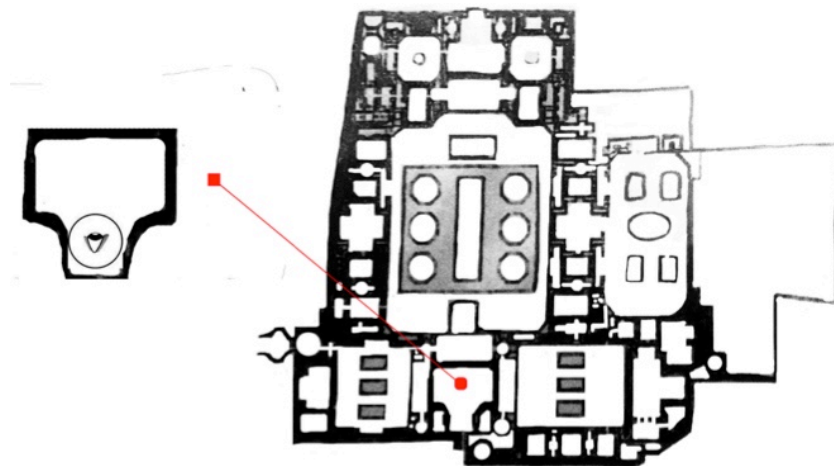
Figure 4.38 Stucco Work of Courtyard (M.Adib, 2016)

4.3.3.3 Five Doors Room

In this room, three sides of the room has Three Door Orosi windows embedded with colorful glasses, but none of the doors have any woodcarving.



Figure 4.39 Colorfull Glasses and Curved Patagh , Orosi Windows of Five door room (M.Adib, 2016)

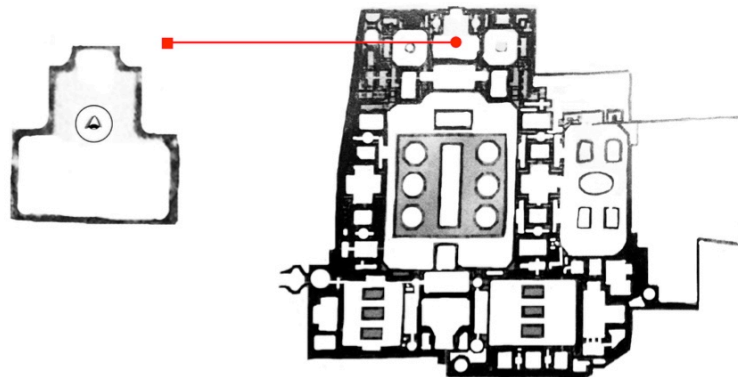


4.3.3.4 Living Room (Shahneshin)

The popularity of Tabatabaei house is its living room. This room is considered as having one of the most amazing traditional architectural design works of Persia because of its stucco work, colorful windows and mural paintings on the walls and ceiling.



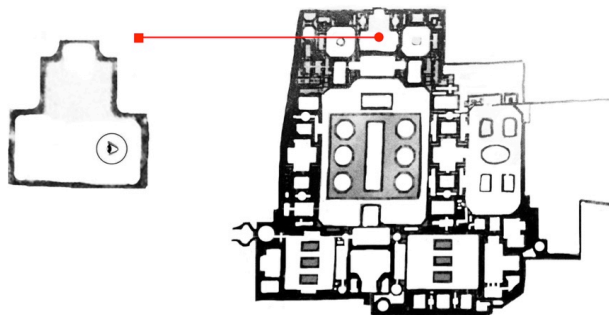
Figure 4.40 The colorful stucco windows of Living Room (M.Adib, 2016)



Unlike the other traditional houses where the Orosi window is located in the main part of the living room. It faces the courtyard, and is the most important decoration element of the living room. This house's living room's Orosi Window is not its main decoration.



Figure 4.41 Mural Paintings of Living room (Shahneshin) (M.Adib, 2016)



4.3.4 Broujerdi Historical House

This traditional house is located at the historical quarter of Kashan and is neighbor of Tabatabei house. This house is also one of the famous houses of Persia because of its three forty-meter tall wind towers and its mural paintings and stucco decoration. In parallel to the aim of this research we have only focused on decorative features.

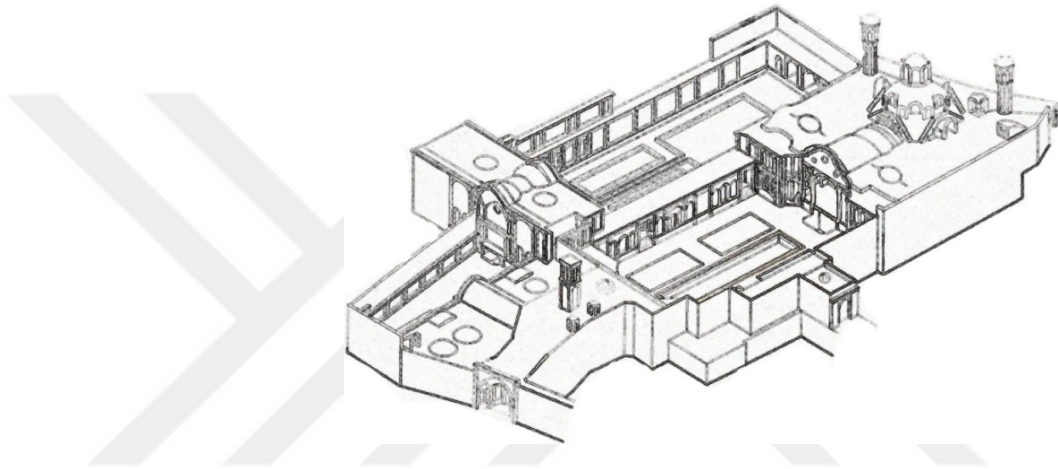


Figure 4.42 Tridimensional View of Broujerdi House

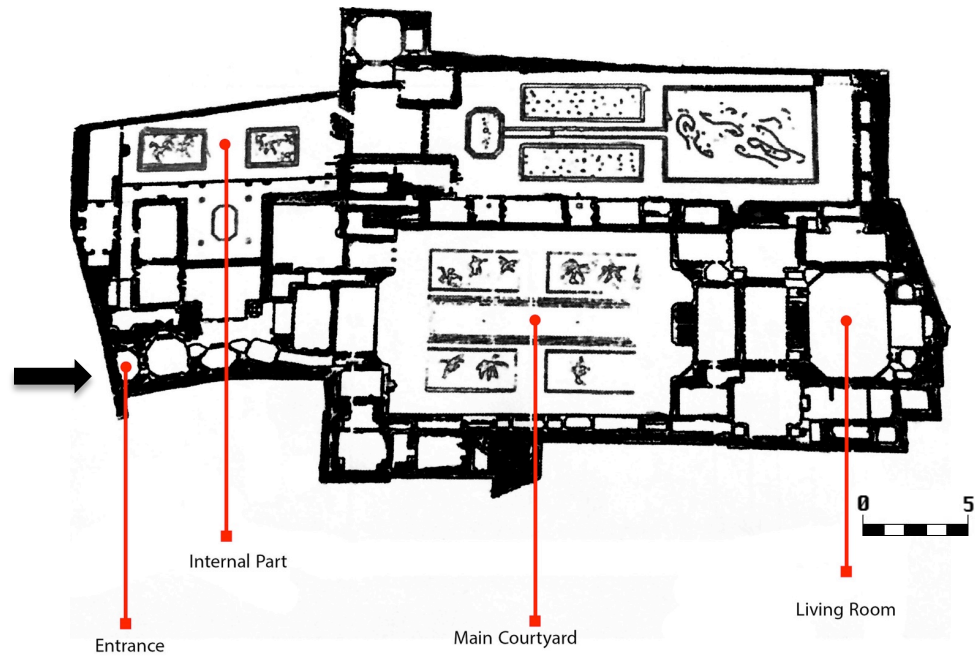


Figure 4.43 Plan Of Broujerdi House

4.3.4.1 Living Room

The most important part of Borujerdi house is its living room. This room is designed by stucco work and mural paintings. The popularity of this house is specifically due to the five famous love stories which have been painted on its walls. The mural paintings were the mixture of western and Persian paintings.

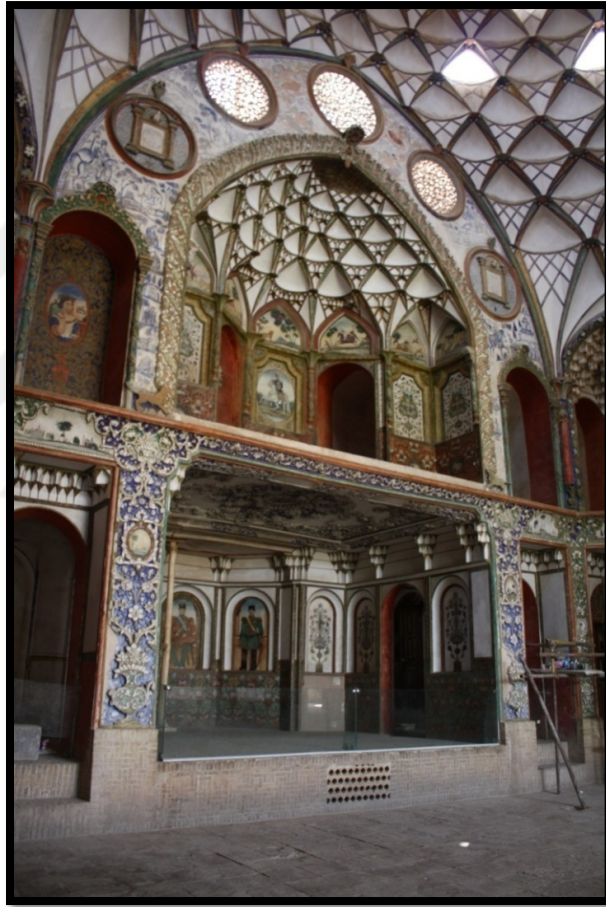


Figure 4.44 Living Room (M.Adib, 2016)

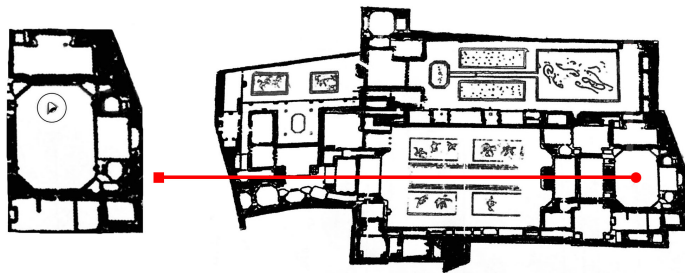




Figure 4.45 Mural Paintings of Living Room (M.Adib, 2016)



Figure 4.46 Mural Paintings of Living Room (M.Adib, 2016)

Also the stucco work of this place was a mixture of Persian and western style. The difference of the Western style stucco of this place is that the stuccos are formed more embossed than the typical western style. Like the previous house, The Borujerdi residence also portrays the carpet that once lay on its floor on the ceiling in the form of stucco work.

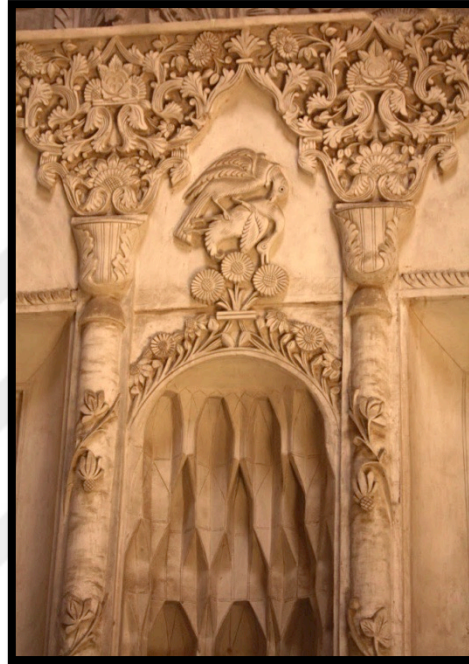


Figure 4.47 Stucco Works of Living Room (M.Adib, 2016)



Figure 4.48 Stucco Work Carpet Design on the ceiling of Living Room (M.Adib, 2016)

4.3.4.2 Main Courtyard

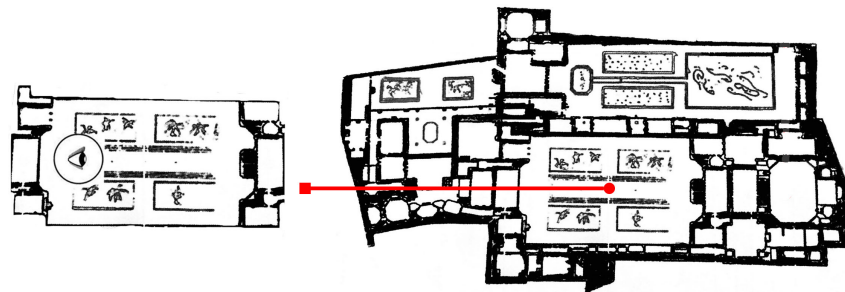
In comparison with the courtyards of the other historical houses, this house has a simpler courtyard. The most important and most beautiful part of the courtyard is in its stucco work of the upper part of the living room's porch, which looks like an inscription.



Figure 4.50 Stucco Decoration of Courtyard

(M.Adib,2016)

Figure 4.49 Courtyard (M.Adib, 2016)



4.3.4.3 Internal Part

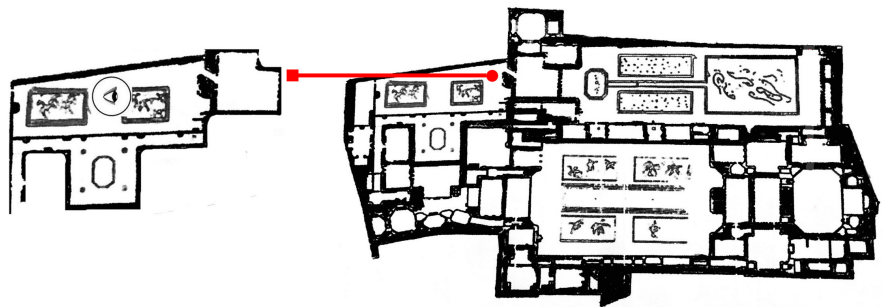
In this house in contrast to other traditional houses, there is no special Orosi window. Only in the internal part of the house there is one room that has three doors on two sides and Orosi windows with a closed Patagh.



Figure 4.52 Internal Part (M.Adib, 2016)



Figure 4.51 Orosi Windows in
Internal Part(M.Adib, 2016)



4.3.5 Ehsan Historical House

This house belonged to a fabric businessman. It is located in the historical part of Kashan city and it is neighbor of Mahinestan Raheb house. From functional and architectural view, the important features of this house involved the living room, two wind towers, one Five Door Room and one Seven Door Room. It is looks like other cases but from the decorative view this house is different and have not used decoration as much as others.

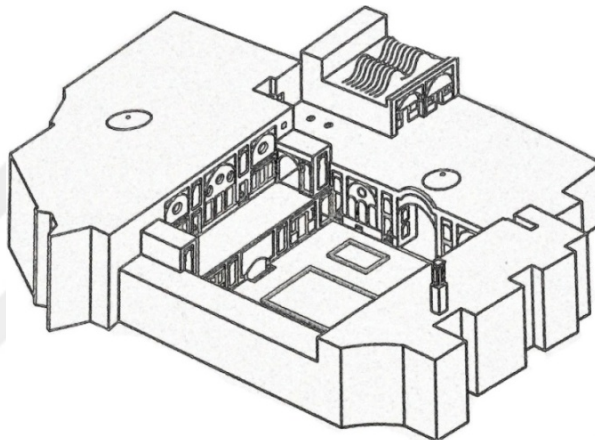


Figure 4.53 Tridimensional View of Ehsan House

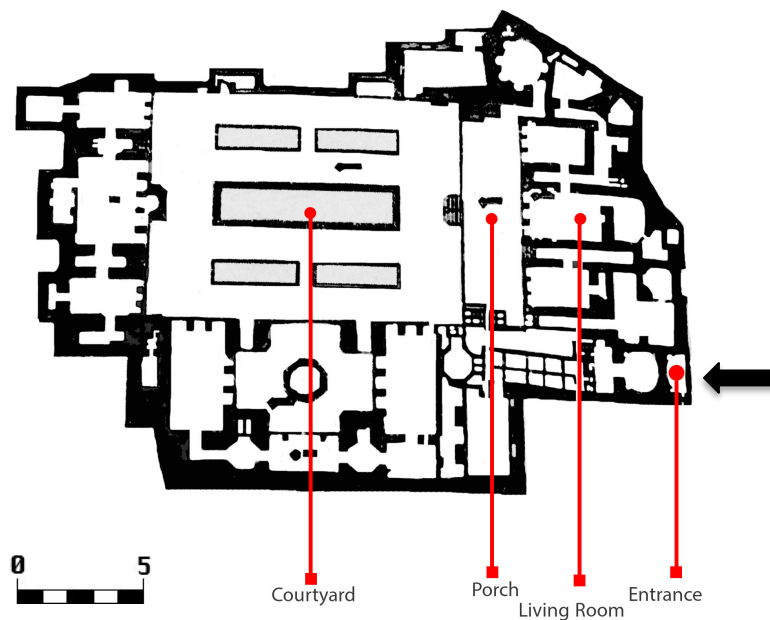


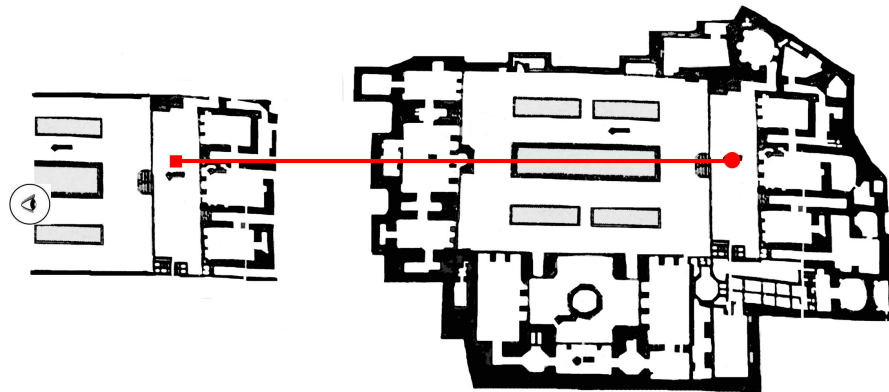
Figure 4.54 Plan of Ehsan House

4.3.5.1 Porch

This house is the simplest house in contrast with the other houses. After accessing the courtyard through the entrance there is a simple porch which is in front of the living room. The only decoration of this part is the stucco skylight (clerestory) of the living room.



Figure 4.55 The Porch with Stucco Skylight Decoration (M.Adib, 2016)



4.3.5.2 Living Room (Shahneshin)

The living room of this house does not have any special decoration, no Orosi windows, no Mural Paintings, just six stucco work sky lights (clerestories). Three of their are decorated with colorful glasses and three of them are just stucco work. Typically the living room of the traditional houses have Orosi windows, but this house's living room just has three simple doors.



Figure 4.56 Using of Light in Decoration
(M.Adib, 2016)



Figure 4.57 Living Room with Stucco Skylight (M.Adib, 2016)

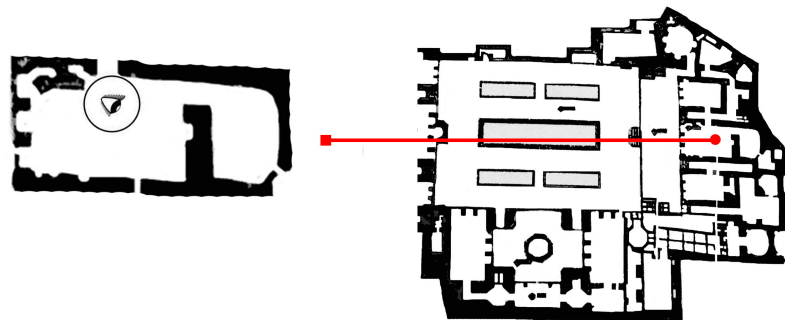
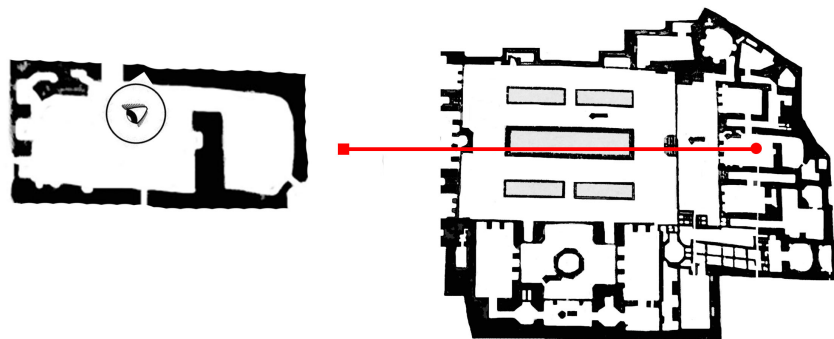




Figure 4.58 Stucco Skylight of Living Room(M.Adib, 2016)

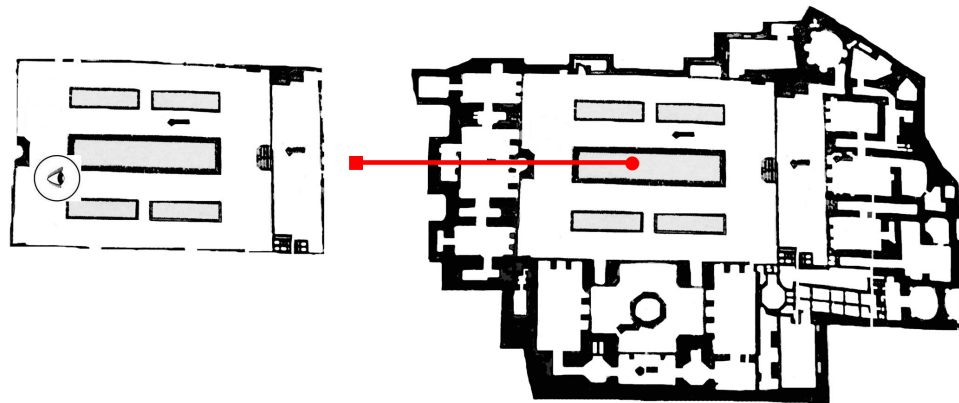


4.3.5.3 Courtyard

Courtyard of this house is simple and there are no decorations, no stucco work, and no mural paintings.



Figure 4.59 Courtyard without Decoration (M.Adib, 2016)



4.4 Analysis of the Decoration of Five Case Studies

To reach and understand the similarities and differences between the houses, studied a comparison was made. As the table 4.1 shows, the only house that contains all the of elements of this research is Mahinestan house. In contrast only house which does not contain the elements, except the stucco skylight (clerestory), is Ehsan house. This house does not have any decoration. Between the houses there are two houses (Tabatabaei- Ameriha), which have all the options except of clerestory. Additionally the Broujerdi house includes other elements except mirror works. This comparison shows that decoration was an important aspect in traditional housing. In design of the houses aesthetic features had a considerable role. By visiting the sites, visual and personal interviews it was understood that financial issues had a direct relation with decoration. One of the reasons that Ehsan house did not use decoration is this issue. However to conceive which house's elements has higher quality and to extract design template a comparison was also done between the elements.

Analysis of the Historical Houses \ Decoration Type	Lattice Orosi Windows	Mirror Work	Stucco Work	Mural Paintings	Stucco Skylight
Mahinestan House	✓	✓	✓	✓	✓
Ameriha House	✓	✓	✓	✓	-
Tabatabaei House	✓	✓	✓	✓	✓
Broujerdi House	✓	-	✓	✓	✓
Ehsan House	-	-	-	-	✓

Table 4.1 Analysis of the Decoration of Five Historical Houses

4.4.1 Analysis of the Decorative Elements of Five Case Studies

To obtain the properties of the interior elements of the houses, it was required to evaluate the elements. Also it needed to figure out the details of patterns in order to reach the template of their design. And determine the similarities and differences.

4.4.1.1 Analysis of Orosi Windows at Living Room

Whereas the living room was the most important place of the house, most masterpieces of Orosi were performed in this part. Therefore the living rooms have been studied in order to clarify the resemblances and dissimilarities.

As table 4.2 shows only three houses in comparison with other houses which have Orosi windows in living rooms. Two of them used separated and skylight Orosi windows and the other house used Orosi with close Patagh (inscription).

Between the Orosi Windows, the highest quality Orosi windows belong to the Ameriha house because of its detailed work.

Also when compared with others, it utilized various colors of glasses. As these windows used more colorful glasses in part of the Patagh (inscription), it can transfer more sunray than other windows. Additionally because of more colorful glasses, it can create more beautification on the space.

4.4.1.2 Analysis of Orosi Windows at Main Room

In traditional houses after living room the most important place was a room, named as main room. When Orosi windows of this room, is compared as table 4.3 shows it is understood that the Orosi windows of both Ameriha and Tabatabei houses have more quality than others. Both of them used same number of doors windows and by a similar model. Also by comparison the their patterns it can be said that they used similar template and used same level of details.

Table 4.2 Houses Living Room Lattice Orosi Window Analyses

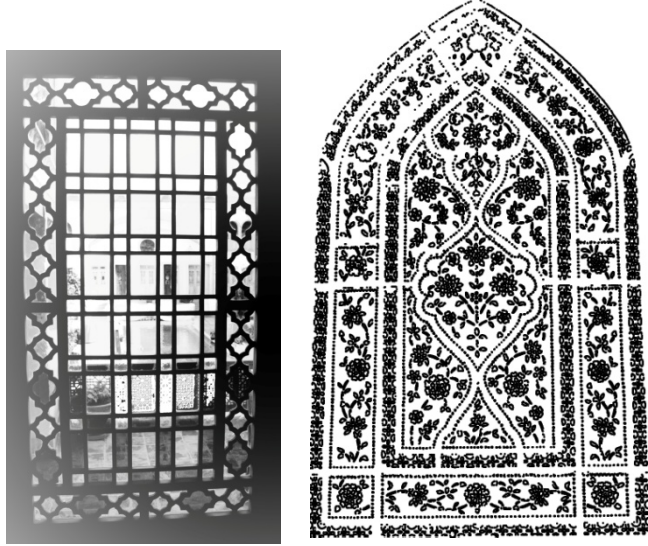

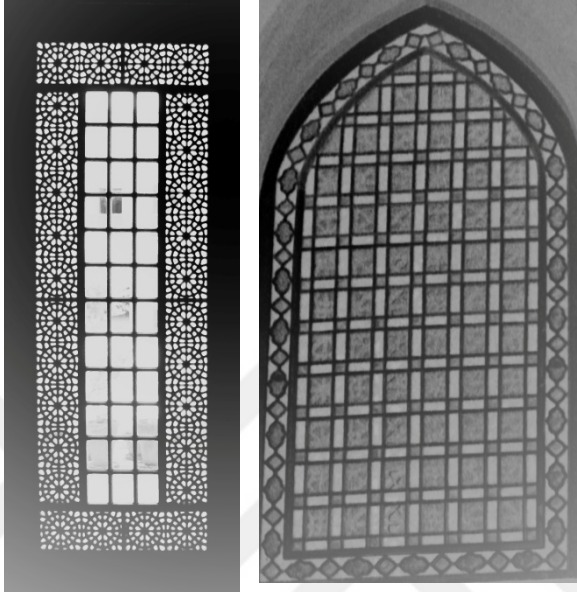

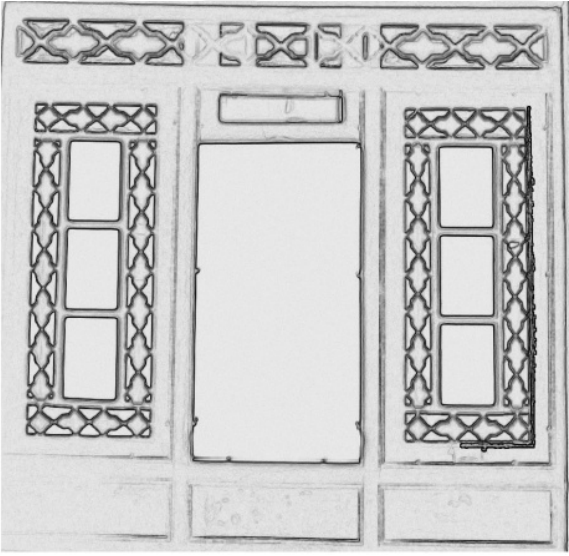

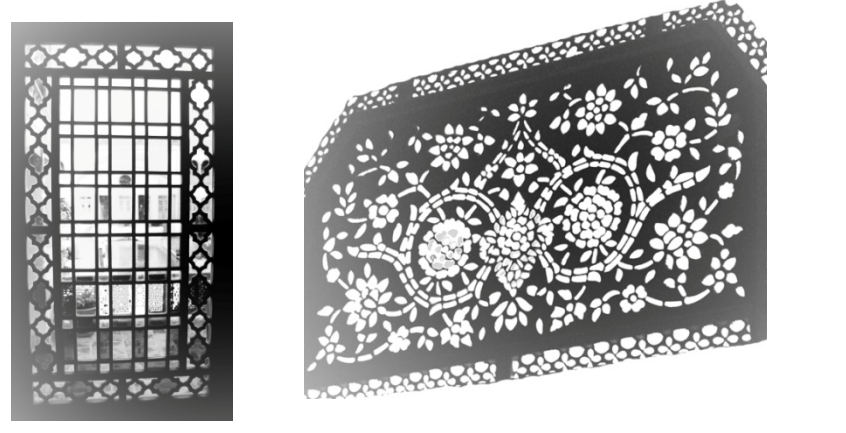

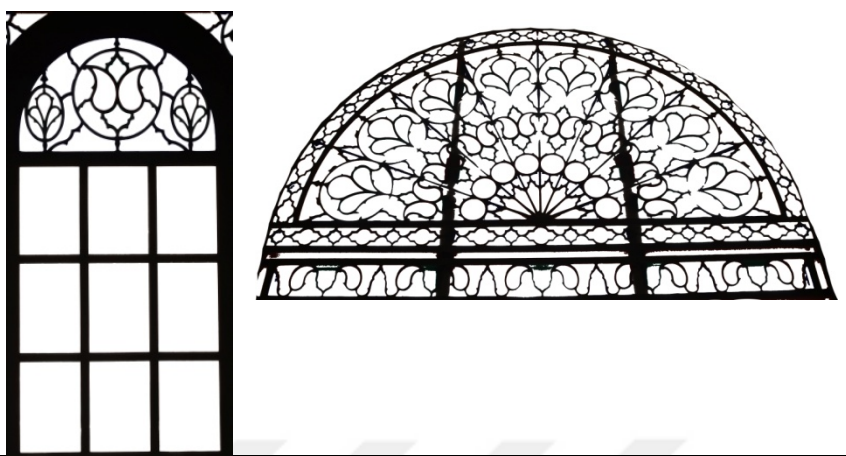

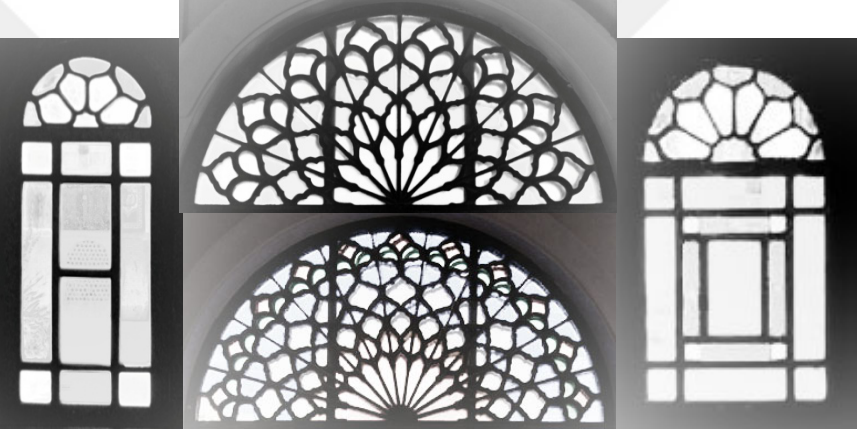

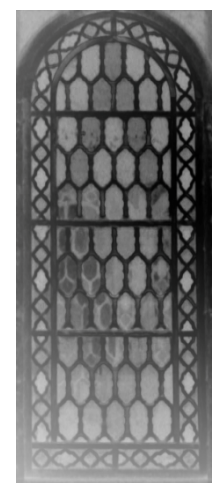

Historical Houses	View	Orosi Windows No	Orosi Doors No	Glasses Color	Inscription (Patagh) Type	Frame Decoration	Picture
Mahinestan Historical House		2	3 & 4	Blue Red	Zigzag Separated Skylight	-	
Ameriha Historical House		2	3 & 5	Blue Red Green Yellow	Zigzag Separated Skylight	-	
Tabatabaei Historical House		2	3	Green Red	Close No Skylight	-	
Borujerdi Historical House	-	-	-	-	-	-	-
Ehsan Historical House	-	-	-	-	-	-	-

Table 4.3 Analyses of the Major Room's Lattice Orosi Windows of Houses

Historical Houses	View	Orosi Windows No	Orosi Doors No	Glasses Color	Inscription (Patagh) Type	Frame Decoration	Picture
Mahinestan Historical House		2	3	Blue Red	Straight Separated Skylight	-	
Ameriha Historical House		3	3	Blue Red Green Orange	Curved Connected Skylight	-	
Tabatabaei Historical House		3	3	Blue Red Green Orange	Curved Connected Skylight	-	
Borujerdi Historical House		2	3	Blue Red Green Orange	Close No Skylight	-	
Ehsan Historical House	-	-	-	-	-	-	-

4.4.1.3 Analysis of Mirror Works

As its obvious on the table 4.4 two houses did not use any mirror decoration and Tabatabaei house, just used low decorations with geometrical patterns. About two other houses it may claim, the Ameriha house, has a higher rank in quality of mirror work because of the extendent performance and use of divers patterns.

4.4.1.4 Analysis of Stucco Work

By comparison of just these five houses, it is understood that stucco was an important element at the past time. Mostly it was performed in all houses in a vast area.

The reason, which made this element useful, can be summarized as:

adhesive property, appropriate color, easy application, availability and low cost.

As the table 4.5 shows, between these five houses, Tabatabaei house performed greater patterns than others. It also has more quality in its application because different patterns with different embossing was used.

Table 4.4 Analysis of Mirror Art of Houses

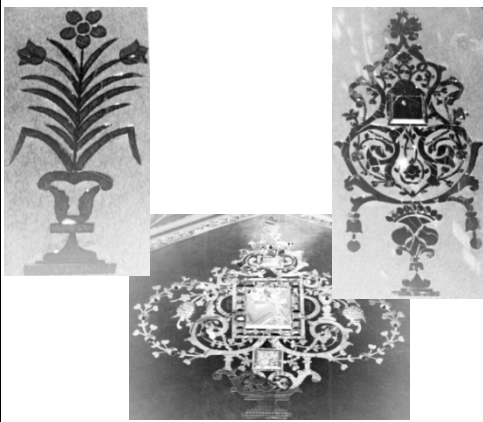

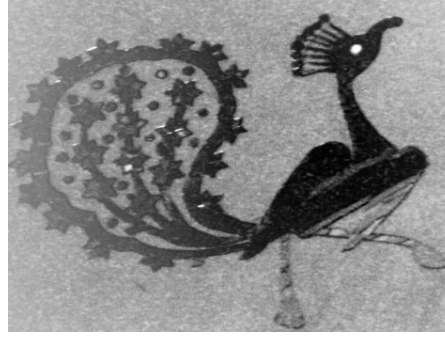
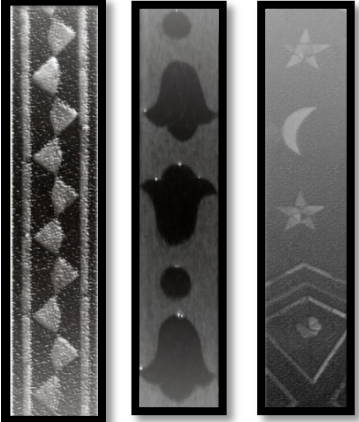

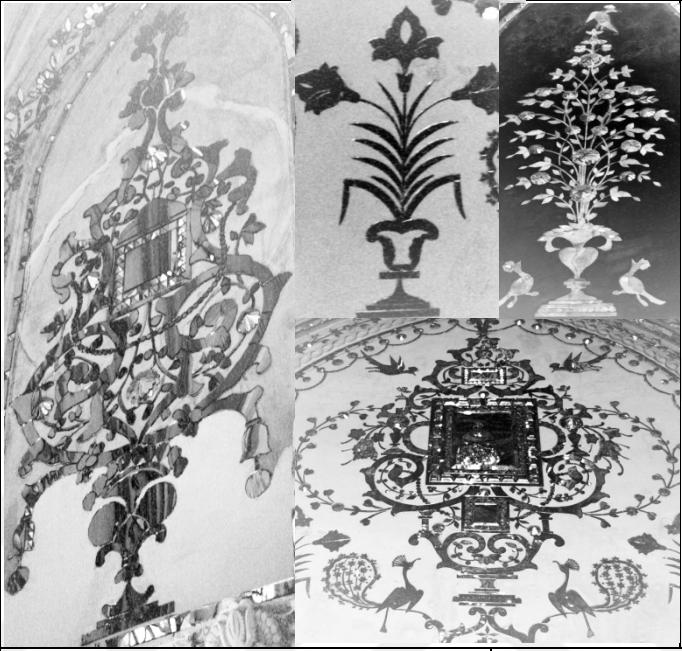
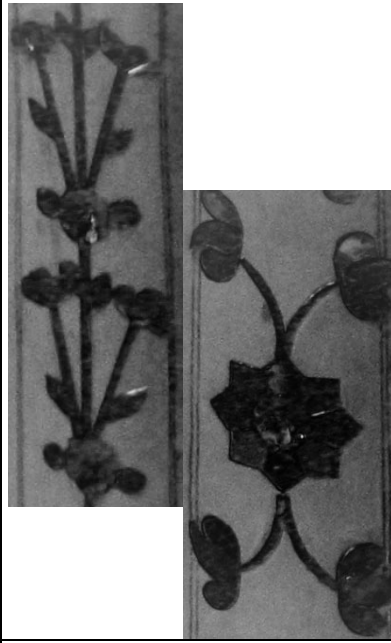

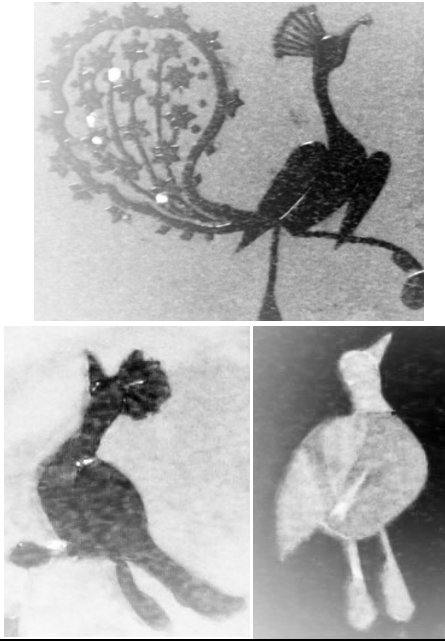
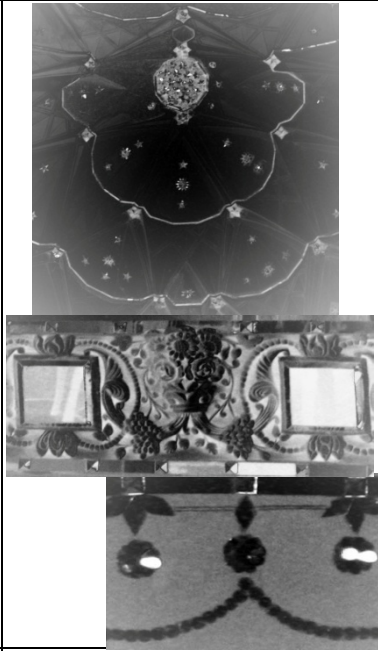

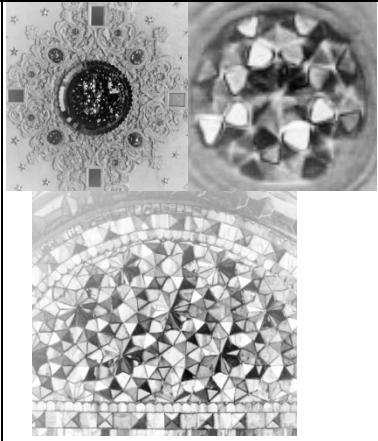



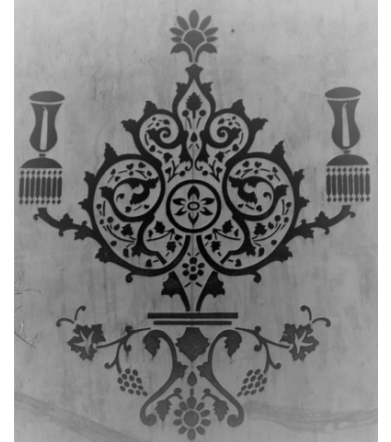








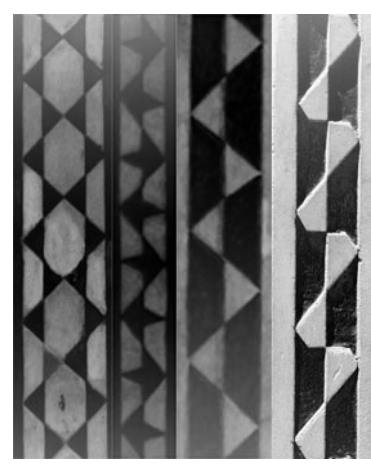


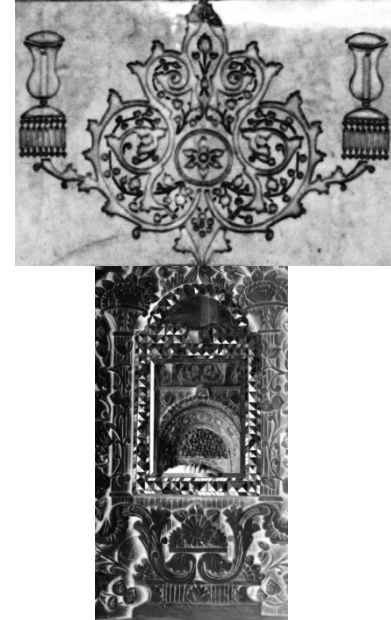



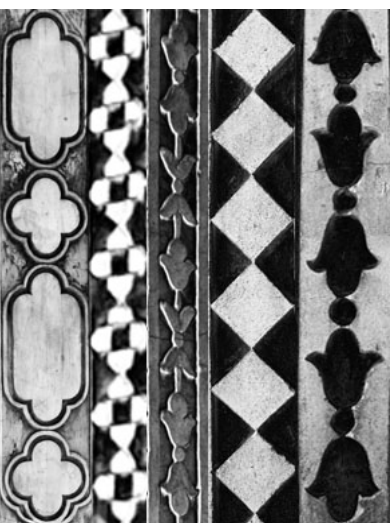


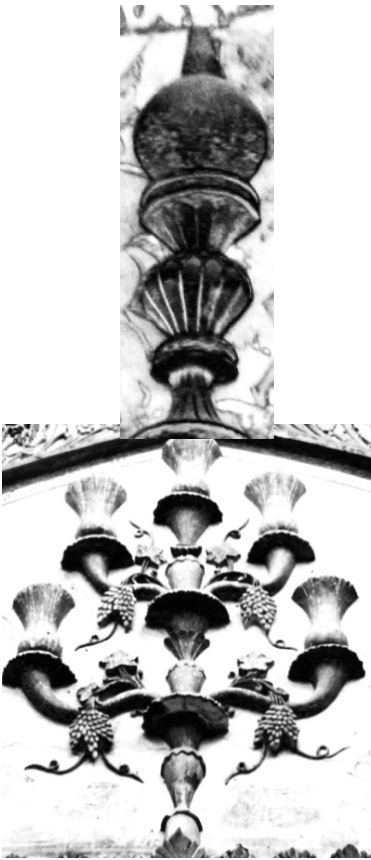



Historical Houses	Mirror Pot Pattern	Mirror Candlestick Pattern	Mirror Flower Pattern	Mirror Leaves Pattern	Mirror Birds , Animals, Human Pattern	Mirror Geometric Pattern	Picture
Mahinestan Historical Houses	✓ 	✓ 	-	-	✓ 	✓ 	
Ameriha Historical House	✓ 	-	✓ 	✓ 	- 	✓ 	
Tabatabaei Historical House	-	-	-	-	-	✓ 	
Borujerdi Historical House	-	-	-	-	-	-	-
Ehsan Historical House	-	-	-	-	-	-	-

Table 4.5 Analysis of Stucco Work of Houses

Historical Houses	Color	Stucco Embossed size	Stucco Pot Pattern	Stucco Candlestick Pattern	Stucco Flower Pattern	Stucco Leaves Pattern	Stucco Birds , Human , Animal Pattern	Stucco Geometric Pattern	Picture
Mahinestan Historical Houses	Brown & White	3 ml	✓	✓	-	✓	✓	✓	
					-				
Ameriha Historical House	Brown & White	3 ml	✓	✓	✓	✓	-	✓	
							-		
Tabatabaei Historical House	Gray & White	3 ml -1 cm	✓	✓	✓	✓	✓	✓	
									

Borujerdi Historical House	White Gray	1 cm	✓	✓	✓	✓	✓	-	
								-	
Ehsa HistoricalHouse	-	-	-	-	-	-	-	-	-

4.4.1.5 Analysis of Living's Room Stucco Skylight (Clerestory)

This decorative element may be seen in many parts of houses. But as it is mentioned before living room was the most important place of the houses. Therefore the most beautiful decoration was done in that part.

Thus the living room was chosen in comparing their clerestory. By comparison of these five houses as table 4.6 shows it feels that there is not considerable difference in performance and beauty of these elements.

But by compare observingly, it may be claimed that the Tabatabei and Ehsan houses' clerestories have higher quality and beauty than others.

The clerestory of Tabatabei house is worked with fine pattern, something that made it special is its similarity with grid, which shows like a curtain.

Ehsan house, used fine patterns with beautiful combination of colorful glasses which stun visitors. Among these five houses, Ameriha house did not use this element in its living room. The reason can be related to the nice Orosi windows that were performed in this room.

4.4.1.6 Analysis of Mural Paintings

As table 4.7 shows, Ehsan house did not use this decorative element. The three, Mahinestan, Ameriha and Tabatabei house can insert in a same category as they used similar patterns.

But in terms of quality between these three houses, Tabatabei house has higher rank than others because it has used more fine template for its patterns. Also the spaces that were painted were vast compared to other house's spaces and they were performed with high accuracy.

The last house, which contains the best mural paintings, is Broujerdi house. One can surely claim that this house is at a higher level in terms of mural paintings.

The considerable difference of this house is its human and animal patterns, which have been painted a lot. Almost all part of the living room's wall and ceiling surfaces were painted diversely.

The most important feature of mural paintings of this house is that all paintings have a story to tell: for example the love stories of Leyli and Majnun or Shirin and Farhad. The mural painting is a feature, which made this house famous.

Table 4.6 Analysis of Living room's Stucco Skylight (Clerestory) of Houses


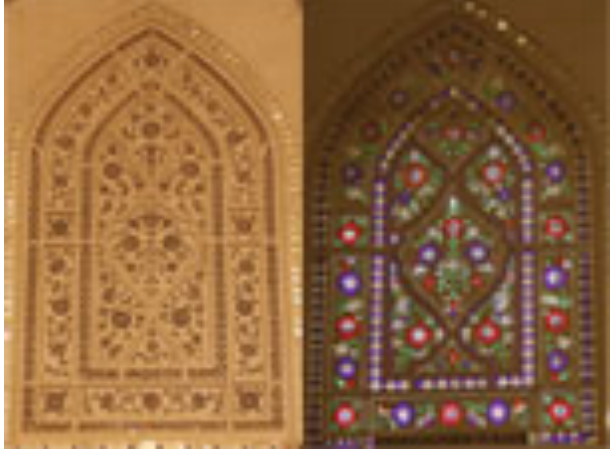


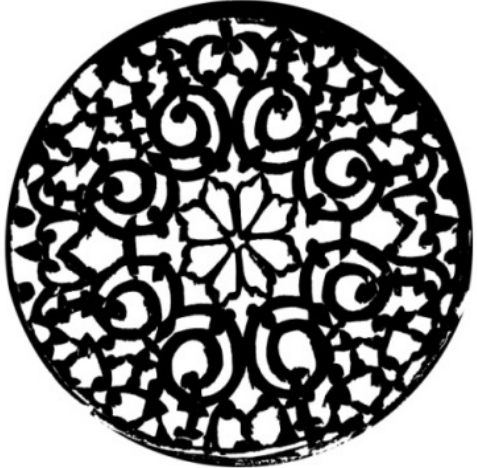

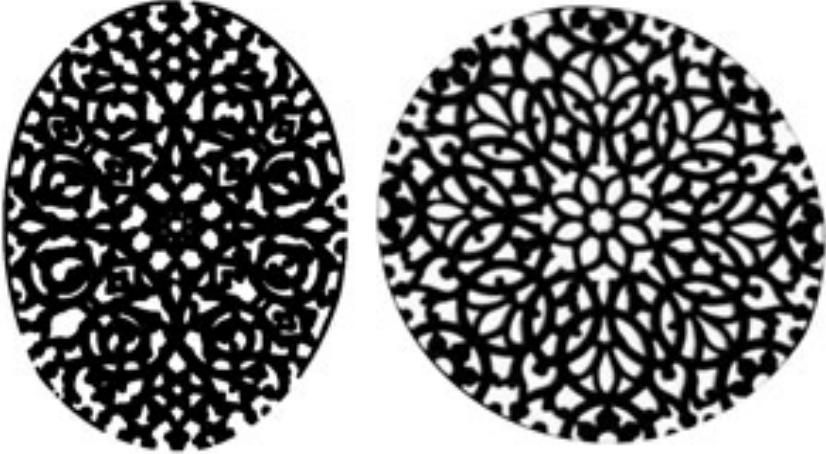



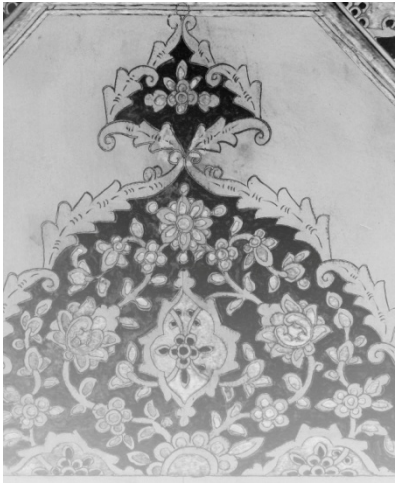

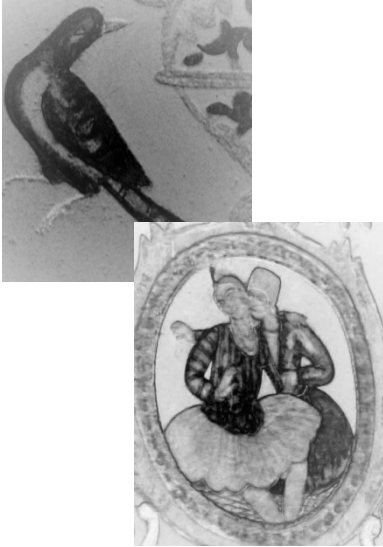
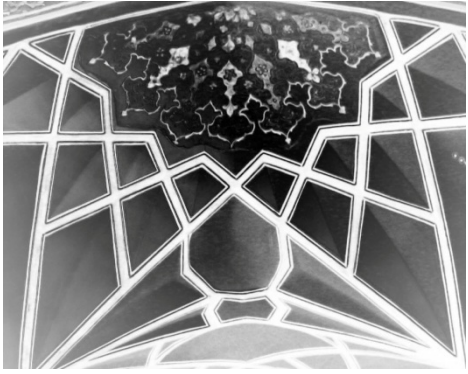



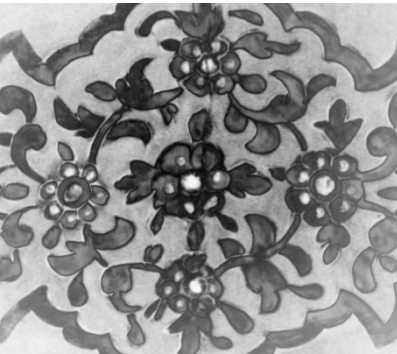

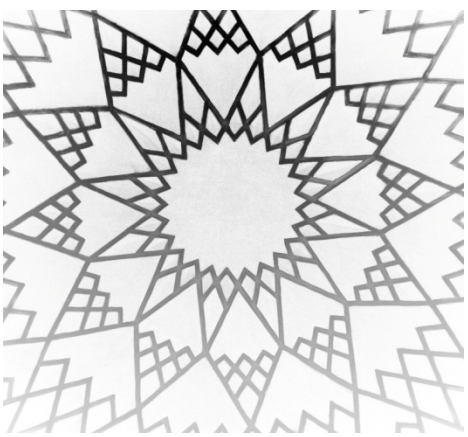


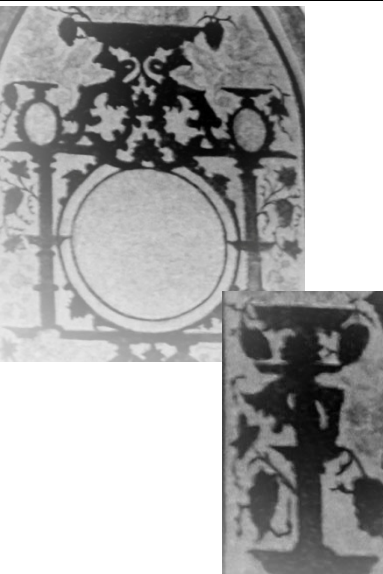
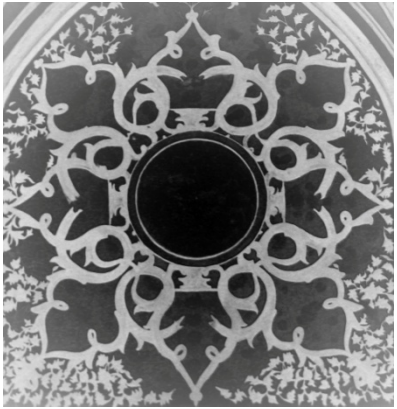


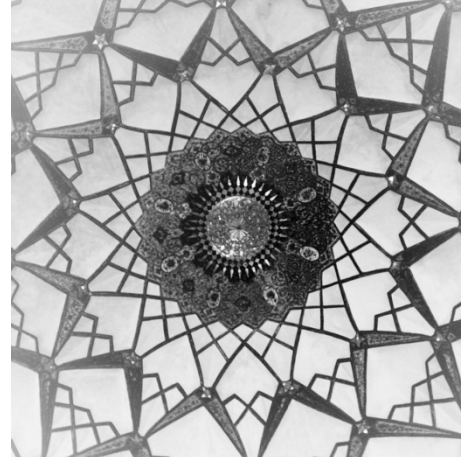
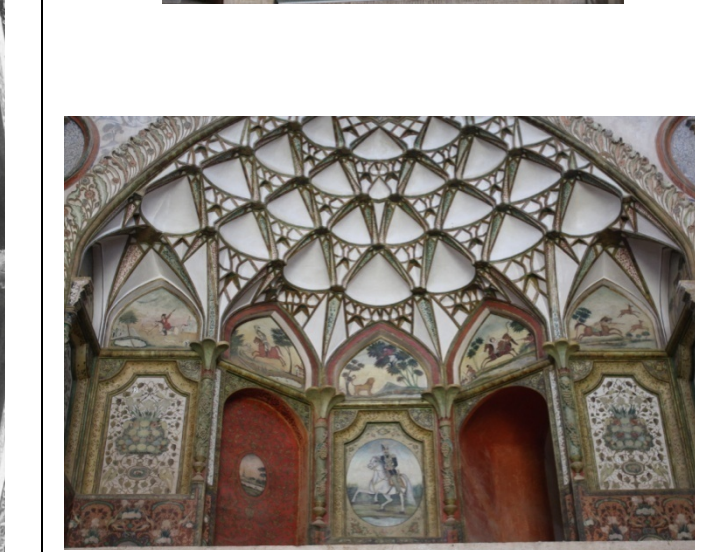
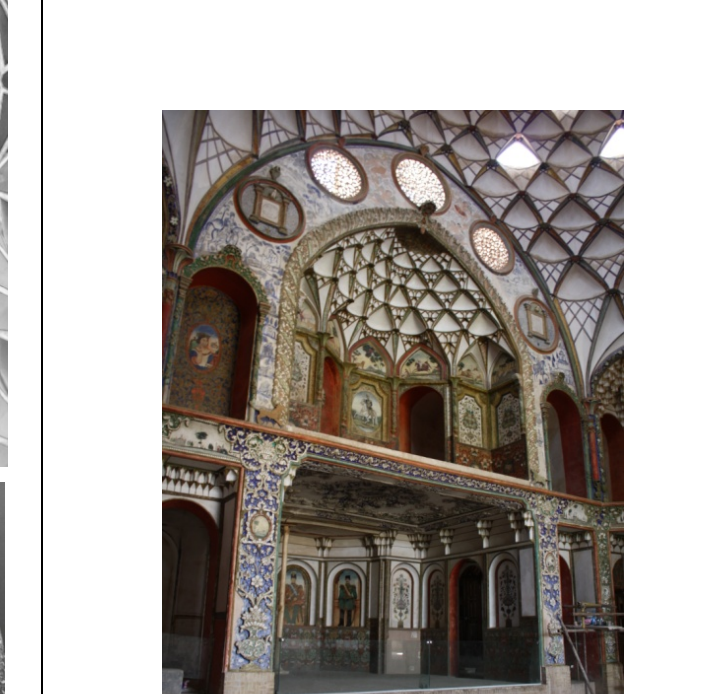
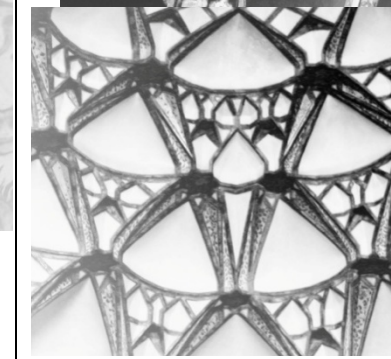
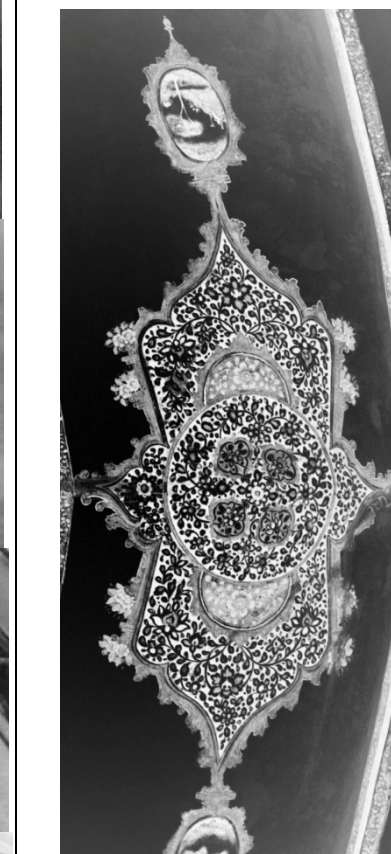
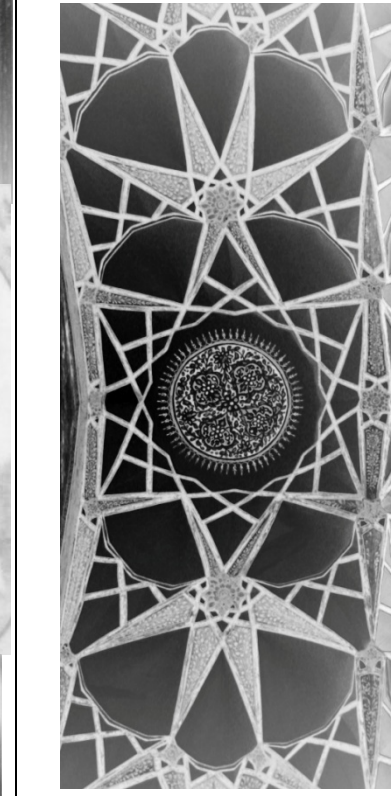
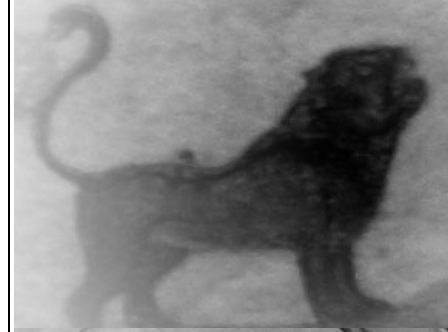
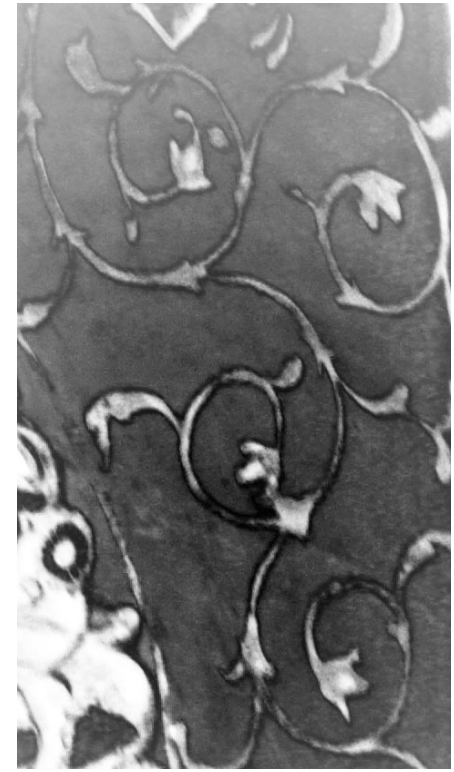
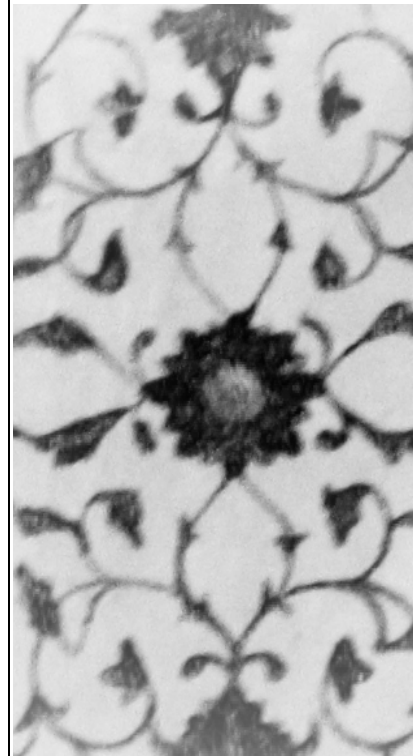
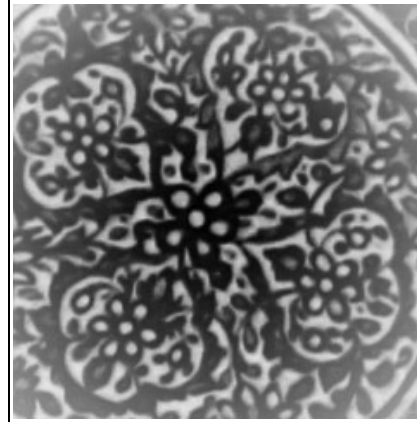
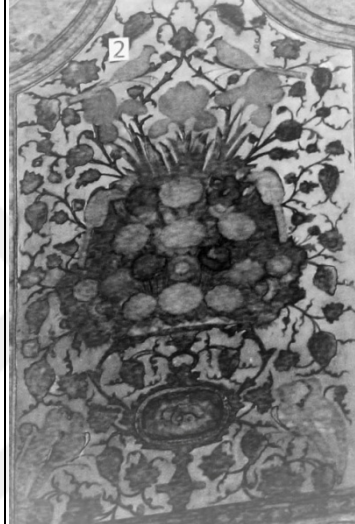
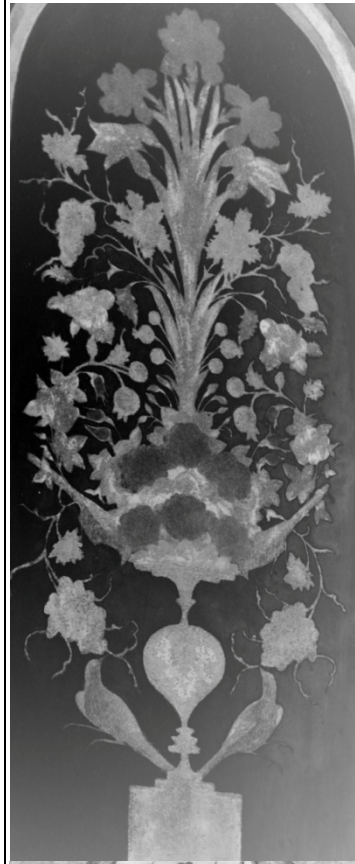
Historical Houses	View	Shape	Grid Model	Glasses Model	Color of Glasses	Picture
Mahinestan Historical Houses		Zigzag	✓	✓	Blue Green Red	
Ameriha Historical House		-	-	-	-	-
Tabatabaei Historical House		Zigzag	-	✓	Blue Green Red Orange Yellow	
Borujerdi Historical House		Circle	✓	-	-	
Ehsan Historical House		Circle- Ellipse	✓	✓	Blue Green Red Light Blue Yellow	

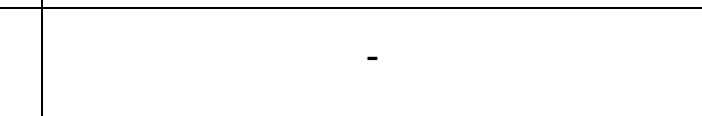
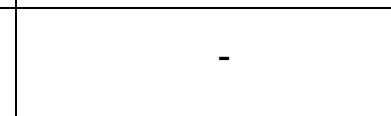
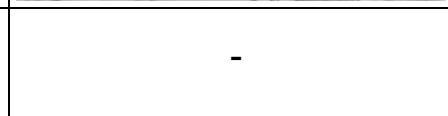
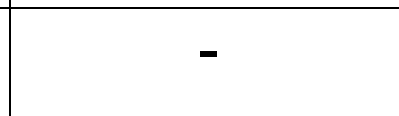
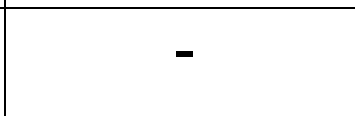
Table 4.7 Analysis of Mural Paintings of Houses

Historical Houses	Pot Pattern	Candlestick Pattern	Flowers Pattern	Leaves Pattern	Birds, Animal, Human Pattern	Geometric Pattern	Picture
Mahinestan Historical Houses	✓	-	✓	✓	✓		
		-					
Ameriha Historical House	-	-	✓	✓	-	✓	
					-		
Tabatabaei Historical House	-	✓	✓	✓	✓	✓	
							

Broujerdi Historical House



Ehsan Historical House



5. CONCLUSION

The purpose and the focal point of this study was traditional houses. It can be mentioned that all over Persia one can see this kind of traditional houses which have survived. Each of them had differences in terms of both, architectural and decorative features. One of the most important reasons, which made these differences is climate.

In this research the houses chosen to be studied are located at Hot-Dry climate. In Persia the houses which were built in this kind of climate were introverted. Also Islamic rules have contributed to this kind of design.

The introverted houses do not have relevancy with the outside nor do they view the street. Thus they were decorated more than extroverted houses. Additionally as these houses were built at the edge of desert, the natural environment was not flourished. Therefore to animate nature; decoration was used to make their places colorful and beautiful.

This study focused on only one period in order to figure out, except for climate and culture, what other features affected decoration of houses.

To reach this aim the most appropriate period is Qajar because of two reasons: first Qajar period holds more decoration features and secondly was because Qajar period was the start of modernity. As modernity can be a feature for affection on design, this period was chosen.

Also for choosing the decoration elements those were chosen that were worked more than others. For example design of floors in Persian traditional houses was not common. The reason can be related with Persian carpets and rugs. Persian carpets and rugs are famous in all the world and are also known as an art.

Probably carpets were used for designing the floors. This matter can be understood from the stucco design of the Broujerdi and Tabatabei house which applied the motives of carpets on their ceiling of the porch and living room. The idea of stucco carpet was an inspiration of the real carpet, which was laid on the floor during past.

5.1 General Considerations

Evolution and boundless formation in modeling of elements in buildings of Persia have made a sort of confusion regarding the identity of architectural culture. Some have similarities to that of traditional Persian houses but some do not.

In the traditional period of Persia, houses were compatible with people's needs. Contemporary housing spaces are not designed to suit the current lifestyle. In spite of the rich history of Persian Islamic architecture of traditional houses, residential buildings today are not designed as carefully as before. Imitation of Modern lifestyle of the west has left a strong impact on changing the living habits of Persians, such as social cultural and physical transformations. This caused to lose the rich architecture of the Persia. Therefore, the space characteristics of traditional houses are unfortunately somehow forgotten in today's Persian architecture. The change in lifestyle has been happening quite fast, thus evoking a new demand. It is the responsibility of contemporary architects to realize this and try to achieve a comprehensive understanding of this need in order to be able to respond to this condition. They can design spaces and create forms adapted to the new lifestyle and be able to satisfy these requirements.

Studying the history of architecture of residential houses in Persia can introduce a new path to architects to think of how traditional houses could be a suitably respond to people's demand and lead them to create a better architecture appropriate for this period.

The analysis of the houses shows the importance of space organization and access design. These are two important architectural features of Persian traditional houses. Understanding the characteristics of space organization of each house and importing these in designing of new houses need to be achieved.

Residential buildings in Persian Islamic architecture have been designed based on culture, religion, traditions and in response to climate and environment of each

region and lifestyle. This architecture could create forms which are able to generate a correlation between these parameters. Old residential houses in Persia, despite that simple outer shell or facade, provided a complex inner shell in order to create an elegant and comfortable atmosphere for its residents. The designs of interior and exterior spaces of the houses follow almost the same rules and their differences are only in their scales. Culture and climatic issues have caused some of the distinctive characteristics of Persian architecture such as designing introverted houses. From the exterior point of view, houses have very simple design and the glory of design of traditional Persian houses can be seen in the interior design. This characteristic of the house have roots in the culture.

Totally geometrical and organic patterns suggest our cultural and religious beliefs. The geometrical patterns suggest religion and the organic ones suggest mythical nature and a symbol of plants, which are named in the Quran and are famous for being heavenly plants. These patterns are the result of Islamic rules which totally changed and affected the architecture of Persia.

As it was obvious in the analysis section of the thesis, there are similarities and differences in the houses chosen. These similarities are mostly rooted in the climatic conditions, culture of that region and the differences which are mostly minor are related to the desire of personalizing living spaces. The financial status of the users also created differences such as the size of the house or the number and quality of the decorative elements.

5.2 Conclusions Regarding Case Study

Generally speaking, analyzed houses belonged to carpet businessmen. The Ehsan house belonged to a fabric businessman. The occupation of the house owners had an influence on decoration of these houses. The owners were rich people of that time and financial issue had a direct relation with decoration. As an example Orosi windows were expensive decorative elements. Whatever the number of doors of Orosi was more or decoration of the frame and Patagh (inscription) was more

detailed, window was more expensive. One could understand the richness of people from their house's Orosi windows.

This matter is obvious in this study as Ehsan house belonged to a fabric businessmen and his house does not have Orosi Windows. He was not as rich as other house owners.

From the point of view of this research Mahinestan Raheb Historical house has all the features: Orosi windows, Stucco works, Mural Paintings and Mirror work. However, all these were done in the simplest possible manner. The strength of decoration design of this house lies with its Stucco work. Patterns of pot, flowers, birds and arabesque pattern were the main characteristics of the decoration used in this house and they were used in all works of art including Stucco and Mirror work.

Ameriha historical house also includes all the characteristics of the present study. This house is known and famous for its beautiful and detailed mirror work. Its Orosi windows are unique and a type of masterpiece in Orosi work, being of the skylight separated from the frame. The integration of mirror work and colored windows has created an extraordinary space which are look for in a residence. However the mural paintings in this house are not among the best. This house has some stucco work, but are not very distinct in its kind.

Tabatabaei historical house too has all the features considered in this research. Among the entire house, these are by far the most beautiful with strongest points in the study. According to the rules of architecture of the time, most decoration was done in the master living room of the house, specifically the Stucco skylight. The main living room is a beautiful place with lots of mural paintings but to our surprise, the Orosi window was only used in the Five Dari room (The room with five doors).

The Orosi put up in this house is the most popular Orosi used throughout Iran, not only in region. The Stucco work is very delicate having a lot of details, specially in the porch's roof. But the house contains little mirror work.

Broujerdi historical house has all the features that have been analyzed and are within the same view points of this research, except Mirror Work and the consideration that the Orosi windows of this house are not as special and extravagant as the other houses' Orosi windows. The main living room of this house is one of the most famous and beautiful living rooms in architecture of Persian traditional houses. This living room has gained its fame due to its elegant mural paintings and stucco works. Each mural and stucco design has a reason and story behind its embellishments. For instance five famous love stories like Leyli and Majnoon, Farhad and Shirin were painted and represented on its walls. The Stucco Work of this house is a mixture of Western and Persian style.

The difference of the Western style stucco of this place is that the stuccos are formed more embossed than the typical western style. This house can be a good example for contemporary houses, because it shows the start of inspiration from Western architecture. However the architect has maintained the Persian architectural style.

Ehsan historical house belonged to a material merchant. From the framework of this research the house doesnot have any of the intended decorative characteristic. The main living room which has the most decorative of the old houses only used colorful glasses stucco skylight with colorful glasses to get light, instead of Orosi windows. Maybe that is due to high cost of Orosi windows.

5.3 Recommendations for Contemporary Housing Design

Qajar period (1789-1925) was the start of modernity. Investigation shows modernity had affected the Broujerdi house and made some changes. In design of stucco, which is mixture of Persian and western style one can feel these changes. And the difference is that, the stucco of this place performed more embossed than typical western style. Also for mural paintings of this house, designer used animals and human patterns which was an inspiration of western style. After Islam using of these kind of patterns became forbidden and the designer just used arabesque and geometrical patterns such as flowers, pots, birds, leaves and candlesticks. Although

modernity had affected architectural and decorative features during Qajar period, it could not eliminate the originality of Persian style. After Qajar period during Pahlavi dynasty (1925-1979) it can be claimed that changes became more frequent. And by passing the time, it grew and became more and more until today. Contemporary design removed all marvelous decoration of traditional architecture such as mirror work, mural paintings, stuccowork, and the amazing colorful glass windows. Contemporary architecture has lost all cultural and traditional decoration elements, which changed the rich architecture of Persia into architecture with no identity.

Nowadays, in a large number of residential buildings, even in hot arid regions, the external facades are full of windows with size, position and orientation on no basic reason, they follow the temporary styles and do not have any special function by climate or even aesthetic features. The traditional Orosi Windows had transformed light through its rhythmic effects or symbolic aspects in architecture. This was for their aesthetic functions. Based on the investigations, there are some principles in Persian traditional architecture which can yet be applicable; for instance:

- Determination of size, position and form of opening with regard to the quality and quantity of sunlight and having an existent desirable perspective around the building.
- Application of light in architecture as a dynamic and aesthetic phenomenon.
- Making use of symbolic aspects of light in order to create a spiritual space in architecture.
- Making use of colors and patterns in the design of windows to obtain aesthetic features and also to control the light.
- Application of the idea of making spaces bright by using mirrors in places which lack light or using the beauty of this material as decoration in spaces in specific parts of the house.

- Stucco was an original and rich type of art in traditional Persian architecture which had a great effect in forming the traditional patterns and was an aesthetic element in the architecture of the Persia. Yet it could even influence decoration and transfer many themes and patterns in decoration .
- Present technology has reduced the value of arts. For instance, to decorate the walls in contemporary residential buildings they use different kinds of wallpaper while in old architecture amazing and rich mural painting art was used in the decoration of the walls and roofs.

5.4 Propositions for Future Research

Future studies can focus and work on other interior elements of these houses, the elements such as brickwork, tile work and wood work. Studies can figure out which spaces these elements were worked and with which patterns and colors. Comparison can be made to understand the similarities and differences between those elements with stuccowork, mirror work, mural paintings and Orosi windows.

Also future studies can concentrate on only one house or just one element and work on greater detail. Tabatabei house as it is used high quality decorative features can be a suitable place as individual study. About elements as there is lack of information about mirror work and orosi Windows. These can be two appropriate cases, to work individually.

Further research can be made about these elements in other countries and compare them with Persian style. As an example mirror work and orosi windows were used on design of Persia but at the same period they were not used in the Turkey, although it has a boundary with Persia. Also one can search and compare with other countries. These comparisons can produce a source about the origins of decorative elements of Persia.

Additionally comparison can be made between these houses and other houses of the same region. For example one can compare Attarha, Manuchehri, Taj and Abbasian houses.

Also comparison can be made between these houses and houses in the different cities like Isfahan or Sanandaj, which are famous for their Orosi windows.

Furthermore comparison with other periods like Safavid or Pahlavi Periods can be an option. These will contribute and create a framework from which rich traditional architecture of provide an inspiration and benefit contemporary architecture. Architectural identity can be recreated again for contemporary architecture.



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