FATİH SULTAN MEHMET VAKIF ÜNİVERSİTESİ
LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ
MİMARLIK ANABİLİM DALI
MİMARLIK İNGİLİZCE YÜKSEK LİSANS PROGRAMI

REVIVING ARCHITECTURAL VALUES OF DAMASCENE DOMESTIC BUILDINGS FROM OTTOMAN PERIOD

YÜKSEK LİSANS TEZİ

YASMIN ALBAKEER

İSTANBUL, 2021

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Mimarlık Anabilim Dalı'nda 180202032 numaralı Yasmın ALBAKEER'in hazırladığı "Reviving Architectural Values of Damascene Buildings from Ottoman Period./ Şam Yapıları Mimari Değerlerinin Osmanlı Döneminden Canlandırılması" konulu Yüksek Lisans tezi ile ilgili Tez Savunma Sınavı, 12/01/2021 Salı günü saat 10 :00 'da yapılmış, sorulara alınan cevaplar sonunda adayın tezinin **KABULÜNE/REDDİNE** karar verilmiştir.

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BEYAN/ ETİK BİLDİRİM

Bu tezin yazılmasında bilimsel ahlak kurallarına uyulduğunu, başkalarının eserlerinden yararlanılması durumunda bilimsel normlara uygun olarak atıfta bulunulduğunu, kullanılan verilerde herhangi bir tahrifat yapılmadığını, tezin herhangi bir kısmının bağlı olduğum üniversite veya bir başka üniversitedeki başka bir çalışma olarak sunulmadığını beyan ederim.

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Yasmin Albakeer

OSMANLI DÖNEMI ŞAM KONUT YAPILARI MIMARI DEĞERLERININ CANLANDIRILMASI

Yasmin Albakeer

ÖZET

Eski Şam'ın ara sokaklarında yürürken duvarlarından gelen geçmişin kokusunu hissedebiliriz. Fakat eski şehirden çıktığımızda, Şam'ın mirasını anımsatan yapılar yerine, batı mimarisinden ithal edilmiş yapı bloklarıyla karşılaşıyoruz. Şam'ın mimarisi, kültüründen uzak kavramların kullanımının yaygınlaşmasıyla kimliğini ve özgünlüğünü her geçen gün kaybetmektedir.

Şam dünyanın en eski başkenti olduğu için, tarih boyunca birçok İslam ve İslam öncesi medeniyet türü barındırmıştır. Ayrıca Şam'daki İslam mimarisinin kendine özgü olan tarzını yansıtıp bugüne dek kalan pek çok önemli anıt bulunmaktadır. Şam yapılarının kendine has olan biçimini ve zenginliğini Osmanlı döneminde kazanmıştır. Dolayısıyla Şam'da var olan geleneksel konutların çoğu bu dönemden kalmıştır.

Bu araştırma, Osmanlı dönemindeki Şam evlerinde uygulanan mimari değerleri, mimarların ve inşaat sektörünün bu değerleri yapılara nasıl uyguladıklarını, Şam'daki Osmanlı evlerinde varolan belirli değerlere göre Şam konut mimarisini analiz ederek canlandırmayı amaçlar. Son olarak ise, Şam konut mimarisini, özgünlüğüne geri döndürmeye ve Şam kentinin kimliğini canlandırmaya çalışan bazı çağdaş örnekler verilmiştir.

Anahtar Kelimeler; Şam, kimlik, canlandırma, Osmanlı dönemi, konut.

REVIVING ARCHITECTURAL VALUES OF DAMASCENE DOMESTIC BUILDINGS FROM OTTOMAN PERIOD

Yasmin Albakeer

ABSTRACT

When we are walking in the alleys of old Damascus, we can feel the fragrance of the past included from its walls. Suddenly, when we exit from the old city, we find the blocks of buildings that have been imported from western architecture, instead of preserving the Damascene majestic heritage. Damascene architecture day by day is losing its identity and authenticity after the spreading of using odd concepts far from its culture.

As Damascus is the oldest capital city in the world, Many Islamic and pre-Islamic civilizations passed through it. Moreover, Islamic architecture was very distinctive in Damascus, since there are many important monuments stand in the city to this day. However, domestic buildings had their unique style and gain their prosperity during the Ottoman period, thus the most of existed traditional houses in Damascus now are from this period.

This research is an attempt to revive the architectural values implemented in Damascene houses during the Ottoman era and how the architects and builders manage to apply the architectural values to their houses, by analyzing the Damascene houses per specific values extracted from Ottoman houses in Damascus. Ending up with some contemporary examples that tried to apply the architectural values of Damascene house as an attempt to get the authenticity back and revive the Identity of Damascus city.

Keywords; Damascus, identity, reviving, Ottoman period, domestic.

PREFACE

The most common concepts in architecture these days are sustainability and environmentally, many architects are looking to employ these terms in their building, many of them forget during the design process the identity of the city.

One of these cities is Damascus since architects thinking about the industrial heating and cooling system of buildings, while there are natural concepts had applied in the traditional buildings to gain and restrict the heat. I have a huge interest to revive the architectural values of domestic Damascene architecture especially houses from the Ottoman period. These houses applied great values to have perfect function and form. I am always thinking about how to employ the architectural values in the contemporary buildings to revive the authenticity and the identity of the city, this is one of the main objectives for me as an architect to reform Syrian architecture during the reconstruction stage in the future.

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SYMBOLS

M	**:** Meter
M^2	**:** Square Meter
CM	**:** Centimeter
%	**:** Percentage
SQ.KM	**:** Square kilometer

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ABBREVIATIONS

UNESCO	United Nations Educational, Scientific and Cultural Organization.
JICA	Japan International Cooperation Agency
BC	Before Christ
C	Century

1. INTRODUCTION

Cities were formed as an expression of social, material, spiritual and political conditions. The changes in these conditions from one city to another makes each one a unique identity. The importance of Damascus city comes from Many civilizations passed on Damascus before and after Islam, in addition, it is the oldest inhabited capital city in the world, moreover, it was the center of Islamic architecture. In 1979 the old city has been listed as a world heritage site. “Damascus measures time not by days and months and years, but by the empires, she has seen rise and prosper and crumble to ruin. She is a type of immortality. Damascus has seen all that has ever occurred on earth, and still she lives” (Twain, 1911).

When we are walking in Damascus, we can find two types of buildings first one blocks buildings and the second one is unique buildings that you can feel the fragrant of the past included from its walls. Here immediately you will be wondering why there are enormous differences between both types. If we go back to history, we will discover the reasons that led to the loss of a sense of beauty.

We are as architects need to keep the soul of local architecture. When Damascene architects imitated western architecture, buildings were copies of western designs, and they forgot to put Damascene touch. After emerging of new materials and globalization day after day, Damascene buildings lost their unique style. In addition, new materials and construction methods contributed to increase using these methods to finish the buildings fast, especially since the population has been increased in the last decade in Damascus. Architect in need to update his knowledge and use novel methods in the design process. However, the architect is responsible for preserving the soul of heritage, culture and identity of the city by his designs. This research aims to extract the Damascene architectural values. Then give some local examples that applied architectural values. Firstly, through analyzing these examples and make a comparison to figure out how much these buildings have succeeded in implementing the investigated values. Finally, supplying some tables to make sure how much these buildings used architectural concepts and values.

1.1. PROBLEM DEFINITION

After the population has increased in Syria serious problem has emerged to provide housing for people with ignoring the affecting on the natural and social environment. Between 1920-1945 Syria was based on the culture and religion of France during the occupation. The approach to urban design reflected the glory of the French government. The master plan of the city has been developed for large sections by wide boulevards and squares. The individual homes with outwardly oriented emerged according to the grid pattern (Al-Kodmany, 1999). Accordingly, the Islamic architectural values are diminished by western copies which are box blocks with ignoring the social, environmental, religious aspects.

Since 1950 the Syrian architecture has become a hostage of endless debate constating on the connection among authenticity, modernism and renewal (Soufan, 2018). Most of the studies on the city of Damascus are based on the study of the old city and its surroundings, as well as focus on buildings of historical value, and exclude the modern buildings. Moreover, many studies cared about the forms instead of the architectural values. All of the previous factors led Damascene architecture to fell into a circle of chaos, which brings us to inquire whether there is still a real presence to the Islamic identity of the city, as it was previously, under the pressures that are facing the contemporary Islamic cities. In general, in Syria, there is a necessary need for developing sustainable design approaches. Approaches that are appropriate for environmental design and living patterns.

1.2. LIMITATIONS

- **Time limits**

Damascus has been the capital of the Umayyad while its architecture derived from the ancestor. After a long Islamic history starting from Umayyad, Abbasid, Fatimid, Seljuk, Ayyubid, and the Ottoman ruling, most of the stand existing Buildings in Damascus are from The Ottoman Period. Since Damascene Architecture gained its unique personality from the Ottoman era, the investigations of this research are based on this period.

- **Spatial limits**

Many civilizations passed on Damascus before and after Islam. Moreover, Damascus is the oldest inhabited capital city and it was the center of Islamic architecture. Most of the significant architectural values derived from the Damascene house, particularly the Ottoman cared about the domestic buildings in Damascus during their ruling. For this reason, this research will analyze Damascene domestic buildings from the Ottoman period located in Damascus city. However, it will expand to the surrounding area of Damascus governorate in the practical phase which includes the contemporary houses examples.

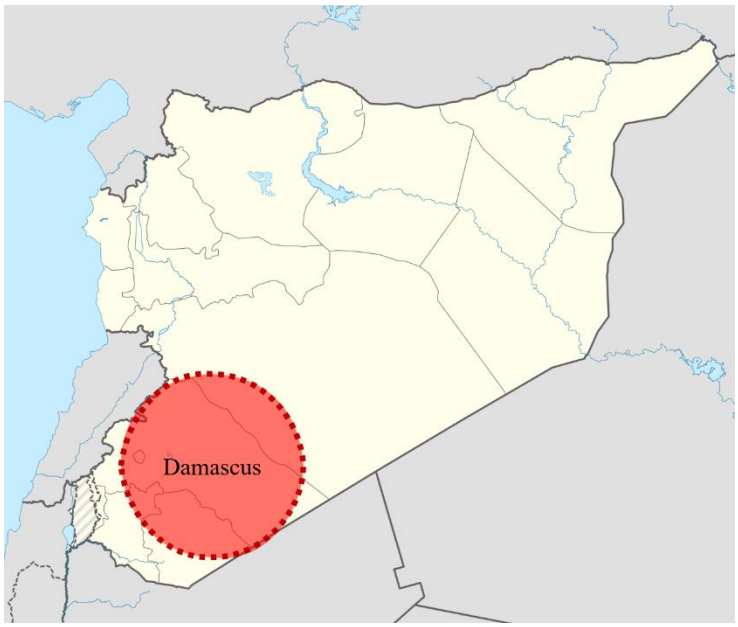


Figure 1.1: Location of Damascus and surrounding study area in Syrian map and colored by Author (Url-1).

1.3. IMPORTANCE OF THE STUDY

Most of the literature reviews cared about historical and descriptive studies. Some studies used an analytical approach but without employing the results in modern and local architecture. Architecture gives each city its personality while in Damascus the modern buildings seem odd from the city. If we want to revive the identity and the authenticity of Damascus city, the architecture of the city should express Syrian morals and architectural values. In addition, improving the built environment and care about climatic treatments and sustainability since it has been applied in old Damascene

buildings. Urban planning affects the city from two sides. Firstly, it impacts the form of the city by distributing the masses of buildings to gain urban style appropriate with city needs (security, economic, social, political). On the other hand, urban planning affects the shape of building both exterior and interior to form the architectural identity that reflects the values and sense of community. The architectural values referred to Islamic legislation principles (Constants). The interaction between Constants (values) and Temporal, spatial, political, social, and economic variables will create specific merits that give the Arab Islamic city its identity (Mousa & Habib, 2013). This research aims to highlight how to revive and reemploy the architectural values and concepts in modern domestic buildings to give Damascus city its glamour and unique style.

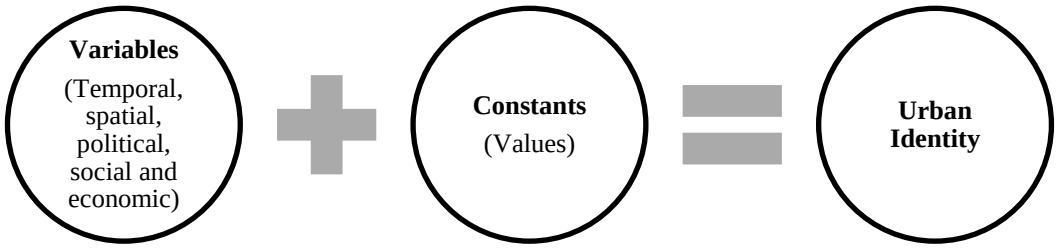


Figure 1.2: Urban identity data from (Mousa & Habib, 2013) and redrawing by Author.

1.4. METHODOLOGY.

This study aims to analyze the Damascene buildings from the Ottoman period since the most remained and unique buildings are from this period. Moreover, providing some local examples that used architectural values and concepts in modern architecture. The methodology of this study will use an analytical approach as a research tool. Through the following four steps:

First Step: Theoretical framework:

- Brief history about Damascus city and its architecture.
- The urban fabric of Damascus city.
- Damascene architecture during Ottoman Period.

Second Step: Analysis and inference:

- Extracting the values and concepts of Ottoman domestic building in Damascus.

Third Step: Practical Application:

- Analyzing contemporary buildings in Damascus governorate and it is surrounding, to investigate the architectural values that applied in these buildings, then to highlight on these architectural values and employ them in the future houses.

Fourth Step: Research Results:

- Includes the main findings of this study and recommendations.

2. DAMASCUS CITY

Damascus is an ancient city of the Syrian Arab Republic, it is the administrative and political capital city, it is located on a hill 690 m high facing the Lebanese mountain (Khlaif, 2018). The land area is 105 km², above sea level 680 m, and divided administratively into sixteen districts (Khlaif, 2018). Next, this research will divide the history of Damascus city into periods to illustrate how each period has affected the city.

2.1. BRIEF HISTORY OF DAMASCUS CITY AND ITS ARCHITECTURE.

Damascus has been inhabited for more than nine thousand years BC according to the excavation in Tal Al-Ramad site near to the city (UNESCO, 2013). The researchers indicate in their books that Damascus is the oldest inhabited capital city in the world (UNESCO, 2013). The Arabic name of Damascus city derives from Dimashka possibly the etymology of this name comes from pre-Semitic (Rabbat, 2020).

The first time Damascus was mentioned by Egyptian hieroglyphic text as T-m-s- q at Temple of Karnak, it was written that T-m-s-q is one of the Syrian cities and Thutmose III has occupied the city on his road to Euphrates (Abdin Y. , 2012). The common name is Sham, while in other Arabic sources they linked Damascus and IRAM THAT AL-IMAD (Colonnaded Aram) that mention in the holy Quran (Rabbat, 2020). Moreover, its popular name is Al-Fayhaa which means the fragrant, this name is gained because of the fresh fragrant of surrounding gardens and orchards (Rabbat, 2020). And recently it called Damascus the city of Jasmine flowers because it contains many Jasmine trees in its neighborhoods and regions, so the smell of jasmine became part of its air (Khudur, 2016).

2.1.1. Aramean Era (From 12th century BC)

The biblical references and Assyrian records mentioned that Damascus became the capital city of an Aramaean in the first millennium BC (Rabbat, 2020). The Spiritual importance of Damascus has increased during that period and in subsequent periods by building the temple of Hudud God (Abdin Y. , 2012). Damascus was an important city in the Aramean period because in this period constructed a distribution

water system that contributes to increasing the population and growth of agriculture (Abu ghazalah, 2019). Damascus remained the center of trade and culture in Aram Syria (Abu ghazalah, 2019). When the Assyrian authority ruled between 732-572 BC Damascus lived A dark age (Burns, 2005). The history never mentioned rather the development in architecture nor urbanism during the Assyrian period (Abdin Y. , 2012). By 572 BC Neo Babylonians controlled all of Syria (Burns, 2005). Later, The city fell into Persian hands in 539 BC (Abdin Y. , 2012), till Alexander the Great's Hellenistic Empire conquered Damascus in 333 BC (Burns, 2005).

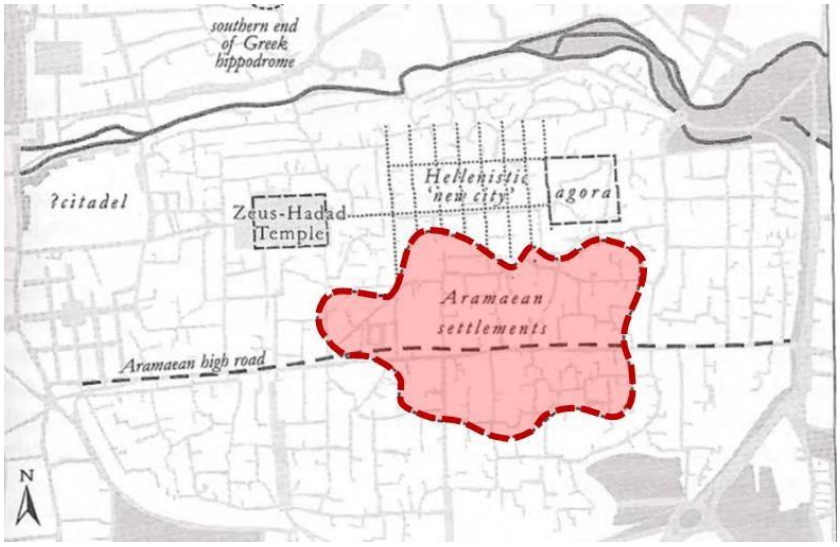


Figure 2.1: Map of Aramean settlements (Burns, 2005).

2.1.2. Greek Era (From 333 BC)

The Greeks reached Damascus and implemented planning methods in the city upon the existing Aramean city (Mansour, 2015). The general planning of Greek cities had the shape of a straight network according to the recommendation of Hippocrates to allow the sun to enter the houses (Waziri, 2004). In addition, each network included two main perpendicular streets in the center of the city, it was called (Agora) and its dimension was 45*100 meters (Mansour, 2015). The Greek Damascus was established within today's old city walls (Lababedi, 2008) figure (2.2). In house design, Greeks used the house with a central courtyard in general and they had two types: The first one central courtyard surrounded by a colonnaded corridor, the second one rectangular

reception hall carried on two columns preceded by an entrance that opens onto a courtyard (Waziri, 2004).

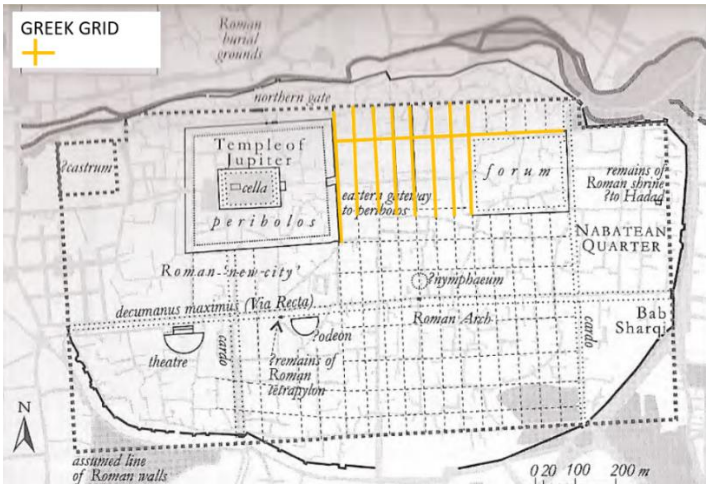


Figure 2.2: Greek Grid of Damascus (Burns, 2005) and colored by Author.

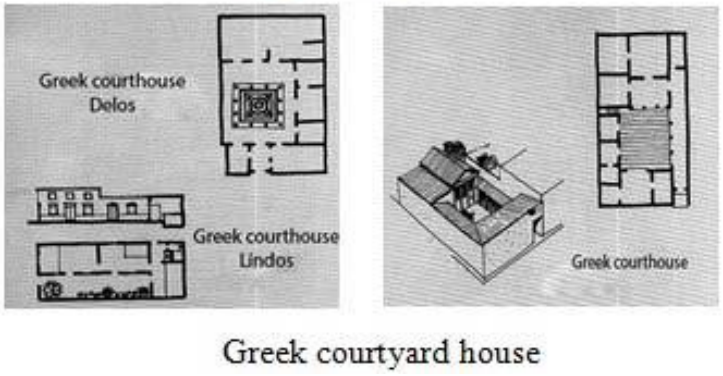


Figure 2.3: Greek courtyard house (Abbas, Hakim Ismail, & Solla, 2016)

2.1.3. Roman Era (From 64 BC)

Damascus in this period witnessed a doubling of population and that led to urban development (Mansour, 2015). Therefore, Damascus expansion was a necessity. New neighborhoods were constructed and enclosed by a fenced area in a rectangular dimension (Mansour, 2015). The city had seven gates, three gates in the north and two in the south and one in the east and the seventh in the west (Abdin Y. , 2012). The most important ones are in the east and the west because they were located on the main axis and are currently known as Medhat Pasha (Mansour, 2015). Also, the Romanians rebuild the temple of the city as a Romanian style in architecture and they called it the

temple of Jupiter (Abdin Y. , 2012). And the planning of the expansion city was constructed like the Greek network (Mansour, 2015).

The Romans used the same style of Greek architecture with some modifications moreover, the Roman house was based on the old Mesopotamian principles, which used the inner courtyard and rooms opening on it without windows from the outside. They replaced the wooden roofs from Greek art by using vaults and arches (Waziri, 2004). In the Byzantine era, nothing changed on the plan of the city. Whereas the temple of Jupiter converted into a church of Saint John and they created new markets (Mansour, 2015).

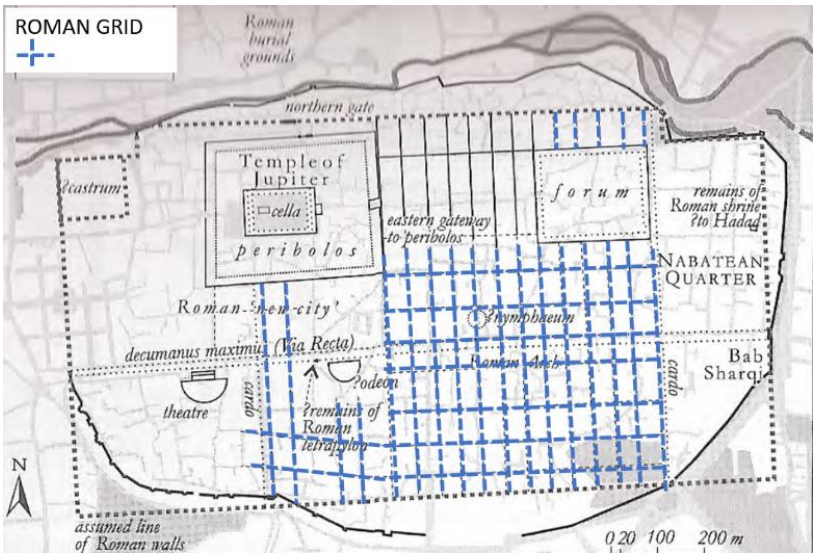
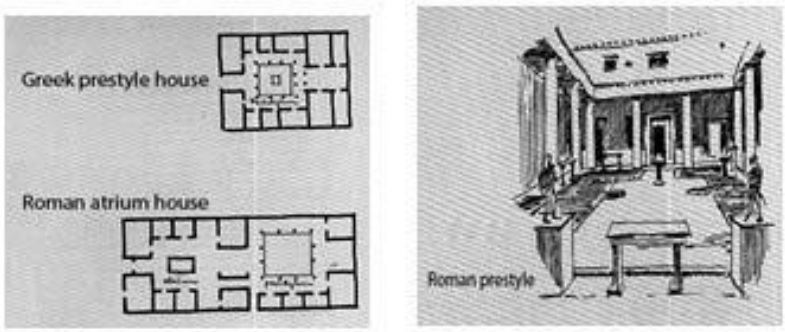


Figure 2.4: Roman Grid of Damascus (Burns, 2005) and colored by Author.



Roman atrium house

Figure 2.5: Roman Atrium house (Abbas, Hakim Ismail, & Solla, 2016).

2.1.4. Umayyad Era (From 661 to 750)

The Umayyad era was the golden period that occurred in Damascus. The city transformed gradually into an Islamic Arabic city. Here Damascus appeared with beautiful style especially when Calipha Alwaleed bin Abdulmalek started his great architectural project by building the big Omayyad Mosque, which is still till these days as a landmark for Damascus (Rihawi, 1969). The Calipha has chosen the place of the Mosque because it had a long majestic history since in this place was built the temple of Arameans God Hudud and then in the Roman era it became the temple of God Jupiter, later it became a church in the Byzantium era (Abdulrahman, 2008).

Figure 2.6: Umayyad Mosque (Abdulrahman, 2008).

After the Urban development that occurred in the Umayyad period, especially in Damascus the capital of the caliphate, in this period the Islamic construction was enormous through building mosques, houses and palaces (Nassrah, 2018).

The Umayyad palaces design confined to the open courtyard surrounded with arcades and enclosed by a huge solid fence without any windows and includes towers and big gates (Nassrah, 2018). The architectural art has been appeared to reflect the test and the values of Islam (Abdulrahman, 2008). The best example of an Umayyad house outside the cities was the western Hier (Alhier Algharbi) (Nassrah, 2018). It is

a huge house surrounded by high fences without openings, in the middle there is a broad courtyard surrounded by an arcade behind this arcade there are two stories contain suites. The Islamic factor was very clear on the design of these palaces and houses, it was closed from the outside while it is opened into the inner side of the courtyard (Rihawi, 1979). The palace contains marbled, stoned columns and wall drawings beside mosaic, inscriptions and ornaments which decorated the main gates (Nassrah, 2018). In this period, they had a feature in their palace buildings since they make the main facade of the palace oriented toward Qiblah (Makka). On the contrary, Mesopotamian architecture depends on angle orientation (Nassrah, 2018).

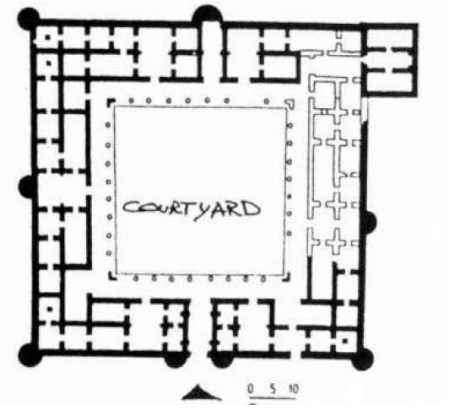


Figure 2.7: Plan of Qasr AL-Hier AL-Gharbi (Western Hier Palace) (Behsh, 1988).

Figure 2.8: Main Gate of Qasr AL-Hier AL-Gharbi (Western Hier Palace) (Url-2).

2.1.5. Abbasid Era (From 750 to 968)

The Caliphate moved to Baghdad (Iraq) in this period. There were many changes that occurred on social, economic and political factors all these factors added new concepts on the buildings, their materials and their function (Kibrit, 2000). The best instance that gives us a realistic idea about the Abbasid house is Al-Ukhaider Palace that built during the Ruler Almansour period (Rihawi, 1979). We can find individual houses and in the center, there is a huge palace, the house consists of a courtyard and two suites, each one includes a broad hall like Iwan, on its sides there are two rooms (Rihawi, 1979). These rooms opened on the Iwan and then another opened on an arcade or the courtyard directly.

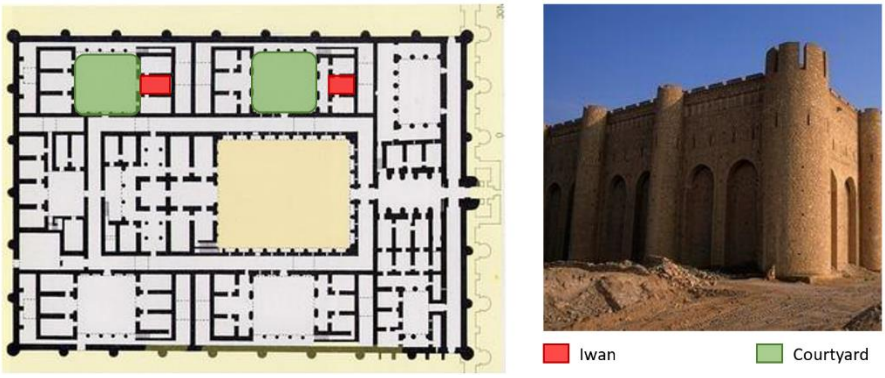


Figure 2.9: Palace of Al-Ukhaider – Iraq (Al-Hafith, 2014) and colored by Author.

2.1.6. Fatimid Era (From 968 to 1075)

The historian Ibn Al-Jawzi said Damascus wasn't working well under the Fatimid ruling because of social and doctrinal differences, most of Damascus dwellers left the city and the prices of houses became very low (Kibrit, 2000).

2.1.7. Seljuk Era (From 1075 to 1174)

People were more comfortable than in the precedent period, Sunni doctrine was prevalent since the Seljukian entering the city (Rihawi, 1972). The Seljukian prevented the occupation of Crusaders on Damascus (Rihawi, 1972). The most important characteristic of buildings in this era has contained Iwans with vast stoned vaults, opened on the courtyard from three or four sides (Abdulrahman, 2008). The Iwan plan derived from houses of Khurasan, this is why in the beginning it was applied in the Madrassa (Rabah, 2003). Sassanians used also the Iwan as a vestibule leading to the domed ceremonial hall (Rabah, 2003). The Iranians adopted the symmetrical cruciform plan (A central courtyard surrounded by four Iwans) practically in all their public buildings. This model can be traced back to the Parthian period (Herzfeld, 1942). The best example of Seljuk architecture in Damascus is Bimaristan Al-Nuri (Al-Nuri Hospital). At that time, stalactites were used for the first time. As an ornamental and architectural element especially in the corner of the domes to move from square shape to circle shape(pendentives) (Rihawi, 1972).

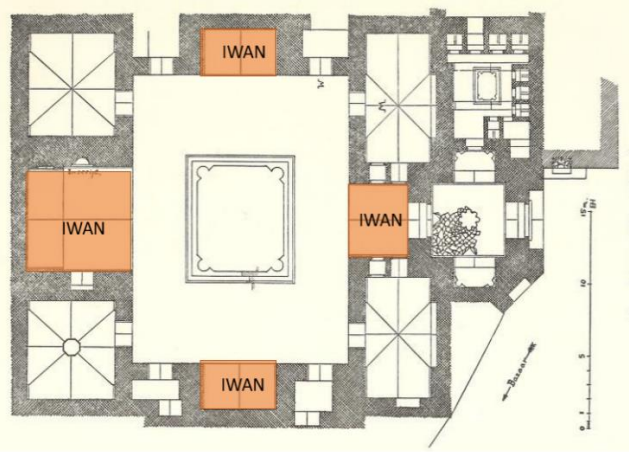


Figure 2.10: Plan of Bimaristan Al-Nuri (Al-Nuri Hospital) (Herzfeld, 1942)

Figure 2.11: The Entrance of Bimaristan Al-Nuri (Al-Nuri Hospital) (Herzfeld, 1942).

2.1.8. Ayyubid Era (From 1174to 1259)

Damascus was coming back to the international news as the capital of two great leaders Nour Aldeen and Salah Aldeen, in this period Damascus has a great and special place of glory and prosperity (Rihawi, 1979). The architectural movement was very activated in this era especially by expanding and renewing the rampart of Damascus, building castles, Hans, Mosques, baths and domed tombs (Yaghi, 2011). Many schools and houses were built for the first time in this style (Rihawi, 1979). This amount of novel buildings with different functions needs more new additions to the prevalent architecture (Abdulrahman, 2008). It was common to build a courtyard with a rectangular fountain and this courtyard was surrounded by Iwans excluding the niche place (Abdulrahman, 2008). The general plan of the schools was similar to houses, courtyard with a central fountain, surrounded by halls and Iwans, in the upper level there are a group of rooms (Rihawi, 1979). The most popular schools in Damascus were houses in the past (Rihawi, 1979). The plenty of ornaments, in general, was a special characteristic of Islamic Art, while the Ayyubid buildings used the least of decorations (Waziri, 2004). It was rare in the facades and almost used in the entrances by using stalactites or colored stones (Waziri, 2004). The roofs are mostly covered by groin vaults or pointed dome which was the most important and prevalent element in the Ayyubid architecture (Abdulrahman, 2008). In general, Ayyubid used many forms of pointed domes. However, in Damascus dome was distinguished by its grooved shape (Abdulrahman, 2008). The end of the Ayyubid period happened when Mongols

arrived in 1259. Then the Mamluk Alsultan Qutuz force them to get out of the area after winning the Ain Jalut battle (Rihawi, 1979). One of the best examples of Ayyubid buildings in Damascus is Al- Madrassa Al-AdilIya, It should be noted that the decoration and the art are absent from the architectural details, It was replaced by solidity and massive, which give the impression of dominance and power (Abdulrahman, 2008) figure (2.12) and figure (2.13).

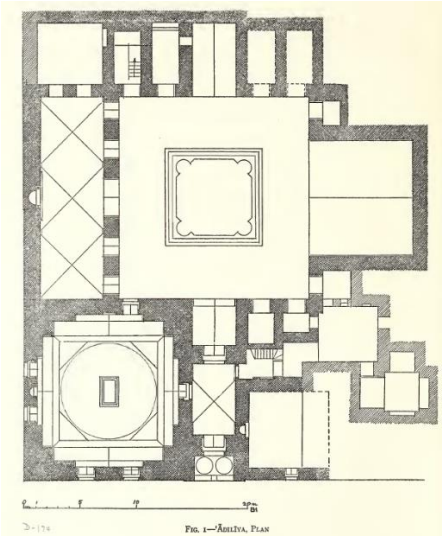


Figure 2.12: Al-Madarssa Al-AdilIya (Herzfeld, 1946).

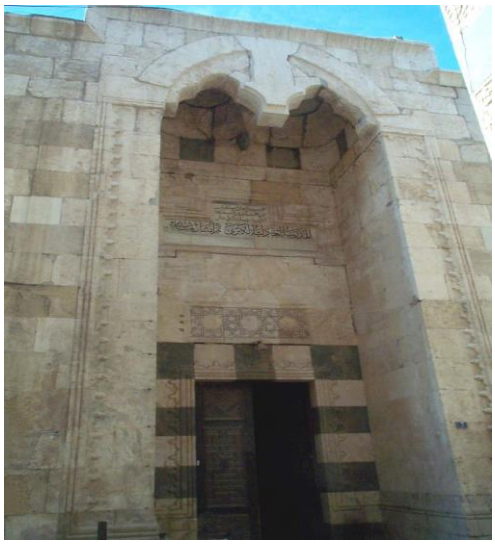


Figure 2.13: Al-Madarssa Al-AdilIya (Abdulrahman, 2008).

2.1.9. Mamluk Era (From 1259 to 1516)

Sultan Al-Zaher Bibars has built his palace (Alablaq) in Al-Maydan Al-Akhdar later on the surrounded area has built too, in the southern part of this area were two neighborhoods for Mamluk dwellings (Rihawi, 1972). Architecture during Mamluk rule became more intensive and this prompted them to shrink the building's area than the precedent period (Abdulrahman, 2008). The massive buildings weren't common during the Mamluk Period in Syria, only two or three mosques like Tenkiz and Yalbugha Mosques. Moreover, the courtyard was removed from some mosques and madrassas or covered in others (Waziri, 2004). Buildings become resemble each other without eliminating the influence of local currents in the city (Yaghi, 2011).

The facades of buildings were covered by two colored stones, to form a special style called (Midamic). And they added decorations with colored stones called mosaic

(Rihawi, 1979). Entrances of buildings were higher and more luxurious than before, in the top, there is a semi-dome ornamented by stalactites (Rihawi, 1972). One of the Mamluk houses in Damascus is Al-Kawa house figure (2.14) with two floors contained a courtyard and Iwan (Fayyad, 2018). The materials of the house were calcareous stones and basalt, once the Iwan in Mamluk house wealth of decoration especially using a series of geometrical forms to create small niches from calcareous stones (Fayyad, 2018) figure (2.15).

Figure 2.14: Plans of Al-Kawa House (Fayyad, 2018) and colored by Author.

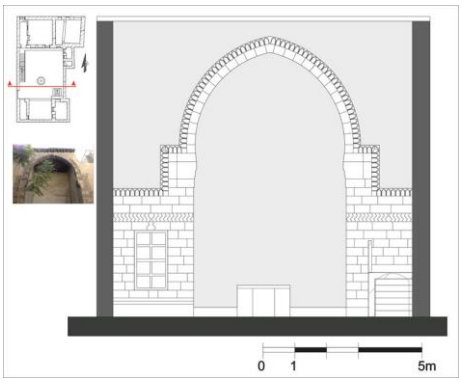


Figure 2.15: Section in Iwan of Al-Kawa House (Fayyad, 2018).

2.1.10. Ottoman Era (From 1516 to 1918)

The first century of Ottoman rule carried prosperity to Damascus and the population grew in the city (Agoston & Masters, 2009). Moreover, Ottoman Sultans cared about Damascus and its architecture which is why it became a masterpiece in architecture (Abdulrahman, 2008). The urban form of Damascus derives from a combination of different architectural traditions and settlement models. Furthermore, the final structure form of its urban fabric occurred during the Ottoman period (Neglia, 2012).

In Damascus, Ottomans combined the Turkish style that derived from Istanbul with local Damascene elements to form a harmonious beautiful style (Abdulrahman, 2008). When Alsutan Salim I entered Damascus in 1516, people welcomed Ottoman sovereignty for their reputation in winning, power and justice (Kibrit, 2000). In this period Damascus had specific importance because it was the center of gathering the Pilgrims from all Ottoman countries and built caravan for pilgrims (Lababedi, 2008).

Sultan Suleyman placed his imprint on Damascus by constructing Takiyya Al-Sulaimaniyya, which was designed by the famed architect Sinan (Agoston & Masters, 2009). Furthermore, Ottomans cared about the palaces and houses by keeping the same principles of Damascene design by closed outside and open inside (Kibrit, 2000).

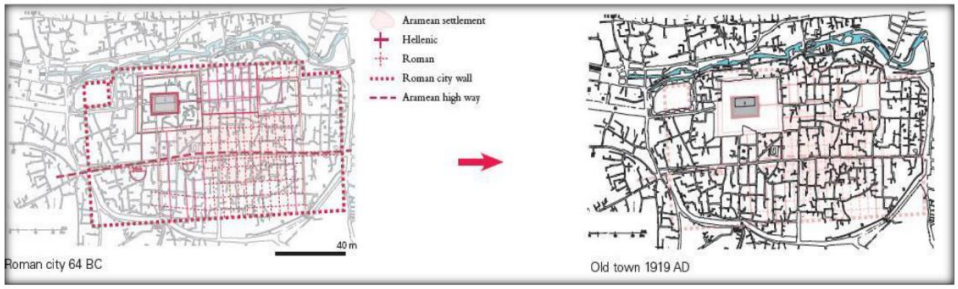


Figure 2.16: changes of Damascus plan between Roman and Ottoman period (Eissa, 2015).

The evolution of architecture in Damascus during the Ottoman period occurred as follows:

2.1.10.1. The 16th And 17th Centuries

In the first four decades of the Ottoman period, Damascene architecture followed the still pre-established models that had developed mainly during the Ayyubid and Mamluk periods (Weber, 2007). The central dome covering the square room of a prayer-hall in a Damascene Mosque was used for the first time in the Zawiya of Al-Sumadi which was constructed in 1527 (Weber, 2007). However, the famous architect Sinan designed Al-Takiyya Al-Sulaymaniyya 1554-1955 in Damascus during the rule of Sultan Suleyman the magnificent (Hakky, 1995). Although it was designed by architect Sinan the supervisor on the construction was Molla Agha the Iranian builder (Hakky, 1995). This building had a special process of introducing Ottoman architecture and techniques (Weber, 2007). Al- Takiyya Al-Suleymaniyya in Damascus is considered the finest piece of Ottoman architecture in Syria (Hakky, 1995). The architectural features of these buildings are the buttressed central dome of the Mosque, pencil-shaped minarets, pointed arches, ceramic tiles (Weber, 2007). One more feature in Al- Takiyya is the situation of two main gates, since their location on the east and west sides is ideal, once the placement of gates allows the continuous flow of circulation from the open green areas to the Mosque and then to the old city (Hakky,

1995). Local builders were inspired by Al-Takiyya building to incorporate new principles, forms and decoration (Weber, 2007).

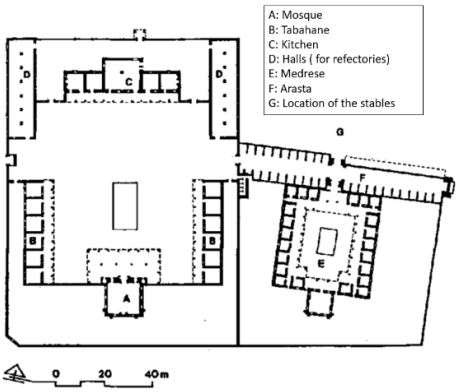


Figure 2.17: Plan of Takiyya Suliymaniyya (Hakky, 1995).

Figure 2.18: General view of Takiyya Al-Suliymaniyya (Url-3).

2.1.10.2. The 18th Century

In this period the country was ruled by local rulers under the Ottoman patronage and they built bulky buildings from Hans, Hammams, Madrassas and Mosques (Abdulrahman, 2008). When Al-Azm family ruled the city, most of their newly constructed buildings were palaces and massive houses (Abdulrahman, 2008). The style of the 18th century is an evolution of the 16th-century style by using domes in Khans (Weber, 2007). The best example of Khans in Damascus is Khan Asaad Pasha al-Azm 1751-1753 covered by nine domes while the central dome is Opened (Url-4). The domes have wooden and frescoes ornaments that are carried on four columns and walls. In the middle of the patio there is a fountain. The patio surrounded by 82 rooms downstairs and upstairs (Url-4).

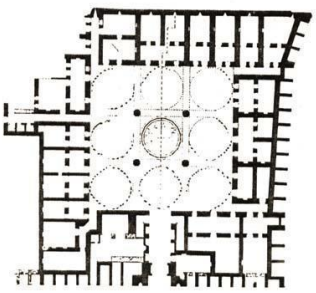


Figure 2.19: Plan of Khan Asaad Pasha al-Azm and the nine domes (Url-5).

Figure 2.20: Khan Asaad Pasha al-Azm and the nine domes (Url-5).

2.1.10.3. The 19th And Early 20th Centuries

In the 19th century, the Urban fabric of Damascus city was almost done. Moreover, the suburbs of Midan appeared to link Damascus with the Horan region and then to Jordan. This road was very important since it was the caravan road toward Al-Hijaz (Matsubara, 2011). The urban transformation concerned all sector of architecture from the public places, commercial and residential architecture (Weber, 2007).

Between the 19th and 20th centuries, the Damascene architecture imported Ottoman Baroque style from Istanbul (Soufan, 2004). In Damascus according to (Agoston & Masters, 2009), building modern urban infrastructure and industries were slower than in the coastal cities of Syria, because of the foreign capitalists and local merchants importing new technologies. Therefore, Damascus gained the reputation of being resistant to rapid westernization. Moreover, in this period the Muslim scholars (Salafiyya movement) took Damascus as home.

Also in Damascene house according to (Weber, 2007) there is a central room that gives access to other rooms like the courtyard. This central room called sofa as known in Istanbul also. This type of house was called Konak as the Turkish name. At that time the Damascene house combined konak style with Arab courtyard then emerged a new type of house and it was very common in Damascus figure (2.21).

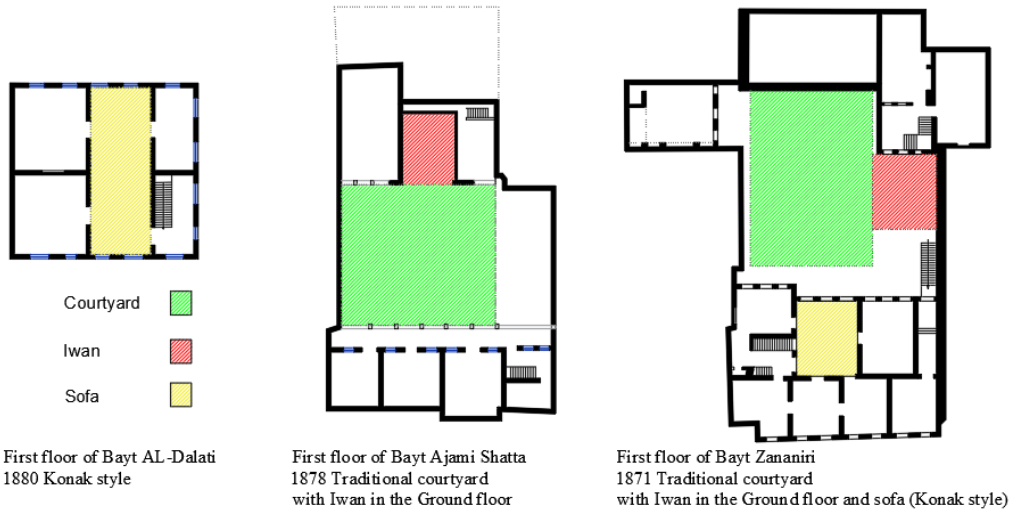


Figure 2.21: Damascene houses typology during Ottoman period by Author.

Finally, at the end of this period, the European style was applied with Ottoman touch by constructing public buildings like Hijaz Station, Tramway administration, and Al-Hamidya Barrack (Damascus University, currently the Faculty of Law) (Al-Hallaq, 2012). And at Harika neighborhood in Damascus, many buildings were built, accordance with the European styles which called Baroque and Rococo (Melnik, 2019). From figure (2.22) we can find the historical development of Damascus since the Roman, Ayyubid, Mamluk and Ottoman periods. As visible from this map how the settlements extended to outside the old city during the Ottoman Period.

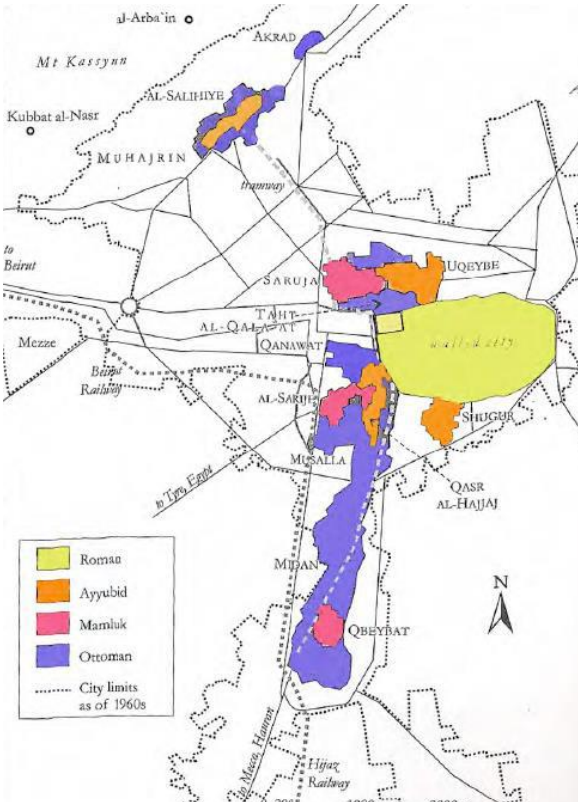


Figure 2.22: Historical Development of Damascus (Lababedi, 2008).

2.1.11. Under the French Mandate (From 1920 to 1946)

The French mandate ruled, after the fall of the Ottoman Empire, between 1920 and 1946 (CORPUS Levant, 2004). They perused the urban reconstruction which had begun around the 19th century (Fries, 2000). In 1926 regulations increased with limiting the jurisprudence and customaries, two building norms had circulated for building planning in Damascus (Abdin & AL-Masri, 2008). The first general planning of the city was issued in 1937 by French architects Dangeh and Ecochard according to

the principles created in 20th C (Abdin & AL-Masri, 2008). Major streets are connected to circular squares to form the minor street to create urban grid fabric (Abdin & AL-Masri, 2008). The architecture and the expansion of the city were influenced by western urban planning, once the European building typologies were prevalent (CORPUS Levant, 2004). Moreover, beyond the traditional boundaries of the old city, a new city was built beside it (CORPUS Levant, 2004). The French had constructed new different projects for the major cities of Syria such as Aleppo and Damascus (JICA, 2003).

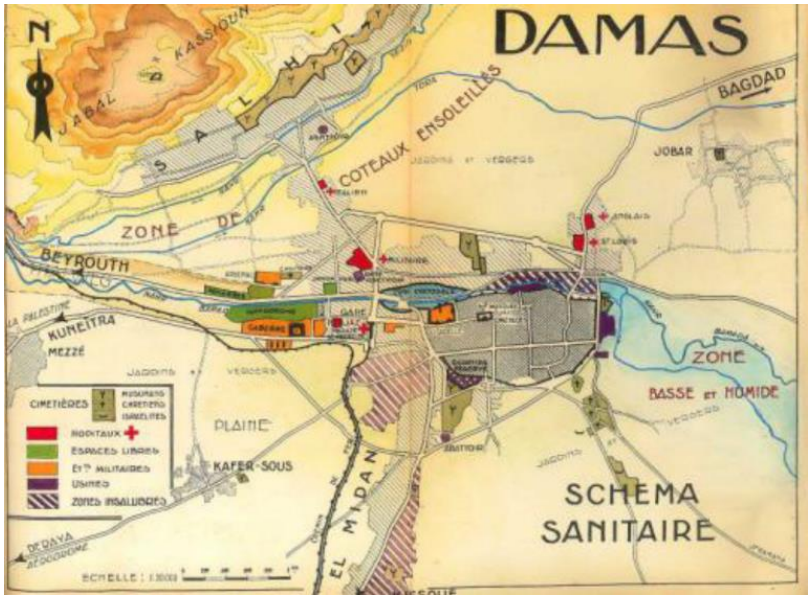


Figure 2.23: Plan of Damascus by Dangee and Ecochard (Abdin & AL-Masri, 2008).

The dwellings of this period represent the transitional phase from traditional architecture to contemporary architecture, and here came the separate dwellings that were opened to the outside and surrounded by gardens and setback distances (Mikhael, 2004). These houses were designed by French or Syrian architects who studied architecture in France (Abdin & AL-Masri, 2008). These dwellings according to (Mikhael, 2004) contained a closed central space called (the sofa), which recalls the function of the inner courtyard within the traditional house, while this space is unable to provide light and air. It also contains a guest room, it is located as close as possible to the main entrance (Mikhael, 2004). In addition, the traditional materials were disrespected and prohibited to use in the construction code, since the factory of cement was established (JICA, 2003). Accordingly, to change the political scene, the French

constructed many types of buildings such as large hotels, three train stations, electric tramways, theaters, street- lights, cafes, hospitals, new schools, and a town hall (Fries, 2000).

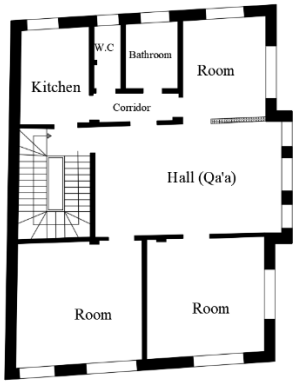


Figure 2.24: Architectural drawing of the repeated floor built during French mandate between 1920-1946, by Author.

2.1.12. From Independence Till The Present

After independence from the French occupation in 1947. The types of dwellings were high residential buildings, and if Damascus was liberated from the occupation, while its architecture did not, and it continues to follow the imported Western pattern (Mikhael, 2004). On the other hand, according to (Saker, 2014) the technological development that took place with time, the old fabric has suffered and distorted increased because it was unable to keep pace with the increasing requirements, since emerging of new elements or buildings, with shapes and patterns strange to the character of the city, and the result was a diverse formative group that is inconsistent with architectural and visual phenomena.

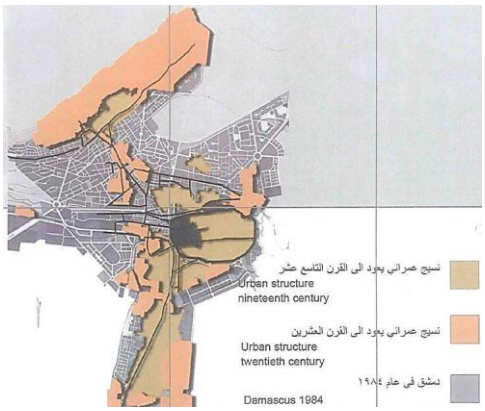


Figure 2.25: The old and new Urban fabric of Damascus city (Saker, 2014).

The development of building codes and regulations that prevailed in this period made a major change in the housing style, in addition to the social and economic developments of society (Abdin & AL-Masri, 2008). Small families were the most dwellers of this type of housing (Mikhael, 2004). Here the dwellings have converged, privacy, and relationship problems with neighbors had arisen. People changed some spaces and adjusted their apartments in an attempt to balance between their built environment and their inherited social values. The most important of these modifications were closing balconies or glazing them, blocking some windows, or using different technologies to preserve the existence of the window on one side and the existence of privacy on the other. (Mikhael, 2004). The inner courtyard was a natural cooler replaced by air conditioners, moreover, the building materials used are concrete blocks, reinforced concrete, glass, aluminum, etc. (Alhawasli & Farhat, 2017).

Figure 2.26: Interventions on Buildings (Alhawasli & Farhat, 2017).

The old city is surrounded from four sides by a group of contradictory uses, including cemeteries, residential slums areas, commercial areas, markets, garbage dumps, and empty landscapes (Saker, 2014). The uses interfered with historic neighborhoods in a way that distorted their appearance and image. (Saker, 2014).

After the Syrian revolution, there is limited evidence available about the situation of housing in Damascus, since the official statistics are not collected and published.

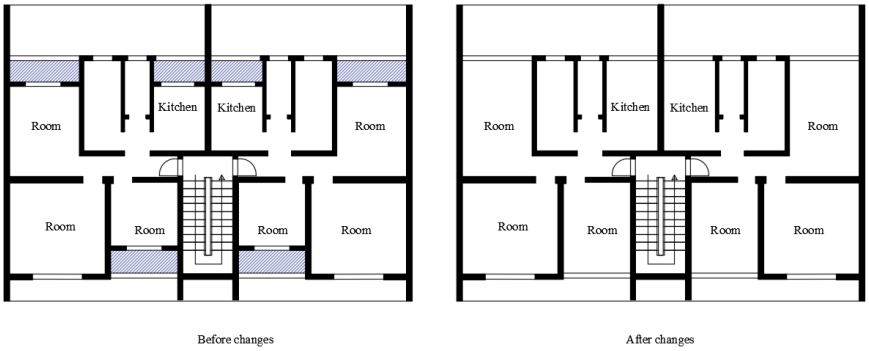


Figure 2.27: Sample of the repeated floor in modern Damascus before and after changes by residents. by Author.

Figure 2.28: General View, a Part of Modern Damascus (Url-6).

2.2. THE URBAN FABRIC OF DAMASCUS CITY

The urban fabric of Damascus composed of old and modern regions next each part will be described separately.

2.2.1. Old Damascus

Old Damascus has an oval shape, its long diameter is about 1600m (Medhat Pasha Street), and its short diameter is about 1000m beginning from paradise gate (Faradis) to the small gate (Saghir) composing on the area of 1.6 sq.km approximately. (Khair, 1969). The old city is surrounded by a Rampart with seven

gates (Bahnasi, 2002). we can conclude the most important landmarks of old Damascus as Table (2-1):

Table 2-1 Most Important Landmarks of old Damascus

Mosques	Rampart and Gates	Citadel	Inns (khan)
Markets	Takeya (school+ residence)	Private mosques (nooks)	Hospitals (pimarestans)
Baths	Public drinking place (Sabil)	Tombs	Quarters (harah), Houses and castles.

Old Damascus planning depends upon closed quarters (Harat). These Harat fulfill ideal residential circumstances for residents of each quarter alone. This urban planning was very clear during the Ottoman period especially, in Hamraoui and Naqqashat quarters (Wulzinger & Watzinger, 1984).

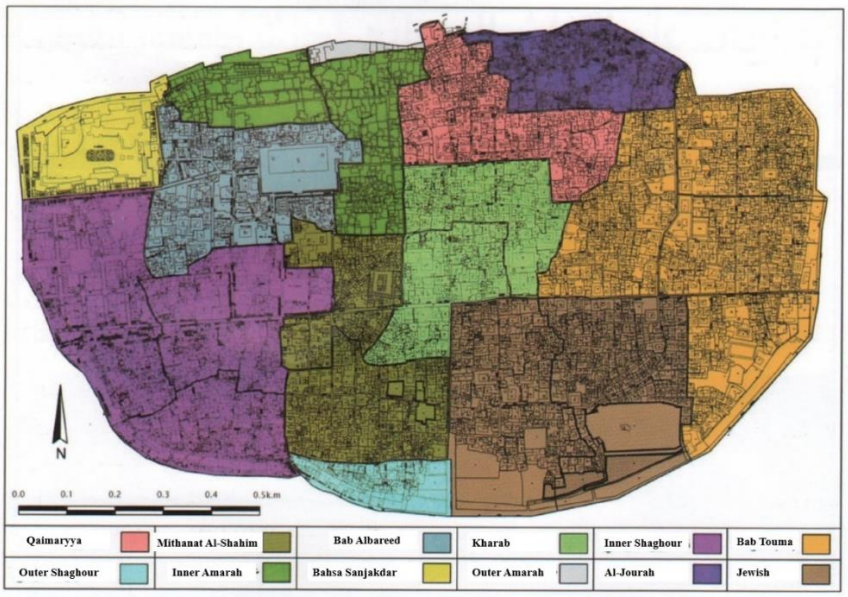


Figure 2.29: Quarters of old Damascus (Yaghi, 2013) translated by Author.

2.2.1.1. Quarters, Houses And Palaces

In the domestic quarters, we can find an unorganized road net, and this feature was linked with the Arab Islamic cities (Raymond, 1991). If we look to the quarters on old Damascus, we will find it consists of a group of compact houses- mostly with courtyards- these compact houses form by their exterior facades, usually solid mass, these facades define the inner street (Kibrit, 2000). In addition, other parts located out the city walled forms maze shape by the bent streets (Khair, 1969). The components that form the quarter according to (Lynch, 1960) definition like the following:

2.2.1.1.1. The Borders

The Damascene quarter has no distinctive borders indeed, even the exterior walls of houses with rare narrow windows form the concept of borders and partitions (Melnik, 2019). Moreover, the entrance of the quarter sometimes is indistinctive and sometimes it is made as a huge arch. However, the inner borders of the quarter it is indistinctive than the other quarters spatially at all, and it is formed by the inner walls of the houses (Kibrit, 2000).

2.2.1.1.2. Passages

They are the lanes that people of the city used to pass. In the quarter we can analyze three components of the Network traffic according to (Lynch, 1960) definition:

- The path (Darb): It forms the main traffic crossroads in the quarter, and from its end connecting with the street's city
- The alley (Zoqaq): It is narrower than the path. It is branching from the path to link with another one or it returned to the same path.
- The dead-end road: This type branching from the alleys to reach the doors of houses. Usually, it is very narrow, therefore, it allowed only two people to pass.

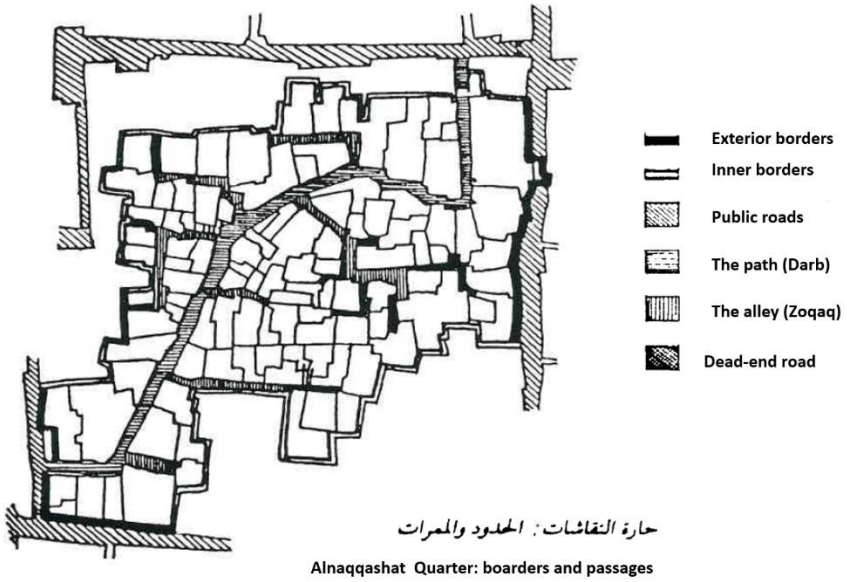


Figure 2.30: Alnaqqashat quarter (Boarders & Passages) (Kibrit, 2000) and Translated by Author.

2.2.1.1.3. Nodes

This type forms by crossed passages or from gathering some services and jobs in one point inside the quarter. In (Kibrit, 2000) nodes have divided into two types within the outer or inner node:

- The outer nodes emerge from the crossing path with the main street. The entrance of quarters was remarkable by big gates closed in the night. On the entrance of the quarter were Mosque or Salsabil or some stores.
- On the other hand, the inner node composes when the alley broader to create open space as a plaza and all the roads come to this plaza, sometimes this plaza emerges in front of Mosque or Bath (Hammam).

2.2.1.1.4. Edifices

These are the landmarks of the quarter, the most important one is the Mosque, School, Bath, Sabil, and Tombs (Weber, 2007). Some of these elements serve functionally the needs of the quarter's dwellings while the others could be more comprehensive like the tomb of custodian, religious corner essential school like in Alnaqqashat quarter (Kibrit, 2000). These landmarks by their expansion, ornamented entrances and very well-designed facades give a type of variation to the solid

elevations of the compact houses (Kibrit, 2000). These landmarks allow people to define the directions from the outside of the quarter because of their height, domes and minarets (Bahnasi, 2002).

Figure 2.31: The old quarter sketched by Author.

Figure 2.32: Part of old Damascus city clarify the courtyards in white areas (Fathi, 1988).

2.2.2. Modern Damascus

The urban planning that was implemented in Damascus city for the last fifteen years had struggles of development. Since the population of the city had been increased, the urban environment deteriorated and lost the urban, social, functional and natural fabric.

According to (Abdin & AL-Masri, 2008) the organizational plan has divided Damascus city into the following regions:

- Regions with an agricultural activity which prohibited to build domestic buildings while it can construct technician farms with two floors.
- Protection areas with agricultural activity: without any type of buildings only to maintain the constructed buildings.
- Inner farms area
- Administration and public buildings areas.
- Green areas for public parks.
- Rural areas.
- Industrial areas.
- Formal domestic areas include Palaces areas, modern dwellings (first level), modern dwellings (second level), modern dwellings (third level), residential areas with commercial usage on the ground floor and commercial buildings.

However, the informal settlement has spread 40% from the area of Damascus residential buildings (Aldahabi, 2016). This case wasn't suitable for the authenticity and historical situation of Damascus. In (Aldahabi, 2016) he has divided residential neighborhoods into four groups as the following:

- First type: Includes the old quarters which is now in the center of the city, therefore, an enormous change occurred on the function of residential activity and converted to commercial, tourism, industrial and crafts activities.

- Second type: Includes the surrounding areas of old quarters, and most of them are built, despite the disparity of construction quality.
- Third type: Neighborhoods that are located far from the center of the city and adjacent to the second type too. It was implemented by organizational planning with specific norms to each area.
- Fourth type: mostly it includes the informal settlements which rely on the facility of the adjacent areas (education, health, sports) beside infrastructure and the services.

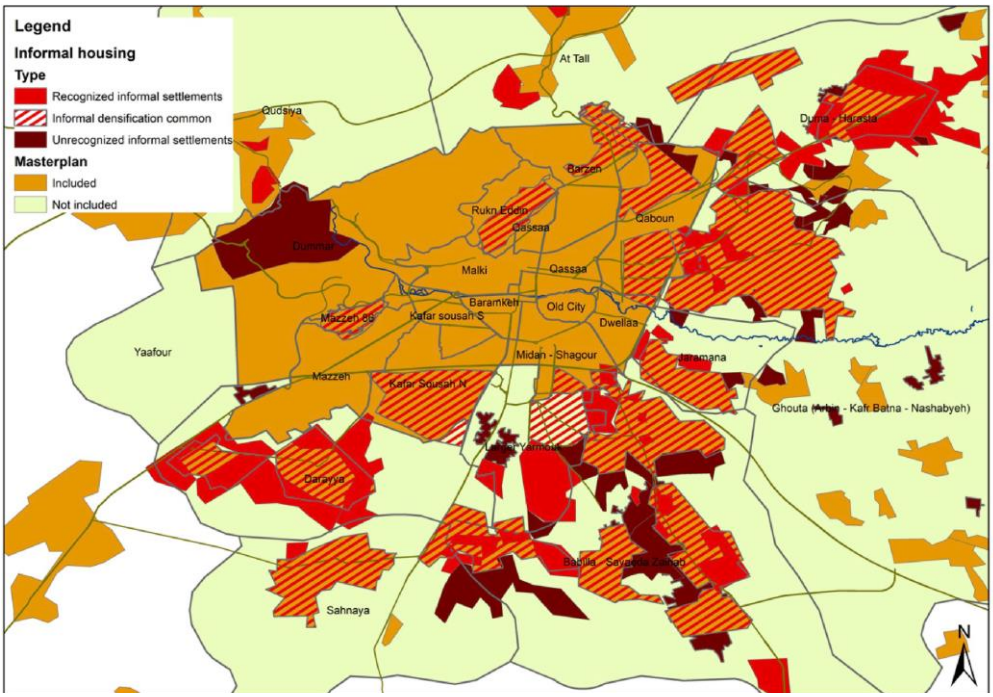


Figure 2.33: Informal construction (with hatch) in Damascus (Wind & Ibrahim, 2020).

When (JICA, 2007) made her report about the facilities of residential areas in Damascus they have indicate to kind of shortage and inadequate distribution as following averages:

- Health facility 3.2 bed to 1000 p.
- Basic education 36 students in each class.
- Secondary education 27 students in each class.
- Green zones 0.19 m2 to each person.

Moreover, the tremendous problem in Damascus is the traffic jam, the network of roads, parking, and public, private transportation systems. However, from figure (2.34) we can find how the borders of Damascus city has changed during 1937-1960-1994.

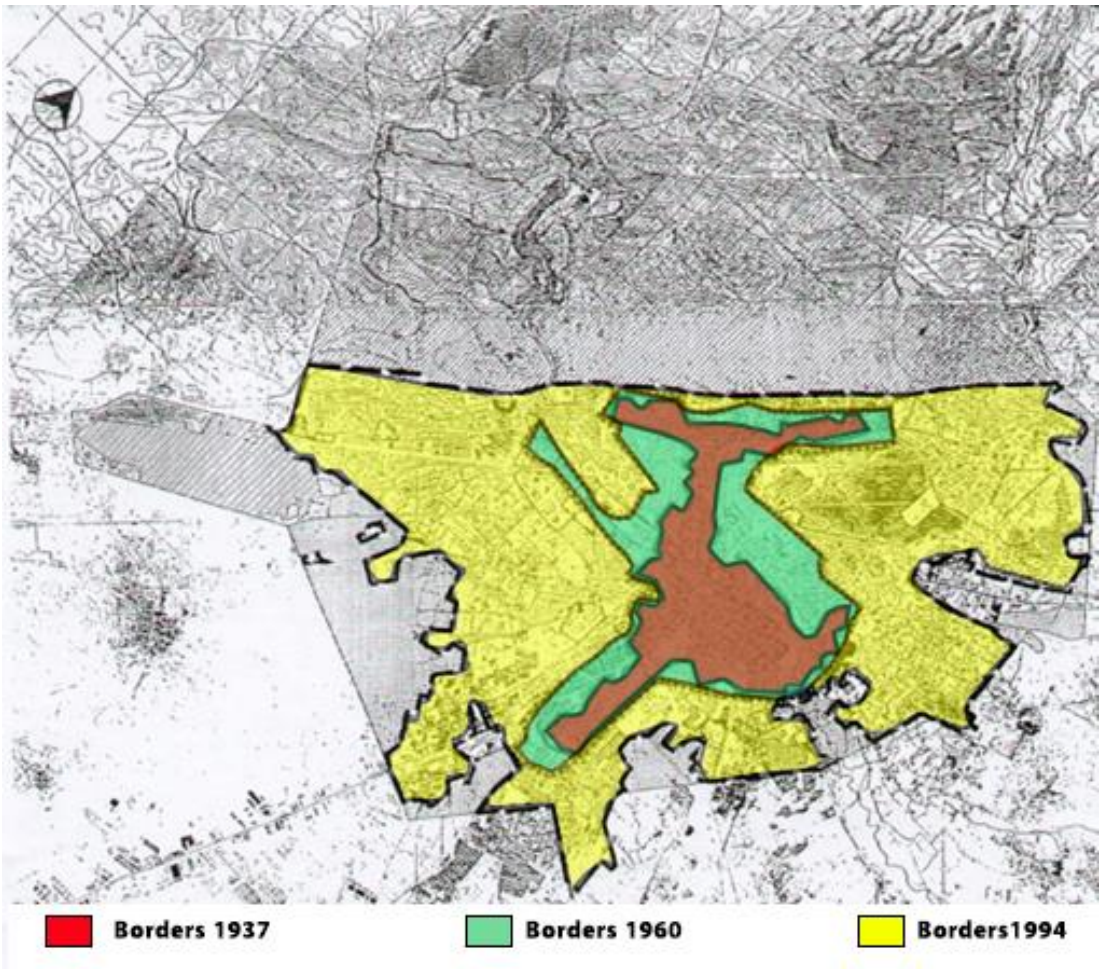


Figure 2.34: Comparison among the borders of Damascus city during 1937-1960-1994 (Damascus university, Faculty of architecture, 2009) and colored by Author.

3. DAMASCENE ARCHITECTURE DURING OTTOMAN PERIOD

Ottoman government and culture left an imprint on the urban centers of Bilad al-sham since they ruled for four hundred years (Agoston & Masters, 2009). Nearly all houses and commercial buildings were constructed during the Ottoman period, many urban centers were modified by the construction of important public buildings during the first one hundred years into the empire and took a different pattern (Weber, 2007). The Ottoman architecture was not specialized only in the mosques but also walls, gates, citadels, schools, hospitals, bathrooms, markets, caravanserais, houses and Takiyyas, etc. (Alafandi & Abdul Rahim, 2013). The Ottoman brought to Syria for the first time the architectural style, that applied to the government buildings from plans to decorations. During this period using of domes in covering was very common especially in religious buildings (Yaghi, 2011).

Real estate legislation and regulations in Damascus dated from the Ottoman rule (Ferwati M. , 1992). In 1839 the Ottoman empire constituted committees to manage the public properties according to its strategy about public buildings to rule the land. In 1879 established municipalities and empower them, the power to regulate the private properties to achieve public services to the city and construct governmental buildings (Abdin & AL-Masri, 2008). The Ottoman enactment issued in 1881 was the most important enactment in real estate legislation and the oldest one to organize the urbanism in Damascus (Abdin & AL-Masri, 2008).

In chapter two, the historical description gave an image of how the Domestic Damascene buildings evolved, starting with the Aramean era ending with the Ottoman era and how the concept of courtyard and Iwan have emerged. And how these elements were essential in many periods. Now to illustrate the Ottoman influence on Damascene architecture in this research, buildings have been divided into two types domestic and public buildings with concentrating on the domestic buildings only.

3.1. DOMESTIC BUILDINGS

Residential buildings are considered one of the necessities of metropolitans. Housing represents an accumulation that reflects the development of the city within its geographical, historical, political, and economic framework (Yaghi, 2011). The city represents the result of the interaction of social, economic, and technical factors within its regional framework and its historical path (Yaghi, 2011).

Chapter two has described the evolution of architecture in Damascus through history, and we can conclude that the expression of courtyard house is basically a human concept despite of the different cultures and continuous evolution of civilization (Raymond, 1991). The Islamic civilization took suitable and compatible aspects of precedent civilizations to expand and extend its own communities (Waly, 1992). Throughout Islamic history, the courtyard was a constant element that characterized all structures (Yaghi, 2011). And it is also a Sunnah as the prophet Mohammad (peace be upon him) built his house in Madinah this is one of the first Islamic residential design (Waziri, 2004). The courtyard was enclosed by walls and a series of rooms built along with one of its sides (Waly, 1992).

The Importance of housing comes from giving the person a feeling of belonging, connection and own privacy (Ibrahim D. F., 2017). Moreover, the house psychologically provides the dwellers with power, courage and it gives them the chance for creation and creativity (Ibrahim D. F., 2017).

Next in this research will explain the general design elements of Damascene house during the Ottoman period.

3.1.1. General Design Elements

The architectural character throughout the ages has always been a true reflection of the urban environment that prevailed in each of the historical stages. This civilization is only the result of many interactions among climatic, religious, geographical, economic and other factors. (Khouli, 1975)

In general Damascene house contains three suites Salamlek, Haramlek, and Khadamlek. In the following, each suite will be described.

3.1.1.1. Salamlek: (Guest Suite):

The first part of the house has specially designed for guests (Yaghi, 2011). It consists of several halls (Qa'a) surrounding the middle courtyard with a beautiful pool and plants (Kibrit, 2000).

3.1.1.2. Haramlek: (Living Suite):

The largest part of the house has specially designed for family living (Bahnasi, 2002). It consists of Iwan (Open living space) facing the main Qa'a (Hall) and several rooms or halls around a wide courtyard with a large beautiful pool and several kinds of flowers, plants and trees (Bahnasi, 1974).

3.1.1.3. Khadamlek: (Service Suite):

The last and smallest part of the house is specially designed for the kitchen, bath, toilet, store, servant's rooms, all around a small courtyard with a small pool (Alafandi & Abdul Rahim, 2013). Usually, it has a separate back entry connected to the stable (Kibrit, 2000). In figure (3.1) we can see the movement of the three suites in Nizam House.

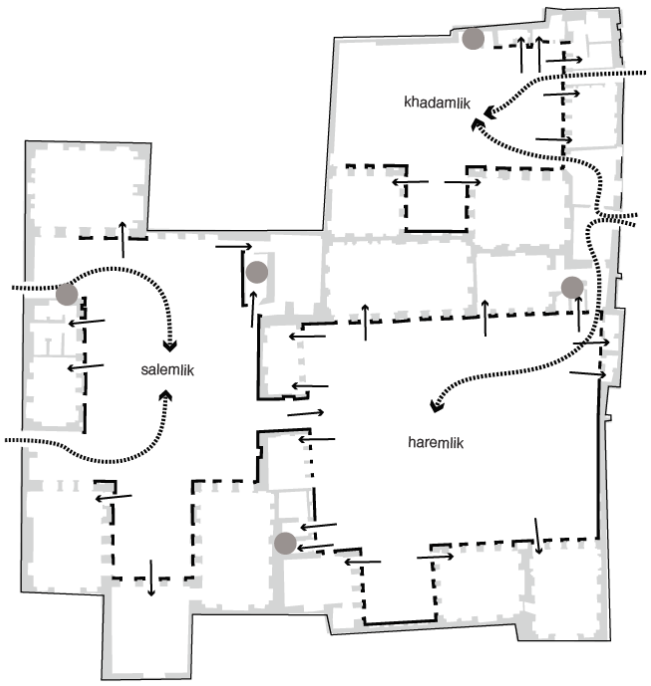


Figure 3.1: The movement on the ground floor in Nizam house (Zeeland, 2013).

3.1.2. The Internal Design Elements

The most important design elements in the interior design of Ottoman Damascene house are: Entrance, Courtyard, Iwan, Qa'a, Kitchen, Bathroom, Toilet, Bedrooms and Flat roof.

3.1.2.1. Entrance:

The Main wooden door having a nice metallic or copper door-latch, sometimes the entrance is through a small minor door as a part of the main door called Khaokha (Al-Shihabi, 1996). An inclined or right-angled corridor leading to the courtyard, or in some examples, there is a small entrance hall leading to the courtyard. Its level is lower than street-level to allow water piping to flow easily (Kibrit, 2000).

Figure 3.2: On the left door's photo of Zain Al-Abideen House and on the right the Entry of Nizam House (Kibrit, 2000).

3.1.2.2. Courtyard:

The first main part of the house represents the family paradise in Summer and Winter. The courtyard area and ornaments differ from one house to the other due to the wealth of the family (Kibrit, 2000). And he added the courtyard has five main functions illustrated by the following figure (3.3).

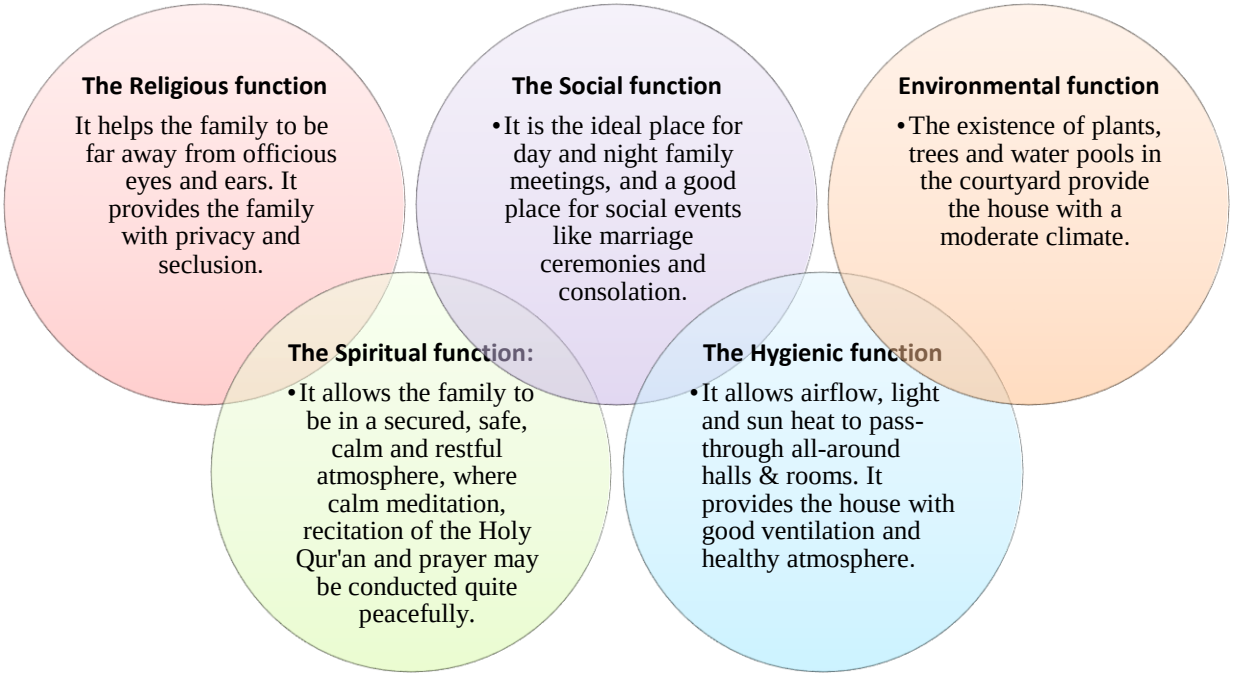


Figure 3.3: Five main functions of Courtyard data from (Kibrit, 2000).

Figure 3.4: Courtyard of Al- Azm Palace (Url-7).

3.1.2.3. Iwan:

The second main part of the house and the open space living area in summer because it faces the north side away from direct sun rays (Kibrit, 2000). In general, the Iwan has the following properties:

It has a squarish plan with a multi-story height, it is located in the north-side direction on the axis of the main water pool (Yaghi, 2011). Its area range between 17 to 30 sq. Besides, the main facade has a high arch with ornamented capitals (Kibrit, 2000). Sometimes, it is at a higher floor level than the courtyard (Kibrit, 2000). Mostly on the right and left, there are halls with glass windows (Bahnasi, 2002). Usually, the ground has ornamented with stones or marble (Bahnasi, 2002). Moreover, the black and white stone covered the lower wall part to form a type called Midamic (Al-Shihabi, 1996). On the other hand, the upper wall part has coated with gypsum plastering. Finally, a wooden ceiling has colored and painted like a carpet called Ajami (Al-Shihabi, 1996).

Figure 3.5: Iwan in Salmlek Nizam House (Url-8).

3.1.2.4. Qa'a (Hall):

The third important part of the house is designed for guest reception, living and special occasions (Ferwati M. , 1992). It may be on the south side of the courtyard to avoid sun¬ rays in summer. However, it may also be on the north side of the courtyard to allow sun rays to pass in winter (Kibrit, 2000). According to (Bahnasi, 2002) Qa'a, may have one Tozor (split level), two Tozor or three Tozor.

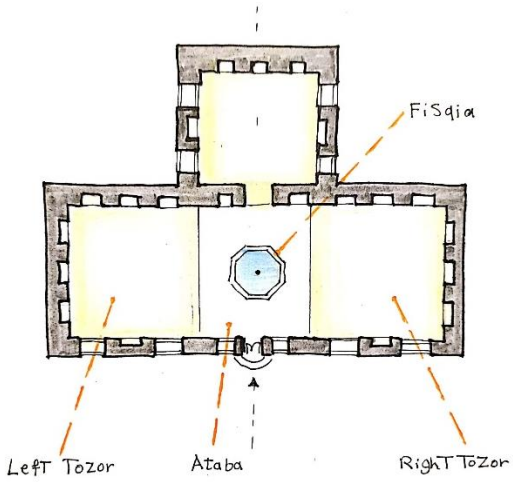


Figure 3.6: A Plan of Qa'a at Mardam Biek House sketched by Author.

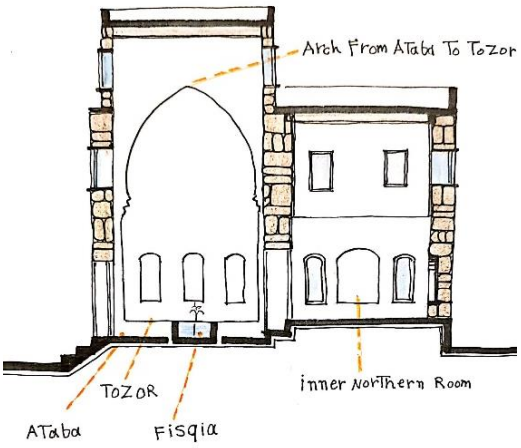


Figure 3.7: Section of Qa'a at Mardam Biek House sketched by Author.

3.1.2.5. Kitchen:

It is usually designed on the ground floor, and sometimes in the basement. In (Kibrit, 2000) the kitchen consists of three main elements:

- Cooking stove (Kanon): Built from burnt bricks, and with a chimney.
- Water pool (Fisqia): To supply water for cooking, washing and cleaning.
- Store: Place for food preservation in the basement under the kitchen, or in the mezzanine, or a room close to the kitchen.

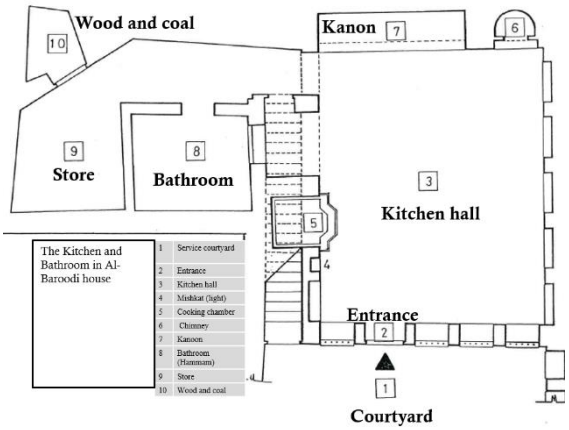


Figure 3.8: The kitchen and the Bathroom at Al-Baroudi House (Kibrit, 2000) translated by Author.

3.1.2.6. The Bathroom:

Rarely found in Damascene houses, because of numerous common and popular baths built to cover all parts of Old Damascus (Abdulrahman, 2008). But it is found in castles and rich houses like Azm palace, Khaled Azm house and Anbar house (Bahnasi, 2002).

3.1.2.7. Toilets:

Usually, built under the stair or in hidden and invisible parts. It has been constructed from stones to conceal the sounds. It's oriented opposite to Qibla direction (Malik & Mujahid, 2016).

3.1.2.8. Bedrooms:

- In summer, rooms and halls on the ground floor are used as bedrooms (Kibrit, 2000).
- In winter, the upper rooms with wide glass windows are used as bedrooms, in order to let sunrays, pass through (Bahnasi, 2002).

3.1.2.9. The Flat roof:

- It is the top roof of the house, usually fenced by iron handrails. Sometimes there is a wooden room with windows on each wall, called Tayyara (Flying room) (Alhawasli & Farhat, 2017). Also, a part of the roof is fenced with high walls, in order to provide privacy for the family, called Mashraqa (Kibrit, 2000).

Figure 3.9: Flat roof of Siba'i house (Url-9).

3.1.3. The Economic factor

For (CORPUS Levant, 2004) the Damascene houses vary in size and luxury level and the inner spaces also alter from one house to another according to the economic factor. Moreover, in (Kibrit, 2000) emphasize these points since Damascene houses have similar outside facades. But the economic factor has a direct effect inside the houses as in the following considerations:

- Courtyard quantity and area.
- Rooms quantity and area.
- Stones quality used.
- Ornamentations quality and quantity used.
- Floor, walls and ceiling finishing quality used.

We can conclude that houses differed due to their owner's richness as follows:

- House with two, three, four courtyards
- House with a single courtyard
- House with small courtyard and rooms

There are many houses that applied the precedent factors; however, the next examples will describe and make the image of Damascene houses clearer.

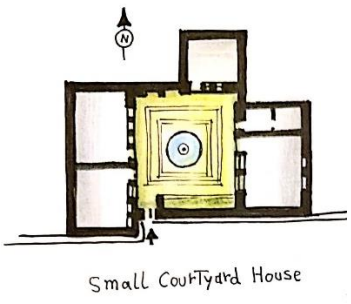


Figure 3.10: Small Courtyard House (Khaldi House) by Author.

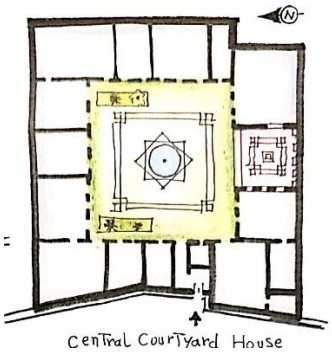


Figure 3.11: Central Courtyard House (Bouqae'i House) by Author.

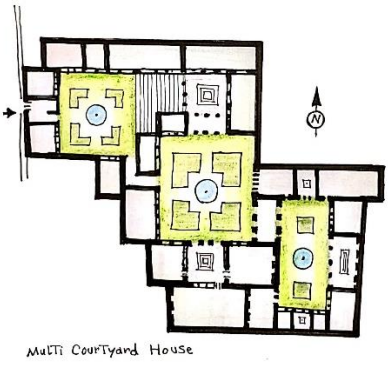
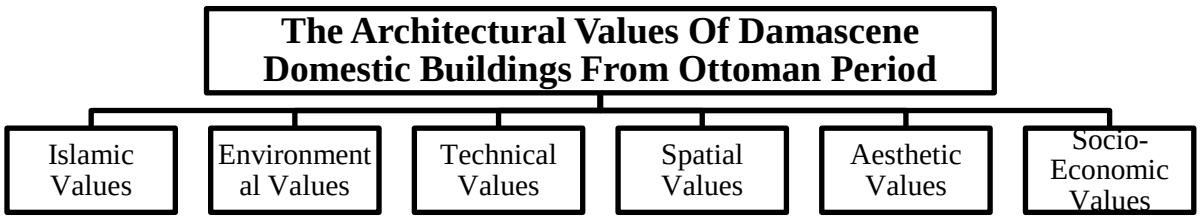


Figure 3.12: Multi Courtyard House (Anbar House) by Author.

4. EXTRACTING THE ARCHITECTURAL VALUES OF DAMASCENE DOMESTIC BUILDINGS FROM OTTOMAN PERIOD

From the former eras, Architecture was a mirror that has reflected the environmental and urban principles. It includes plenty of architectural values that continued overall eras. Ottoman rule has spread on a vast land and a long period. The Ottoman architecture obtained the architectural and Islamic values that passed from period to period in Islamic lands. It developed architecture by emerging new methods in construction and Islamic art. Moreover, added new ideas that reached the Islamic art in the whole world. Next, the following items will be divided into several values to illustrate each one clearly.

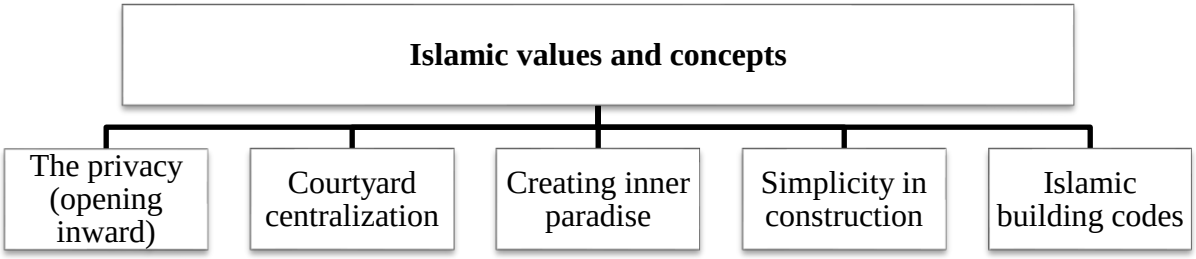
Table 4-1: The architectural values of Damascene domestic buildings from Ottoman period.



4.1. ISLAMIC VALUES AND CONCEPTS

Islamic values were the most important reason that gave the Damascene house its personality by details and basic properties. The form of buildings had social and religious backgrounds because the family in this urban community cared about basic social unity (Yaghi, 2011). Moreover, a man had his belonging to Umma (Muslim community) like his belonging to his family (Khouli, 1975). As stated in (Ferwati M. , 1992) that understanding Islam is essential to appreciate the social-spatial transformation from pre-Islamic to Islamic, furthermore, in Islamic Middle Eastern cities, the traditional built environment has reflected socio-religious principles that form the basis of Islamic ideology. According to former information, we can summarize the Islamic values applied by architecture in the Ottoman Damascene house as the following:

Table 4-2: Islamic values and concepts.



4.1.1. The Privacy (Opening Inward)

As stated in (Ibrahim D. F., 2017) the privacy of the house has two levels, one privacy for each person and the privacy of the family. Moreover, she added that the courtyard links the dwellers with nature. While (Waziri, 2004) indicated that privacy inside the house is to supply calmness, far away from the noise of the street and neighbors. However, The basic mission for women in Islamic society inside her home to prepare the new generation to be the center of a good nation with proper education and benignant morals (Kibrit, 2000). According to (Khouli, 1975), the Damascene house was closed from the outside with thick, high and solid walls. While it was opened in the inner courtyard that contained various trees, shrubs, plants, fountains and ornaments surrounding this courtyard.

In figure (4.1) illustrates the inward-looking of Damascene houses and how this method is implemented on houses differently. Some houses had one courtyard and if the son of the owner gets married the owner expands his house horizontally by adding another courtyard surrounded with rooms, or the expansion could occur vertically by using a courtyard on each floor.

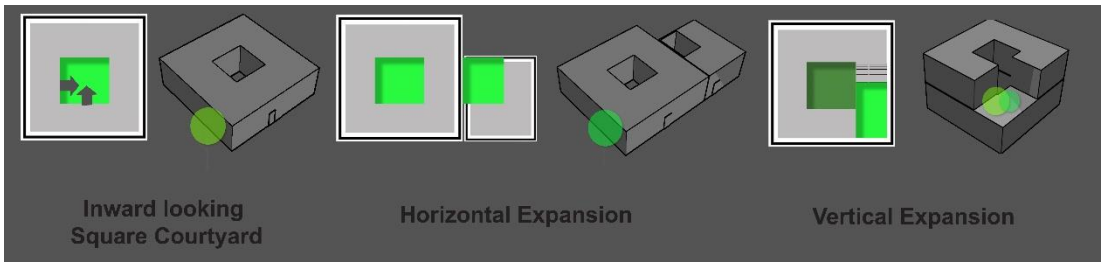


Figure 4.1: Inward looking of Damascene house by Author.

Also, using a bent entrance faces blank wall to achieve privacy, security and to block the vision of the inner dwellers (Amro & Bahauddin, 2015)

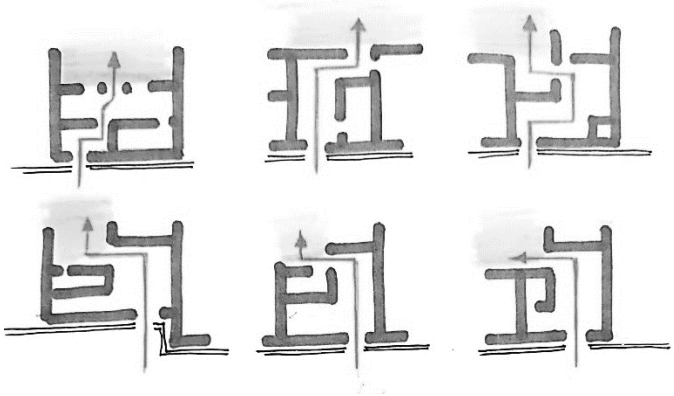


Figure 4.2: Inclined Entrance to provides privacy by Author.

However, windows were very limited from the exterior facade but sometimes to keep the privacy, were covered with wooden lattice screen (Waziri, 2004). And some of exterior windows covered by Masrabiya (Al-Shihabi, 1996). As stated in ((Fathi, 1988) Mashrabiya provides privacy for the residents and at the same time allows them to look outside through it.

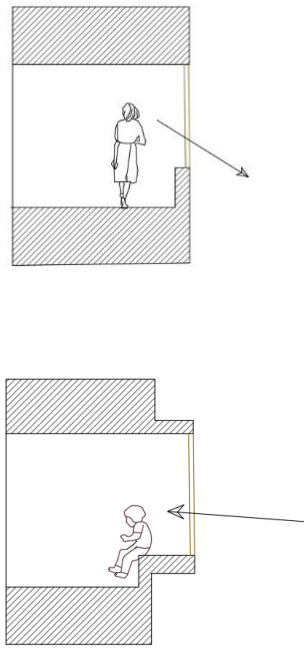


Figure 4.3: Mashrabiyya allows the dweller to look outside without being seen drawing by Author.

Figure 4.4: Type of Damascene Mashrabiya sketched by Author.

4.1.2. Courtyard Centralization

According to (Akbar, 1988) Fina has defined it, as the space on the street next to a property, used exclusively by the residents of that property. Fina differs from its location. If it is located on a wide, narrow, or dead-end street, whether demarcated or not by the owners. In the Damascene house, Fina was in the core of the house mostly. The house has divided into small dwellings inside (since sons of the owner married in the same house then each son will get his own room to become his home). In front of each dwelling (room), there is a Fina. Finally, the big Fina consists of many Finas.

While (Waziri, 2004) defines Fina as it comes in Arabic, it is related to any open space in the house. And he added that Fina means a plaza or the area in front of the house, and the courtyard is the same meaning as Fina, but the courtyard comes in the middle of the house.

Figure (4.5) the red rectangles indicate to dwellings (rooms) in front of each room there is a private Fina to form the biggest Fina which is with green color.

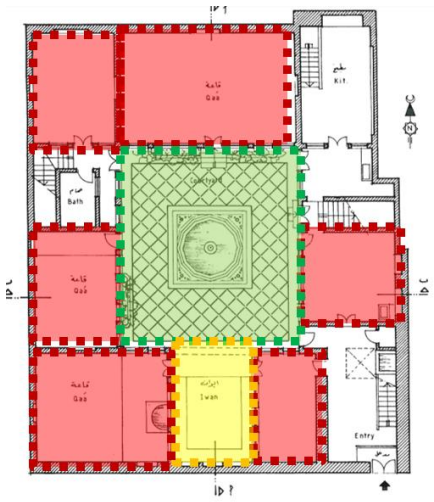


Figure 4.5: Central Courtyard House (Kibrit, 2000) and colored by the Author.

Since Islam cares about the essence, the central courtyard contains all the elements associated with heaven (Ferwati M. , 1992). The shape of the courtyard wasn't fixed because sometimes we can see the rectangular one while the most popular shape was the square one. The Most popular proportion of square courtyard 1/4 and 1/2, While the rectangular courtyard 1/5. (Ferwati & Mandour, 2008)

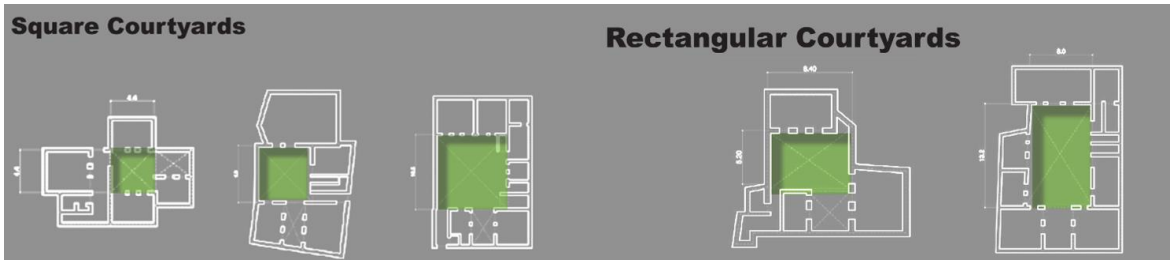


Figure 4.6: Types of courtyard by Author.

In Turkish house also rooms connected by a central hall (Sofa) (Küçükerman, 1973) that is why Damascene architecture inspired from Turkish design and used this feature by creating the central courtyard.

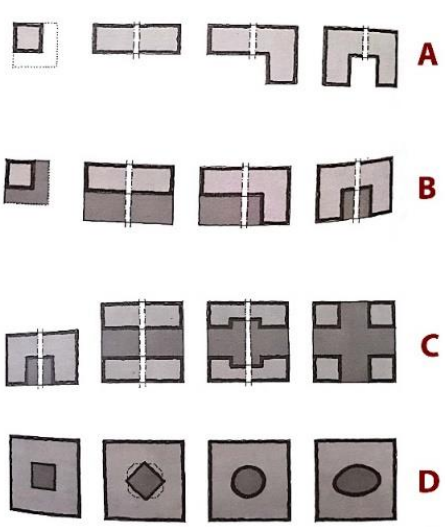


Figure 4.7: Central Hall (Sofa) in Turkish House (Küçükerman, 1973)

4.1.3. Creating Inner Paradise

The courtyard is the first main part of the house (Bahnasi, 2002). It is the family paradise in Summer and Winter. This space was the best place for household chores, a playground for children, ceremonies and social meetings for each family and their relatives (Mikhael, 2004). Some houses have a central courtyard, and some have three courtyards (Bahnasi, 2002). However, The components of the courtyard Iwan, fountain, trees, plants, and sky symbolically represents the Garden of Eden described in the Quran (Ferwati M. , 1992).

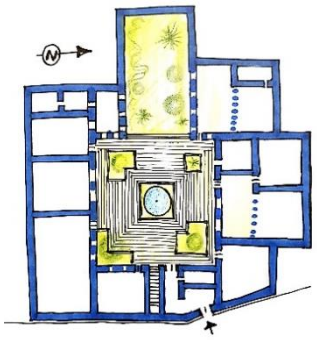


Figure 4.8: The green, water and opening of courtyard in Khurasan house by Author.

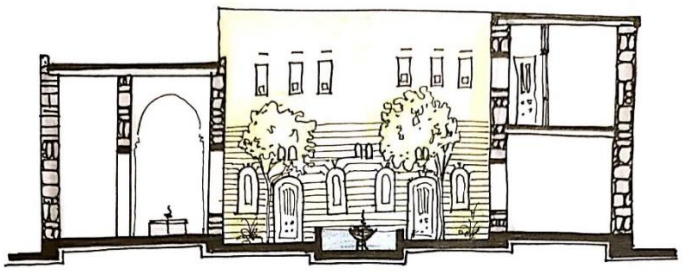


Figure 4.9: Section in Khurasan House to illustrate the details of inner walls (Small paradise) by Author.

4.1.4. Simplicity In Construction

The simplicity of the Damascene building will be clear from the exterior facades of each house while, from the inner side it was rich with ornaments (Melnik, 2019). Although Damascene houses were very simple from exterior facades, the Damascene architect tried to play with harmony by cantilevers and masses to create shadows on the walls (Kibrit, 2000). What we see from big openings on the street is an odd habit in Islamic house (Al-Kodmany, 1999). The simplicity in construction wasn't only for modesty but also to assure privacy since the exterior windows -if available- were small and higher than the pedestrians (Ferwati M. , 1992).

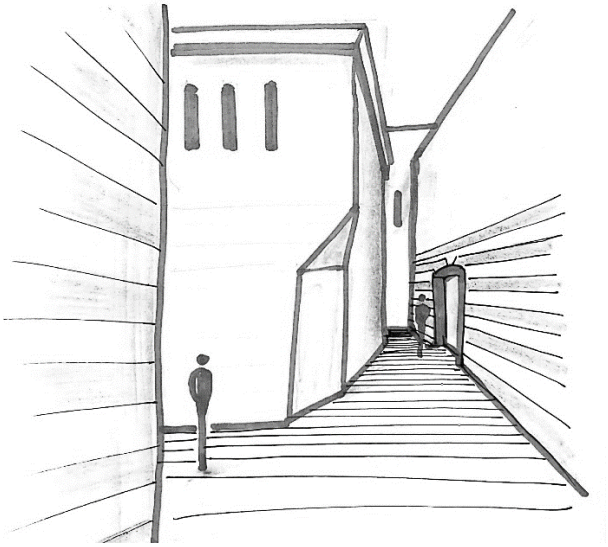


Figure 4.10: Simplicity exterior facades sketched by Author.

4.1.5. Islamic Building Codes

According to (Akbar, 1988) for maintaining the privacy of the women in each house, they made the windows from the exterior side higher, limited and smaller. In addition, according to Islamic principle, neither darar nor dirar (neither harming nor reciprocating harm) the owner of the house should think about his neighbor's privacy also so when there are windows from the outside, one of the methods to keep the privacy of each house by locating windows where the eye cannot penetrate the privacy of other neighbors. Not only windows shouldn't face each other but also Houses' Entrances. This method was used in all types of the street the dead-end street and continues street. figure (4.11).

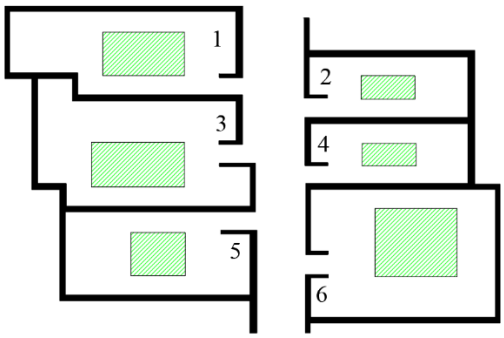


Figure 4.11: Locating of houses doors by Author.

Then, (Akbar, 1988) added about the rights of owners, when there are two houses without windows. The first house that will open a window, the right will be with him according to Islamic legal. And the owner of the other house couldn't complain because he doesn't have a window on this side before.

Figure 4.12: Damascene house windows from the outside. (Url-10).

Figure 4.13: On the left dead-end street and on the right continues street. (Url-11).

Sometimes in old Damascus, there is Sibat (Overpass) figure (4:15). For (Akbar, 1988) The height of Street works by the principle of damage. If the road rise, the owner of this overpass has two options first one is digging the road and the second one is demolishing the overpass (Sibat). However, if the digging will cause damage, the owner should demolish the overpass. If the owner demolishing the overpass his neighbor can build a new one and it will be his property. So, the property of this space will remove by demolishing the overpass.

Figure 4.14: Damascene Sibat (Overpass) (Url-12).

Now starting with the entrance of the house, we can note that the entrance mostly wasn't open to the courtyard directly. For (Malik & Mujahid, 2016) using bent entry to facilitate the private approach into the house. And most of the entries were right angles linked with the courtyard to keep the privacy figure (4.15).

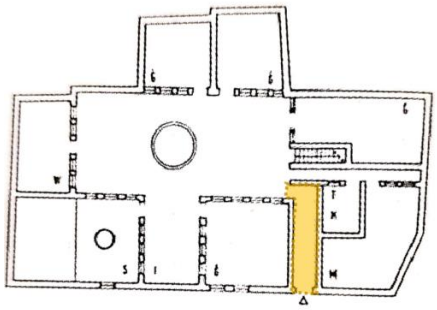


Figure 4.15: The right-angle entrance in Alshatta house (Bahnasi, 2002).

Who Controls the courtyard? If we suppose there is a house and there are two brothers who want to divide the house between them by building a wall in the middle. According to (Akbar, 1988) there are two opinions about the ability to build on the courtyard and join its property.

- It is disallowed, if it prevents people to pass from the courtyard.
- It is allowed, if it is not harming the passers or narrowing the passage.

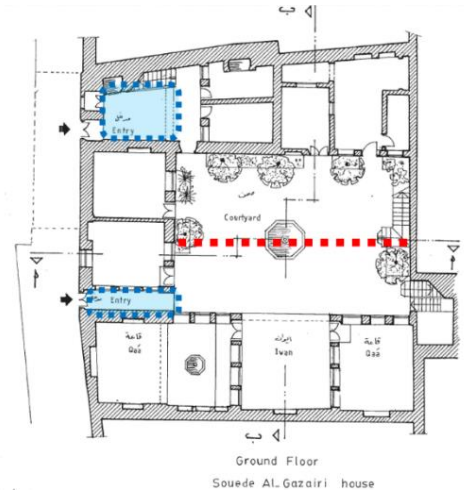


Figure 4.16: Control of courtyard (Kibrit, 2000) and edited by the Author.

As stated in (Kibrit, 2000) the orientation of the Damascene house was toward Makka (Qibla), the most important rooms were oriented toward Qibla which means to the southern direction, and this direction gives easiness for the prayer in any part of the house. In some rooms there are different levels in Damascene house, sometimes appears in Iwan and Qa'a (halls) to avoid ground humidity and to obtain a clean space,

where the higher level disallowed to stepped-on by shoes, to keep the room clean as Islam called.

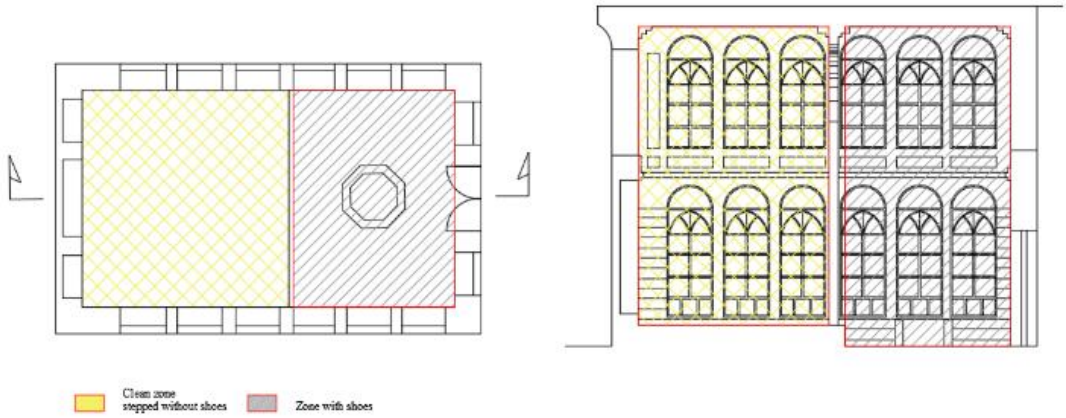


Figure 4.17: Qa'a (Hall) with different levels drawing by Author.

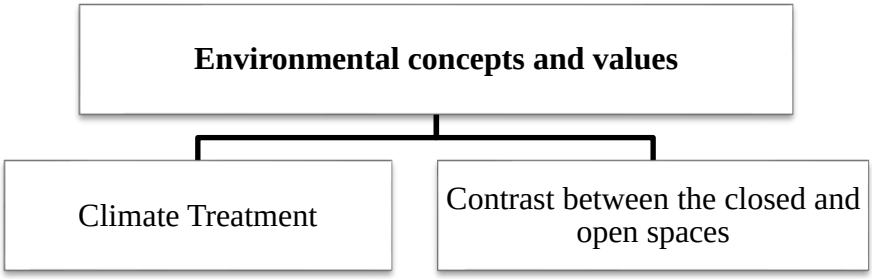
For (Ferwati M. , 1992) the ornaments in all Damascene houses have designed to conform with the principles of Islamic legal (Shari'a), which prohibited living features, images or carved statues. The decoration of the Damascene house focuses on calligraphy and arabesque arts. By these styles, the Muslim artist expresses a sense of unity and his art becomes part of the Muslim identity. Moreover, Damascene craftsmen presented plants, geometrical and calligraphic ornaments in fascinating designs on courtyard facades, doors, windows, ceilings, and walls of the halls (Kibrit, 2000).

Figure 4.18: Islamic inscriptions (Azm palace) (Url-13).

4.2. ENVIRONMENTAL CONCEPTS AND VALUES

The vernacular architecture in general cares about the environment. Consequently, when we are diving into Damascene architecture, we will discover that most modern architectural terms have been applied from the past. The next items will explain the treatments executed by the old Damascene architecture during the Ottoman period to achieve the environmental concepts.

Table 4-3: Environmental concepts and values.



4.2.1. Climate Treatment (Climate Control)

Damascus is approximately 800m above the sea level. It has a Mediterranean climate with hot-dry summer and cold-rainy winter (Kibrit, 2000).

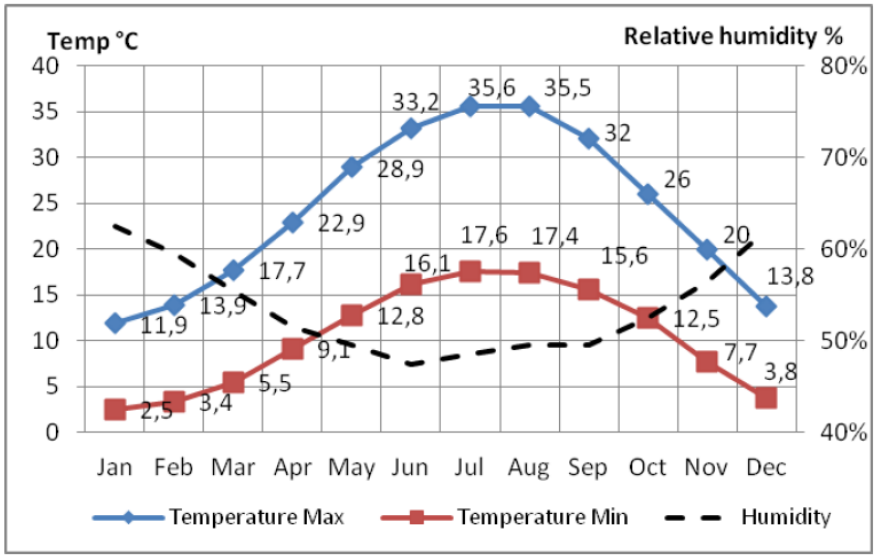


Figure 4.19: Temperature and humidity in Damascus (period 1961–1990) (Yahia & Johansson, 2014)

Hence, the Damascene builder did his best to prevent and isolate his house from the outside effects through the following procedures:

4.2.1.1. Urban Planning

- Compact solutions to have large shading areas (Bahnasi, 2002).
- Roofing and narrowing the passages to protect the pedestrian from sun heat (Al-Kodmany, 1999). In addition, for (Waziri, 2004) the height of adjacent buildings leads to provide broad shadings for the roofs.
- Inclining and bending the passage to protect from dusty winds (Khouli, 1975).

Figure 4.20: A street at Hara sketched by Author.

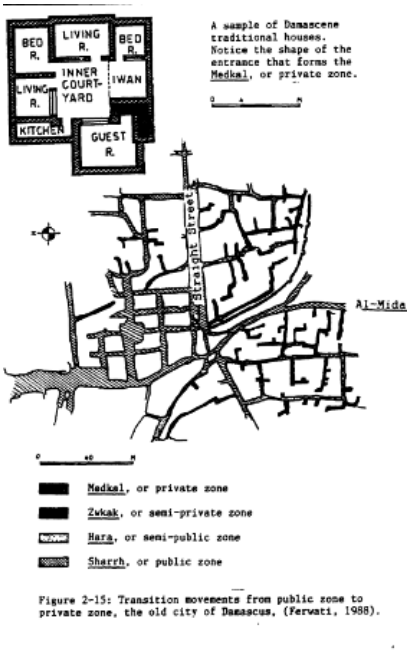


Figure 4.21: Compact fabric (Ferwati M. , 1992).

4.2.1.2. Bent Entrance

- Provides a sudden transition between spaces from the narrow space to the wider one (Courtyard). This process has a Hygienic purpose by maintaining the moderate temperatures between the exterior and interior climate (Alshamaylah, 2016).

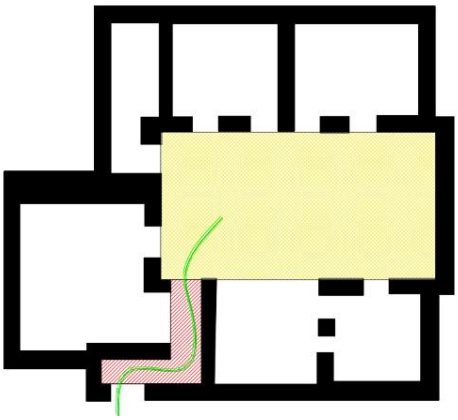


Figure 4.22: Bent entrance to provide moderate temperatures by Author.

4.2.1.3. Courtyard

- Enhancing the level of temperature, since the courtyard maximizes shading areas and creates a pleasant microclimate (Bahnasi, 2002).
- The material used for the floor and walls of the courtyard are working as a radiator of heat (Sthapak & Bandyopadhyay, 2014).
- The activation of the fountain to decrease temperature and humidifies the atmosphere (Mousli & Semprini, 2015).
- Green areas, different types and sizes of plants and trees planted in the courtyard increased shades, humidity, airflow and purification (Kibrit, 2000).

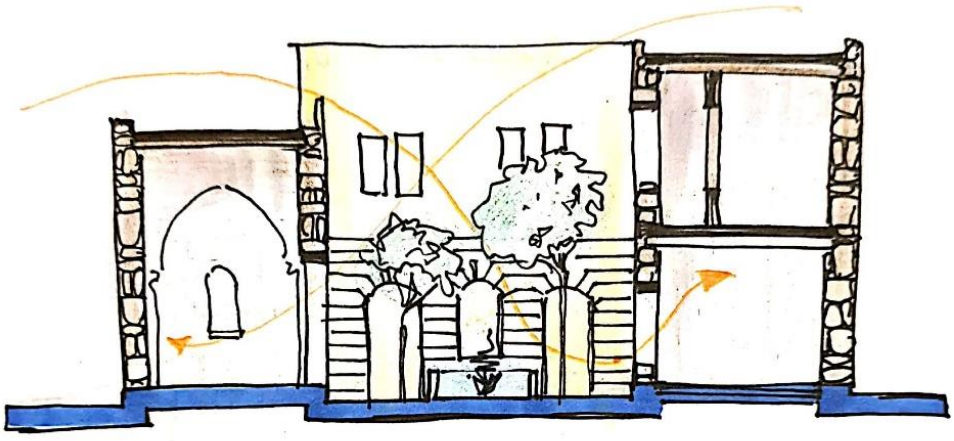


Figure 4.23: Sketch for the section of a courtyard sketched by Author.

4.2.1.4. Arcade (Riwaq) And Iwan

As (Alshamaylah, 2016) has mentioned that in Damascene's house we can find an arcade surrounding three sides of the courtyard and sometimes from one or two sides. The fourth side contained the Iwan. This arcade made shades on the rooms' walls and it is a type of covered corridors to pass between rooms.

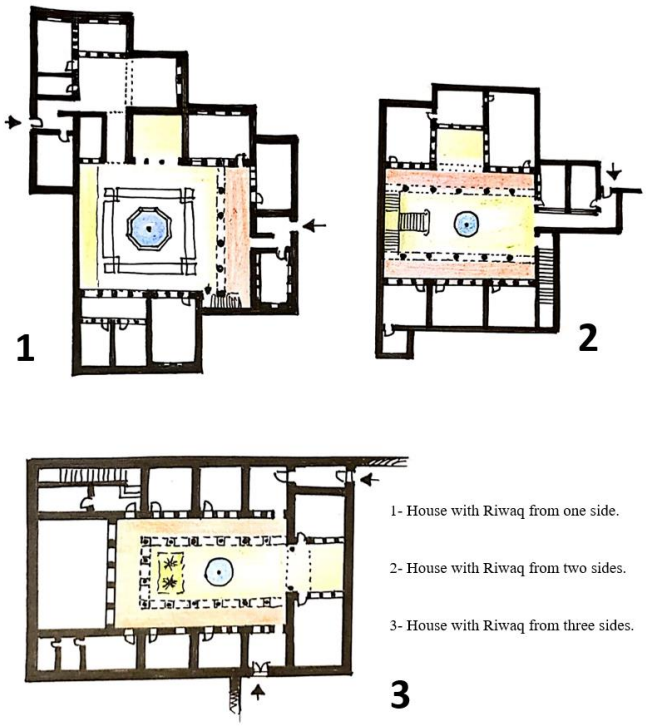


Figure 4.24: Types of Riwaq in Damascene house sketched by Author.

Also in (Dincyurek, Mallick, & Numan, 2003) the Turkish Cypriot style used Arcade house type, The Arcade is constantly located in the south since it works to avoid the sun of summer and to gain the heat from the sun in winter.

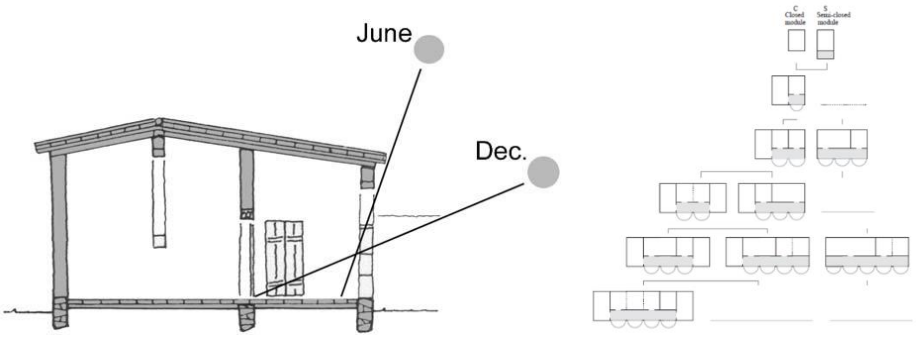


Figure 4.25: On the left section, on the right plan of (Outer arcade house type Turkish Cypriot house) (Dincyurek, Mallick, & Numan, 2003).

As stated in (Waziri, 2004) Iwan was the summer living room the family did its daily activity in this space to avoid the heat of the sun. Moreover, it isolates the rooms on its sides from external climatic factors in summer and winter. According to (Bahnasi, 2002) the height of Iwan was double height of the other rooms, this method allows to maintain clear air.

However, (Shahran, 2018) says that Iwan was located on the southern side so its opening was to the northern side to gain more humidity fresh air which comes because of the fountain in the courtyard in front of the Iwan. Since the Iwan is very high the air comes smoothly. However, in the big houses sometimes we find another Iwan located on the northern side which sun penetrates it in winter (Kibrit, 2000).

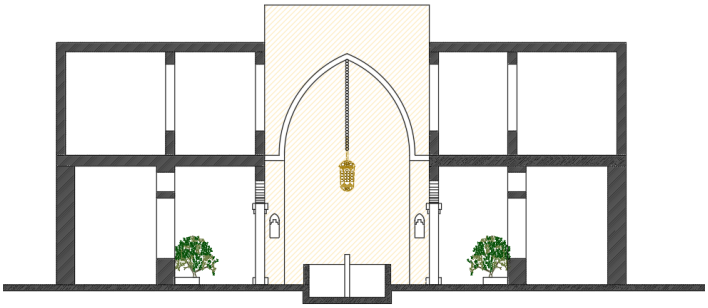


Figure 4.26: Section in a courtyard to illustrate the Iwan height by Author.

While (Küçükerman, 1973) has described the Turkish houses which includes an interior Iwan this type called Sofa style.

As a result, the Damascene house combined sofa style with Arab courtyard then emerged a new type of house and it was very prevalent in Damascus.

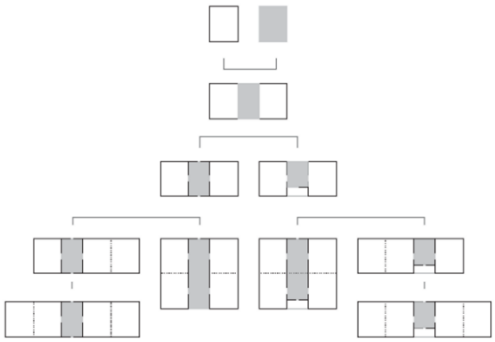


Figure 4.27: The inner hall house type Turkish house in Northern Cyprus. (Dincyurek, Mallick, & Numan, 2003).

4.2.1.5. Walls

As (Shahran, 2018) mentioned that walls in Damascene house use three types of stones first durable black basalt, second less durable limestone (white, yellowish, reddish), third quite hard Mazzeh stones (from Mazzeh area) which is pinkish. Thickness range between 50-90 cm helped to form perfect isolation from outside climate effects. This thick load-bearing stones masonry technique provides an adequate thermal atmosphere

4.2.1.6. Roofs

Using wood and sun-dried bricks as roof construction materials isolated the house from direct sunlightheat, and coldness also (Kibrit, 2000).

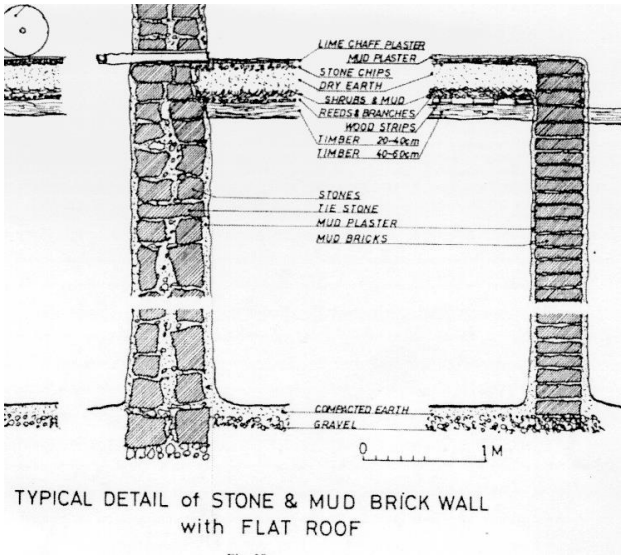


Figure 4.28: Sections in Damascene house illustrates the details in the wall and roof (Url-14).

4.2.1.7. Facades

Using of protrusions and cornices in outer facades and even Mashrabiya in the upper level to form shades (CORPUS Levant, 2004).

Figure 4.29: Salihiyya houses with cantilevers and Mashrabiya in the upper part (Agoston & Masters, 2009).

4.2.1.8. Windows

- The exterior facades had rare windows and has usually covered with thin wooden crisscrossed rods (Malik & Mujahid, 2016). There is also wooden

lattice screens (Mashrabiya) which is an extruded opening covered by fine wooden balusters with a more decorative pattern. It allows light penetration, ventilation, and provides privacy at the same time (Fathi, 1988).

- The courtyard windows were large and decorated, to provide light and sun to penetrate the rooms in winter (Shahran, 2018).

Figure 4.30: Damascene Mashrabiya (Url-15).

4.2.2. Contrast Between The Closed And Open Spaces

As stated in (Ibrahim, 1982) the contrast between closed and opened spaces appears clearly in Islamic architecture due to the construction method which has been used the local building materials like stones, that made the opening took a vertical side and creating vaults to cover the big open spaces. This contrast assures that linking between forms couldn't be occurred without function or expressing architectural values.

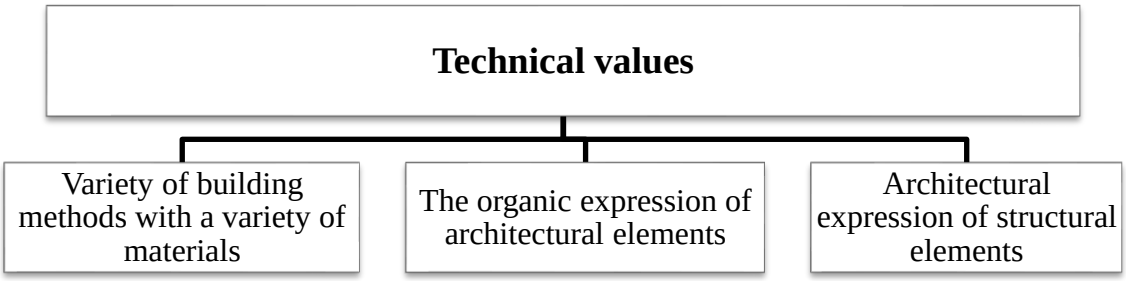
Although, arcades and Iwans have been constructed for climatic purposes, but also created a type of contrast between the closed and open spaces. However, this contrast occurred for purpose and function, so it is not random. From the exterior also we can find Mashrabiya that gave this contrast between closed and opened spaces.

Figure 4.31: The contrast between closed and opened spaces in Anbar Office. (Url-16).

4.3. TECHNICAL VALUES

If we look back to old Islamic buildings, we will find different types of materials work to rich the design with many benefits. One of them is the technical aspect. However, the Ottoman architecture brought new constructional methods and entered distinctive decorations not only to palaces but also for all houses.

Table 4-4: Technical values.



4.3.1. Variety Of Building Methods With A Variety Of Materials

In ancient Islamic architecture according to (Ibrahim, 1982) there were different methods in construction because of the differentiation of the built environment in each country. That led to finding obvious diversity in architectural expression in each country of the Islamic world even there is a unity of civilization represented by social and cultural attitudes.

Furthermore, in Damascus, used materials in the old city were yellow, ivory, red Calcareous, or simple clay and sometimes painted with little yellowish gray (Bahnasi, 1974). All of that creates modeling from warm colors (Bahnasi, 1974).

In general, all ground floor facades are constructed with white and black volcanic stones rows or with white, black and rose stones rows Ablaq; including colored stone lintels forming the shape of arches (Kibrit, 2000). While the upper floor facades according to (Ibrahim, 1982) are coated with gypsum plastering; including wide glass windows. Finally, there is the roof metallic balusters upon a decorative wooden lace. While for (Ferwati M. , 1992) the ground floor was made with stone and the second floor was made of mudbrick and wood. For (Shahran, 2018) the type of stones differs according to the usage. If it uses for an external wall or an internal wall. Moreover, wooden muqarnas has used at the corners of spaces to provide the transition to the ceiling.

In figure (4.32) we can see the Ablag material on the ground floor and the plaster paint on the first floor at Khaled Al-Azm house.

Figure 4.32: The inner walls of Khaled Al-Azm house (Url-17).

Damascene house's flooring reached a highly advanced architectural rank, as appeared clearly in different house spaces and most of them covered by different marble colors (Kibrit, 2000). Furthermore, according to (Al-Shihabi, 1996) marble was very common during the Ottoman period and mostly covered the floor of the courtyard and water pool while decorated Iwan’s walls, windows and the arch of Iwan.

Figure 4.33: Iwan flooring Nizam house (Kibrit, 2000).

Figure 4.34: Marble floor and Fisqia (Url-18).

All Damascene houses ceilings for (Bahnasi, 1974) are colored and painted to form a fabulous plate like a Persian carpet Ajami. This Ajami wooden covering meets the walls by an ornamented wooden cornice, and the corners by special decorative wooden pendent ornament called Saraweel. While sometimes the entrances and arcades covered by stone vaults as executed in the entrance of Azm palace.

Figure 4.35: Ceiling of Oustwani house (Kibrit, 2000).

Figure 4.36: Ceiling with vaults Azm Palace (Url-19).

The inner walls of Qa'a (Hall) according to (Bahnasi, 1979) have covered with colored wooden decorations include floral and plant motifs while on the upper side there is a cornice with calligraphic tape. However, (Kibrit, 2000) mentioned that thick walls of rooms contain a type of cupboards carved into walls like YUK, Kotbiya and Maktabah all of them made from wood and painted with beautiful ornaments. In addition, inside rooms fireplace was built with bricks and covered with ornamented marble tiles. Usually, it has a conic top which is a copy of the fireplace in the Turkish house.

Figure 4.37: Wooden ornaments of room's wall (Kibrit, 2000).

4.3.2. The Organic Expression Of Architectural Elements

The appearance of the city is manifested by the cohesion of its vocabulary and the integration of its components into a unified organic entity, and its domestic units are mostly similar in size, harmonic in mass and design, so that they seem homogeneous within its general framework (Alkinani, 2006). As with all Islamic architecture; The traditional Damascene built environment for (Ibrahim, 1982) consists of organically connected buildings, sharing walls, or adjacent independent walls joined together by a system of private and public plans that limits interference with household privacy and increasing social interaction. Houses were more spontaneous, clear and simple without exaggerating. However, Old Arab buildings neglect the exterior design according to (Ibrahim, 1982) because the ornaments and decoration were only in the interior spaces. This method gives streets its simplicity.

Moreover, materials of buildings are stone walls, wooden ceilings and marbled floors all that express the organic feature as (Fathi, 1980) said “look under your feet and built”. this means all the building materials should be local no need to import materials from other places.

According to (Waziri, 2004) in Damascene's house the architect made a small copy of nature inside the house to make its own small paradise by adding different plants and water and the opening to the sky. Moreover, houses of old Damascus are compact, it is like one building by sharing walls and narrow streets.

Figure 4.38: Anbar office ,The Organic Expression Of Architectural Elements (Url-20).

4.3.3. Architectural Expression Of Structural Elements

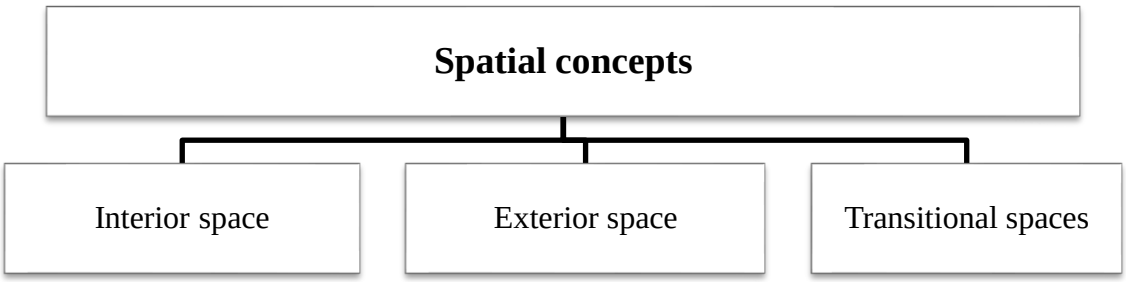
In general, the Architectural expression of structural elements according to (Ibrahim, 1982) had shown by the frank expression of construction methods for ceilings and walls. The raw materials were evident in the architectural expression since it was used without painting or cladding. However, when it has covered, covered by natural materials like ceramic tiles, clay, wood, and several colors of stones all these natural materials were used for construction and covering methods. Hence, these materials have been used not only for walls but also for ceilings. Moreover, Columns during the Ottoman period had specific styles according to (Kibrit, 2000), the body of the column was smooth and the crown was ornamented with geometrical shapes. Also, there were main types of arches used, they are Circular Arch, Semicircular Arch, Elliptical Arch, Horseshoe Arch, Segmental Arch, and Pointed Arch.

Figure 4.39: Columns and Arches at Anbar house (Url-21).

4.4. SPATIAL CONCEPTS

There is a hierarchy of spaces according to (Almulla Hwaish, 2015) starting with private, semi-private, semi-public and public, this is was one of the basic features of the Damascene house. Furthermore, the most significant design value as stated in (Ibrahim, 1982) is the integration of spaces in houses. This feature was determined by not only the spatial relations among rooms but also the spatial connection between the ground and first floor. According to former information, we can summarize the spatial concepts in the Ottoman Damascene house as the following:

Table 4-5: Spatial concepts.



4.4.1. Interior Space

In general, the main character of Islamic architecture is the orientation to internal, since the rooms are organized to surround the open courtyard (Almulla Hwaish, 2015).

Additionally, it is the center of daily routine activities according to (Hamed Alkattan & Kasim, 2016) and it works as a barrier to prevent noise. While the height of each interior space was determined accordingly to its function and its area also depends on the activities that occur inside.

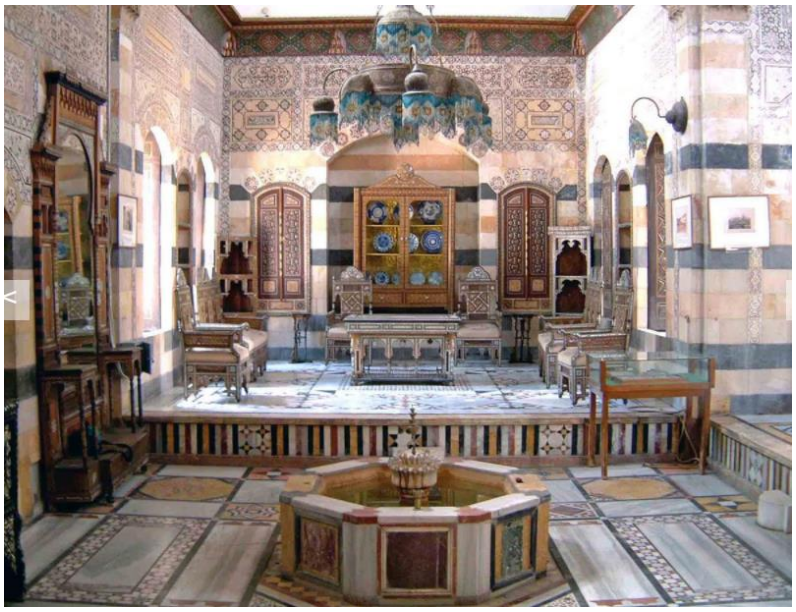


Figure 4.40: Guest reception (Qa'a) of Khaled Al-Azm house (Url-22).

4.4.2. Exterior Space

Space located between buildings and includes roads and squares according to (Hamed Alkattan & Kasim, 2016) we call it exterior space. Furthermore, this space is not constant on the contrary, it is variable according to a sense of movement, the gradual in the volume of spaces, areas and the variety of its forms and usage.

Figure 4.41: The exterior space sketched by Author.

4.4.3. Transitional spaces

In the Damascene house, there are three significant transitional spaces starting with courtyard, Iwan and Riwaq. According to (Amro & Bahauddin, 2015) the courtyard works as an intermediary space between the inner spaces and the entrance. Furthermore, Iwan for (Bahnasi, 2002) links the courtyard with Qa'a and sometimes there are two Qa'as on both sides of Iwan. Finally, Riwaq that located on the ground floor links the courtyard with rooms. While the Riwaq of the first floor works as a corridor to link among bedrooms (Alshamaylah, 2016).

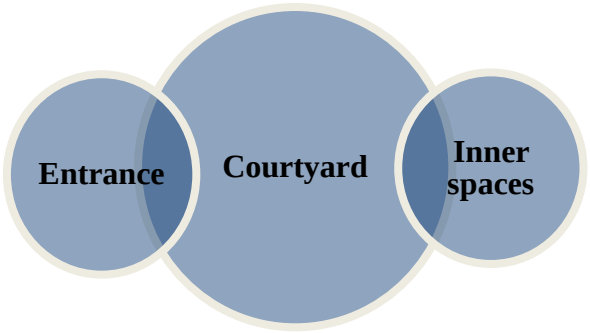


Figure 4.42: Courtyard as transitional Space by Author.

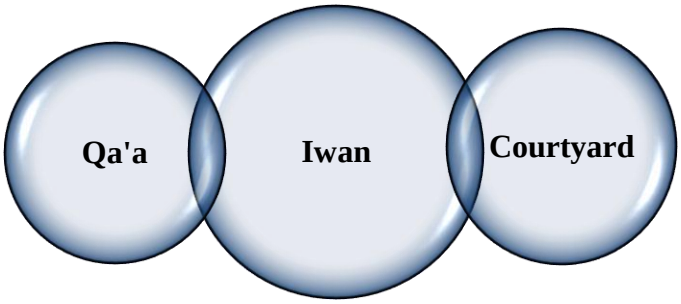


Figure 4.43: Iwan as transitional Space by Author.

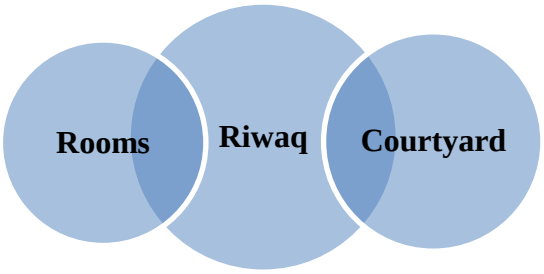


Figure 4.44: Riwaq as transitional Space by Author.

4.5. AESTHETIC CONCEPTS AND VALUES

Islamic architecture cared about the aesthetic concept. Although beauty is changeable, we can't define it without finding some concepts or values that give this beauty. That is why Islamic architecture had some major aesthetic principles to define if the design has an aesthetic feature or not. In Damascene houses, we can find important aesthetic values that give the Damascene architecture its stunning form.

Table 4-6: Aesthetic concepts and values.

Aesthetic concepts and values		
Human scale	Geometrical Formations and Decorations	Harmony In Architectural Formation

4.5.1. Human Scale

As stated in (Bahnasi, 2002) that the Damascene house is a frank example of Islamic architecture since it depends on the spiritual and materialism scale of the human.

In general, Islamic architecture as mentioned in (Foroozani, 1991) cares about the scale not only in the residential buildings but also in the public buildings especially the mosques with high minarets to be a landmark. While the scale of residential buildings is in accordance with the human dimensions and needs.

For instance, entering the house from the small entrance to the bigger corridor then the courtyard to prepare the person from the street to courtyard that will let him feel safe and comfortable (Shahran, 2018). In addition, the areas of rooms and height differ according to the need, like the living room for daily routine activities and Qa'a is bigger for different ceremonies (Kibrit, 2000). This value was very important because Islam respect human basically and architect implement this value in Damascene houses.

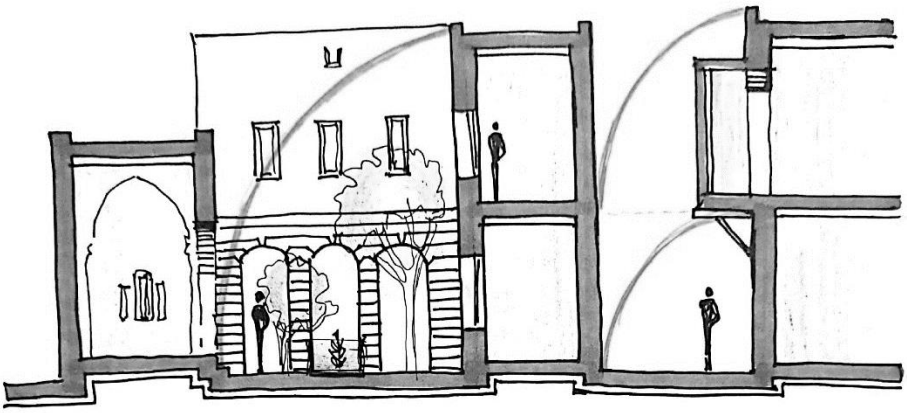


Figure 4.45: Sketch of human scale in Damascene house by Author.

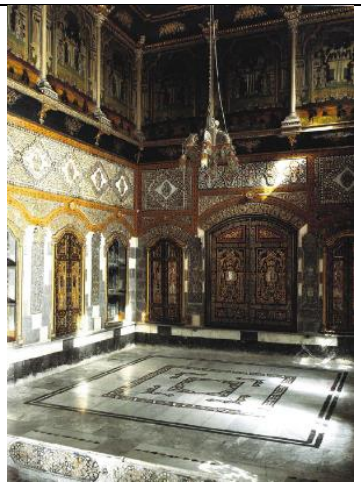
4.5.2. Geometrical Formations And Decorations

The geometrical formations appear in every tiny detail that forms the architectural component according to (Shahran, 2018) and sometimes used in openings, windows, closed spaces, and even the furniture.

In the Damascene house, the materials of decorations were mostly from stone, plaster, wood, ceramic tile and glass (Bahnasi, 2002). There were three types of ornaments plant, geometrical and calligraphy ornaments. (Kibrit, 2000). The main methods used in ornaments are illustrated by the next table:

Table 4-7: The Main methods used in ornaments.

Main methods used in ornaments	
Method	**Photo**
Moshaqqaf: Continuous geometrical patterns formed with colored marble pieces (Kibrit, 2000).	 **Figure 4.46:** Moshaqqaf at Anbar house (Kibrit, 2000).
Ablaq: Alternating color courses. Which mean different colored stone rows forming house facades (Al-Shihabi, 1996).	 **Figure 4.47:** Ablaq of Azm Palace (Url-23).
Moqarnasat (Stalactites): A special Islamic ornament element made of wood, marble, stone or gypsum. It consists of numerous small niches near and above each other forming a fantastic honey-comb-like structure (Al-Shihabi, 1996).	 **Figure 4.48**: Moqarnasat at Azm Palace (Url-24)

Khait: Continues geometrical patterns stripes carved in wood and sometimes plaster to form fine plates (Al-Shihabi, 1996).	 **Figure 4.49:** Wooden Khait at Anbar house (Kibrit, 2000).
Ajami (Persian): A jutting-out kind of ornaments on colored and painted wood used on doors, ceilings, covered columns, crowns, furniture and cabinets (Al-Shihabi, 1996).	 **Figure 4.50:** Ajami ceiling of Azm palace (Url-25).
Arabesque: An intersection and overlapping of plant and geometric ornaments used on furniture, walls, doors ceilings and floors (Al-Shihabi, 1996).	 **Figure 4.51:** The Arabesque walls of Sibaie House (Zeeland, 2013).
Mo'ashaq (Stained glass): Covering colored glass windows with gypsum plant or geometrical patterns (Kibrit, 2000).	 **Figure 4.52**: Stained glass (Mo'shaq) (Url-26).

Mashrabiya: A jutting-out window covered with a wooden lattice screen (Al-Shihabi, 1996).	 **Figure 4.53:** Mashrabiya (Url-27).
Mosaic tiles: Small colored pieces of stone, marble, ceramic, glass, porcelain or glazed tiny tiles joined to each other to form an artistic flooring or wall plates. (Al-Shihabi, 1996)	 **Figure 4.54:** Mosaic tiles at Sinan Basha mosque (Url-28).

4.5.3. Harmony In Architectural Formation

Even though the exterior facades of Damascene houses were simple and spontaneous, the inner facades of courtyards have a harmonious formation (Shahran, 2018). The architectural harmony in plans and facades with the aesthetic ornamental elements made the Damascene house like a small paradise (Ibrahim, 1982). Moreover, there are different proportions and different forms but with harmonious design (Ferwati & Mandour, 2008).

The Damascene house gains its harmony by many principles since it an Islamic house according to (Foroozani, 1991) starting with the proportion, scale, rhythmic repetition, symmetry, contrast, balance, variety and the Dominance of elements.

This harmony still clear according to (Bahnasi, 2002) with the dominance and centrality of Iwan space. Furthermore, on the left and right of Iwan, we can see the one complete picture full of harmony not only by the symmetry but also by the visual balance of design (Figure 4.55).

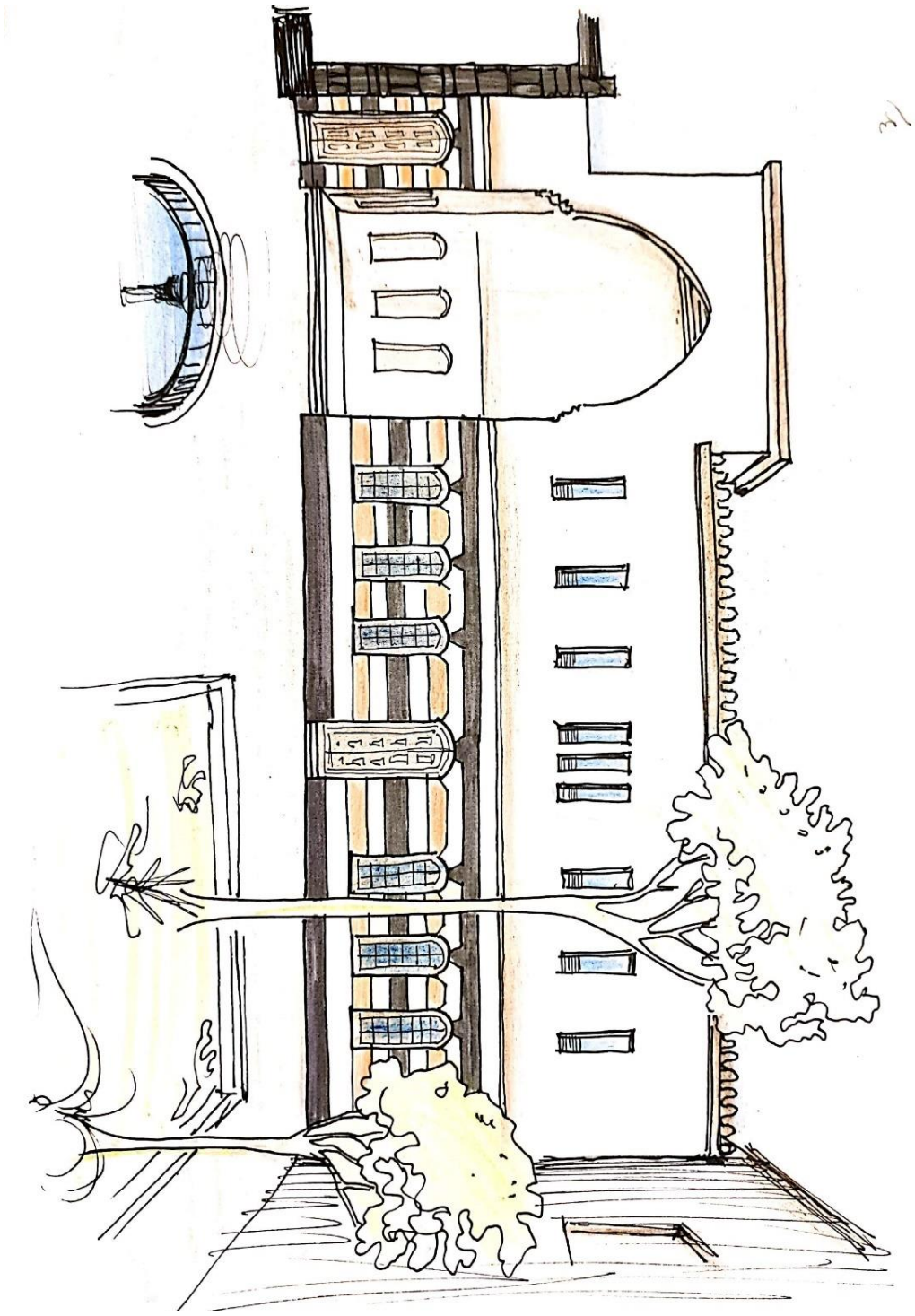


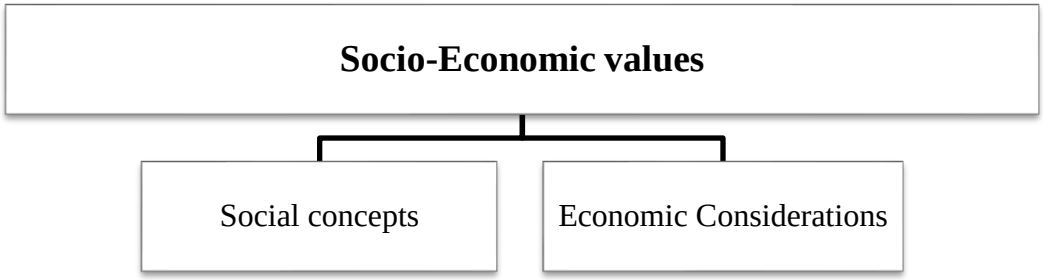
Figure 4.55: The harmony in Damascene courtyard sketched by Author.

4.6. SOCIO-ECONOMIC VALUES

Sustainability have three important pillars according to (Al-Ulwan & Hasan Beik, 2017) are economic, social and environmental. These aspects should be confederated to achieve sustainable architecture.

The Damascene house as mentioned in second values cared about the environmental concepts and values, these treatments also effect on the social and economic life of Damascene people. Next in this paragraph the socio-economic values will be described.

Table 4-8: Socio-Economic values.



4.6.1. Social Concepts

Traditional architecture, in general, reflects the social aspect of the residents, so it informs us about their habits, lifestyles, and social life (AL Asali & Shahin, 2016).

The courtyard according to (Ibrahim D. F., 2017) moved the external activities of human into the house, and this creates the feeling of the social bond between people through the following:

- Provide suitable and safe space for children, since they are playing under the observation of the family.
- The capacity of the courtyard to include the different household chores and reception for guests in a moderate climate.
- Caring about the neighbor's rights by making all the openings into the courtyard.

The Damascene house mostly includes more than one family, since the father and his sons' family live in the same house. This method increases the affinity and the social life of the whole family.

4.6.2. Economic Considerations

Damascene houses have been characterized according to (AL Asali & Shahin, 2016) by their inhabitants. Since they can decide how to build their houses in accordance with their needs and financial situation, for this reason they depend on using available local materials. Since the geography of Syria provides variety of natural resources. Not only the materials of construction but also benefiting from natural light and ventilation. So, they utilized natural energy and resources during and after the process of construction. As the Damascene house is a sustainable design so we can conclude that it has three important points:

- Using natural building materials.
- Utilize the climate to reduce the energy waste.
- Ensure the sustainability through lifestyle.

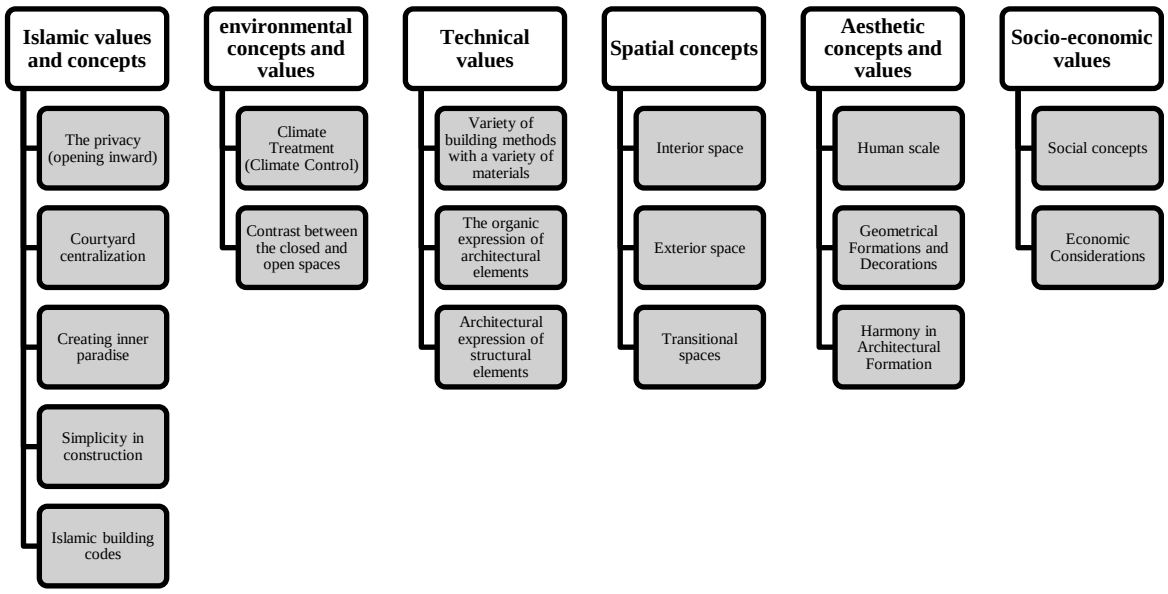
Moreover, the multiple family in the same house works also as economic factor that reduce the using of resources and energy.

Figure 4.56: The courtyard in Damascene house as a socio-economic element by Author.

5. ANALYSING CONTEMPORARY DOMESTIC BUILDINGS THAT REVIVED ARCHITECTURAL VALUES OF DAMASCENE DOMESTIC BUILDINGS FROM OTTOMAN PERIOD.

Authenticity according to (Bahnasi, 1979) does not mean imitating the heritage and imitating its patterns, neither it is not the reverse of contemporary. On the contrary, authenticity does not come unless we are conscious of the demands of the era and its related extension in the field of the culture. However, the architectural values that illustrated in chapter four can be classified as the following table:

Table 5-1: The extracted architectural values of Ottoman domestic buildings in Damascus.



If we implement these architectural values in modern Damascene architecture, then we will revive the authenticity and the identity of the city without neglecting modern demands. This chapter of the research will focus on an investigation of examples that used the architectural values in Syrian buildings. Therefore, there will be a table for each building and how much this building applied architectural values. Before analyzing the examples that applied the previous architectural values, the first part of this chapter will demonstrate the current architectural design situation of domestic buildings in Damascus to give the whole description of the design process.

5.1. CURRENT ARCHITECTURAL DESIGN SITUATION OF DOMESTIC BUILDINGS IN DAMASCUS.

Syria was affected by the European architectural situation, especially after the French mandate period as (Abdin & AL-Masri, 2008) and that laid out plans of most new neighborhoods that intentionally contributed to distorting the city's landmarks and removing them from their character. The organizational plans were proposed by the French architect Michel Ecochard, which had approved in 1937. According to a European architectural style that depends on the multistoried. According to (Mousa Y. , 2020) this impact comes from two reasons: the first is because of the occupation, and the second is responding to economical need, the necessity of expansion, and the growth of population. But what makes the normal evolution been worse is exceeding the cultural, urban, architectural identity and establish new neighborhoods that not related to the land. The similar concrete blocks were constructed with the Absence of the architectural and urban damascene soul and without considering the environmental, functional, esthetical, and privacy aspects of the Syrian community.

The modern sections of Damascus are widely referred to as Western (Ferwati M. , 1992). As (Mikhael, 2004) divides the residential buildings in Damascus city into three types:

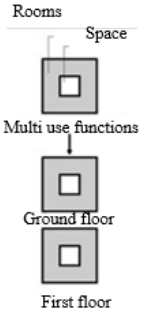
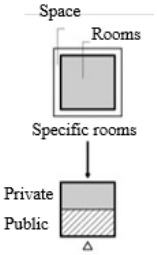
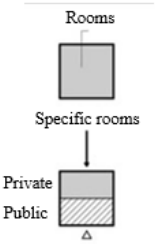
A- Traditional houses or courtyard houses. Which is located in old Damascus inside or outside the fence of the old city. And as we described in chapter two most of the traditional residential buildings are from the Ottoman era. Consequently, we have analyzed these buildings in chapter three.

B- Residences built during the French mandate. These types of buildings are classified from the Transitional phase between traditional and modern architecture. These buildings were opened to the outside and surrounded by gardens and designed by French architects or Syrian architects who studied in France. The distribution of rooms differs from the traditional houses since It includes covered central space. And guest room near to the entrance and the other rooms with different functions.

C- High rise residential buildings. These buildings were built after the French mandate. Here Damascus was freed from the occupation, but its architecture

was still connected. In this period the concrete has emerged, and the building norms have changed according to social and economic society developments.

Table 5-2: Samples of Damascene residential buildings (Mikhael, 2004) and redrawing by Author.

Samples from Damascus city				
	Region	**Traditional region**	**Transitional phase region**	**Modern region**
The architectural components of residential buildings	**Entrance**	 Entrance L shape	 Door open into main hall	 Door open into corridor
	Courtyard	 courtyard	 Saloon	 Main corridor
	Rooms			
	Services	 Located in the dead corner	 Located in the center	 Reached by the entrance hall, baths connected with bedrooms
	Openings	 Inward opening	 Outside opening	 Outside opening

While (Ferwati M. , 1992) has divided modern buildings in Damascus into three types.

- The first type of attached apartment buildings, which constructed in 1930 and replaced the traditional materials with concrete. But still, includes some traditional design aspects. The attached apartment buildings share

the same concepts of traditional houses in three points (attachment, the light hole between apartment buildings and the height).

- The second type of detached walk-up apartment buildings, this type constructed after 1960 with concrete, and it is individual buildings surrounded by buildings in the same block.
- The third is elevator apartment buildings or high-rise buildings. Finally, this type was constructed after 1970 after the land cost and the demands for housing had increased. each building surrounded by open space and parking. Like detached buildings used materials are mostly concrete steel and glass.

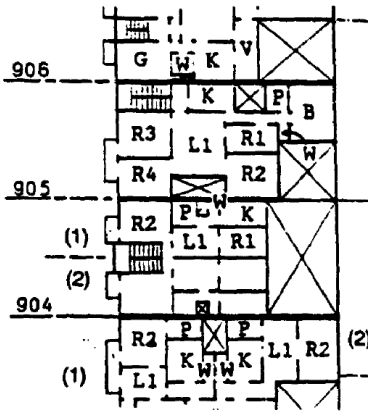


Figure 5.1: A plan of attached residential units in Alshwika quarter (Ferwati M. , 1992).

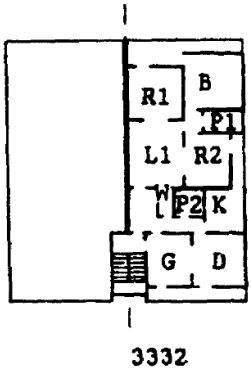


Figure 5.2: A plan of detached residential units in Alkassa'a quarter (Ferwati M. , 1992).

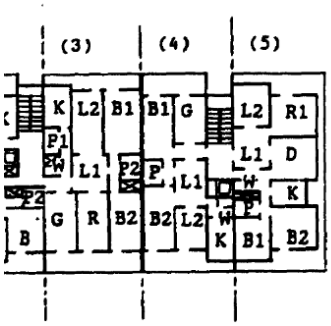


Figure 5.3: A plan of elevator resedintial units in Aladawi quarter (Ferwati M. , 1992).

5.2. REFLECTION OF ARCHITECTURAL VALUES.

Recently, some architects tried to revive the architectural values of Damascus. Since they are more conscious about the trends of design in Damascus and other Syrian cities. Not only the architects but also some academicians tried to highlight how to keep the identity of the city. And maybe this research, also other researches will be steps to illustrate how to keep the authenticity of the Damascus city. Although, there are little efforts to construct buildings that have local identity, not only in Damascus but also in all cities of Syria. However, we can still find some examples that tried to apply a few architectural values in Damascus and other cities. Next analyzed examples are from Damascus Governorate and its surrounding because it was very challenging to find domestic buildings that applied some of the architectural values in the city, besides, one example from the southern area of Damascus between Dara'a province and Damascus. Although some examples that constructed in the last decades, they still try to imitate the traditional Damascene house. However, we can say it is a step to enhance the design of housing in Damascus by reviving the Damascene heritage.

5.2.1. AL-Cantara House

This house was constructed between 1996-2002 on a site area of 4550 m^2, located in the suburb of Damascus (Touma, 2011). Designed by the architect Antoine Touma and he is also the owner of the house. His design was in the list of Aga Khan Award candidates in 2011. The architect Touma tried to combine the traditional with modernity in one building. Since it was his dream to revive the traditional house of Damascus, especially after his grandfather's house in the old city had been demolished (Touma, 2011).

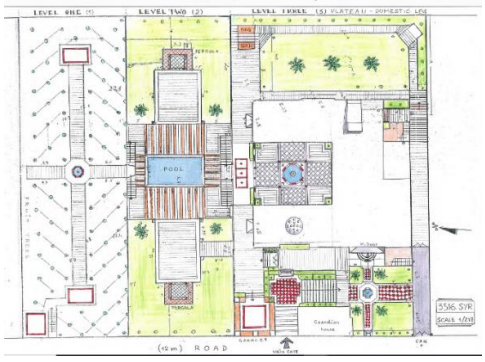


Figure 5.4: General site plan of AL-Cantara house in the suburban of Damascus *(Touma, 2011)*.

The house is located on the slope of the mountain therefore it was opened from the fourth side into the beautiful landscape (Touma, 2011). On this side, there is an arcade to allow visitors to enjoy the view of the valley. The courtyard as a traditional house is for social meetings besides enjoying lunch and dinner and sometimes breakfast according to the weather status. Moreover, the courtyard is surrounded by orange and Limon trees which give the space a special fragrant. In this house, there are two Iwans, one in the east to let visitors and family sit in the early morning (Touma, 2011). While the second in the west for an afternoon sitting. In the middle, there is a fountain that cools the air which carries the fragrant from the tree also.

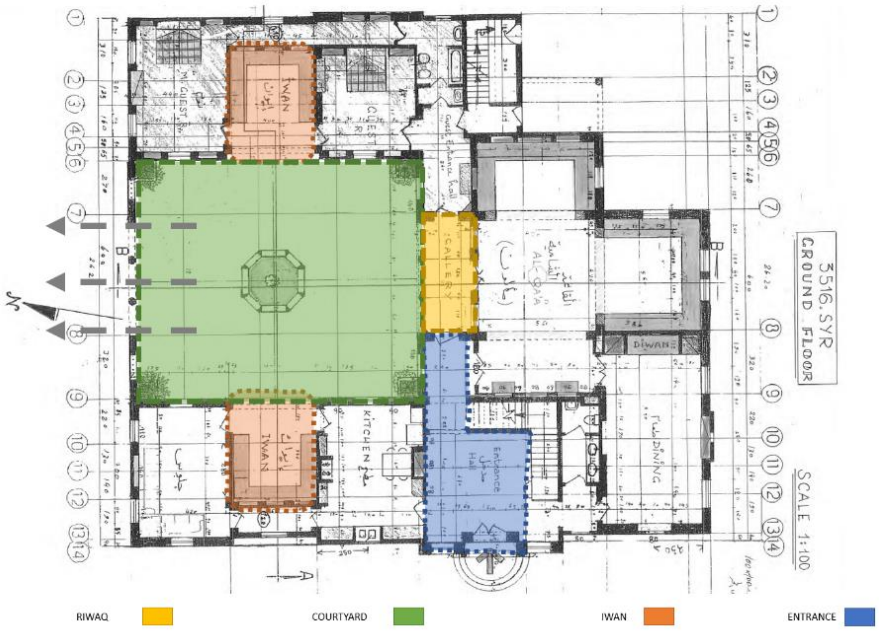


Figure 5.5: Ground floor of AL-Cantara house in the suburban of Damascus *(Touma, 2011)* and colored by Author.

The external walls are doubled thick 50 cm which provide excessive air conditioning, also provide spaces for niches and shutters (Touma, 2011). For materials, he used local ecological materials like a hard stone for exterior wall covering, Roumi wood for doors and windows, Golani stones for pavement, and pinkish granite called Maadarani. The Islamic patterns reflect the harmony and the rhythm of nature. Moreover, the inclined entrance to provide privacy and for climatic purpose. While the centralization of the courtyard still appears although it is opened from the fourth side.

Furthermore, Mashrabiya views on the swimming pool to keep the privacy of the family while visitors sitting beside the pool (Touma, 2011).

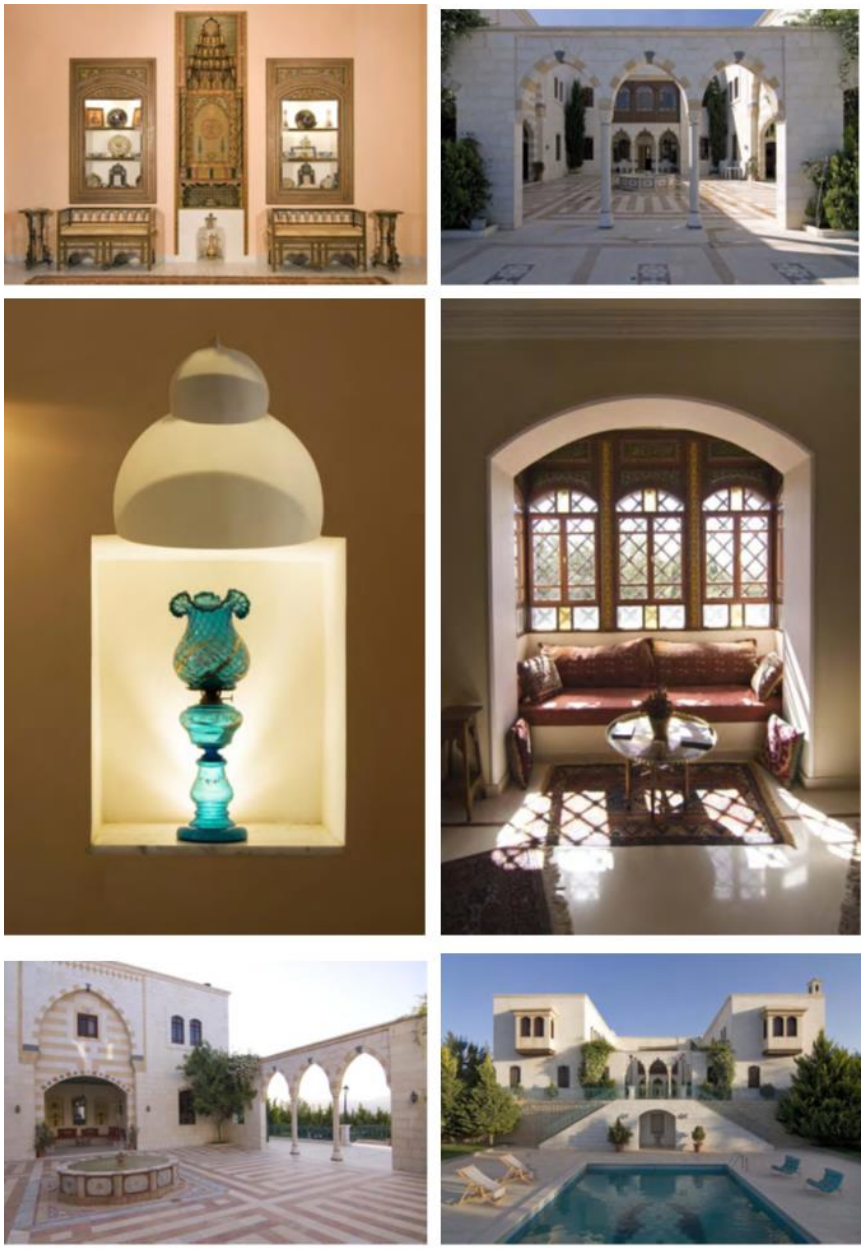


Figure 5.6: Collection photos of Al-Cantara house (Touma, 2011).

AL-Cantra house not only applied the architectural values od Damascene house but also it copied many design elements, except using concrete material in some hidden parts. Next table is an evaluation of Al-Cantara house within the architectural values that extracted in chapter four.

Table 5-3: An Evaluation of AL-Cantara house.

AL-Cantara house				
Architectural Values		**Evaluation**	**Per value**	**percentage**
Islamic values and concepts	1- The privacy (opening inward).	✓	**4**	80%
	2- Courtyard centralization.	✓		
	3- Creating inner paradise.	✓		
	4- Simplicity in construction.	✓		
	5- Islamic building codes.	**x**		
Environmental concepts and values	6- Climate Treatment (Climate Control).	✓	**2**	100%
	7- Contrast between the closed and open spaces.	✓		
Technical values.	8- Variety of building methods with a variety of materials.	✓	**3**	100%
	9- The organic expression of architectural elements.	✓		
	10- Architectural expression of structural elements.	✓		
Spatial concepts.	11- Interior space.	✓	**3**	100%
	12- Exterior space.	✓		
	13- Transitional spaces.	✓		
Aesthetic concepts and values	14- Human scale.	✓	**3**	100%
	15- Geometrical Formations and Decorations.	✓		
	16- Harmony in Architectural Formation.	✓		
Socio-economic values	17- Social concepts	✓	**2**	50%
	18- Economic Considerations	**x**		
Total	18	18/16		88.3%
Notice	This house was a new copy of a luxurious traditional Damascene house.			

5.2.2. A Bioclimatic House

This house was constructed in 2011, located in the southern area of Damascus (Dier E-Boukhet), it was designed by architect M. Hosam Jiroudy this design was a gift to his friend (Jiroudy, 2012). The main concept of the house is to use the local and natural materials that Syria offers starting with limestones, coral stones, sandstones, lava stones, and clay. The architect tried to use the typological studies of the traditional Damascene courtyard (Scardigno, 2014). For example, he cared about the orientation of the house and the system of courtyards by using two courtyards, with lava stones work as thermal and moisture resistance. Moreover, two domes were used in the main Qa'a one is a pressed dome, while the other is a high dome on Muqarnas. This project aimed to identify building materials that could challenge the dominance of traditional building methods (Scardigno, 2014).

Figure 5.7: Plan of the bioclimatic house *(Scardigno, 2014)* and colored by Author.

The architect for (Scardigno, 2014) attempts by his design to respect the identity of culture by the continuity of traditional domestic solutions with considering the contemporary requirements. This occurred through reintroducing the traditional elements like courtyards, domes and vaults, wooden doors and windows, stained glass, thick walls for insulation, and finally, for providing a cooler surface, they used Basalt flooring.

As the traditional courtyard was the focal point, this house had the same concept of the traditional courtyard, which includes green vegetation and a fountain to circulate and humidify the air.

Figure 5.8: Two sections of the bioclimatic house to illustrate the shades in summer and winter (Jiroudy, 2012).

The architect according to (Scardigno, 2014) tried to use local material which is Lava stone, and it was expensive to construct the whole project. Therefore, he creates a new composition consist of 80% crushed Basalt, 2% powder of Limestone, and 8% water and cement. This method was less expensive than cutting the stones. This material enables people to build houses with three floors without using steel or reinforced concrete for load barring walls.

Figure 5.9: photos of the bioclimatic house *(Scardigno, 2014)*.

Next table is an evaluation of Bioclimatic House within the architectural.

Table 5-4: An Evaluation of Bioclimatic House.

Bioclimatic House				
Architectural Values		**Evaluation**	**Per value**	**percentage**
Islamic values and concepts	19- The privacy (opening inward).	✓	**3**	60%
	20- Courtyard centralization.	**x**		
	21- Creating inner paradise.	✓		
	22- Simplicity in construction.	✓		
	23- Islamic building codes.	**x**		
Environmental concepts and values	24- Climate Treatment (Climate Control).	✓	**2**	100%
	25- Contrast between the closed and open spaces.	✓		
Technical values.	26- Variety of building methods with a variety of materials.	**x**	**2**	66.6%
	27- The organic expression of architectural elements.	✓		
	28- Architectural expression of structural elements.	✓		
Spatial concepts.	29- Interior space.	✓	**3**	100%
	30- Exterior space.	✓		
	31- Transitional spaces.	✓		
Aesthetic concepts and values	32- Human scale.	✓	**2**	66.6%
	33- Geometrical Formations and Decorations.	**x**		
	34- Harmony in Architectural Formation.	✓		
Socio-economic values	35- Social concepts	✓	**2**	100%
	36- Economic Considerations	✓		
Total	18	18/14		82.2%
Notice	This house was a copy of the simplicity of a traditional Damascene house with creating new materials for construction by mixing local materials with contemporary materials to achieve cheap material for construction.			

5.2.3. Dar Al-Rida House

This house was constructed between 1995-1996 it is in Al-Zabadani which is in the rural area of Damascus. Designed by the Architect Mohammad Khayri Al Baroudi for the owner of the house is Hani Sawaf. His design was nominated for the Aga Khan award in 2004. His philosophy of the house design extracted from Damascene Islamic Architecture by emphasizing the spiritual concepts, the relation between man and place, and the Islamic geometry (Url-29). The architect was thinking about the concepts not only the forms especially he was diving into the Islamic architecture of Damascus and he is working on some researches since he is a professor at Alyarmouk private university in Damascus.

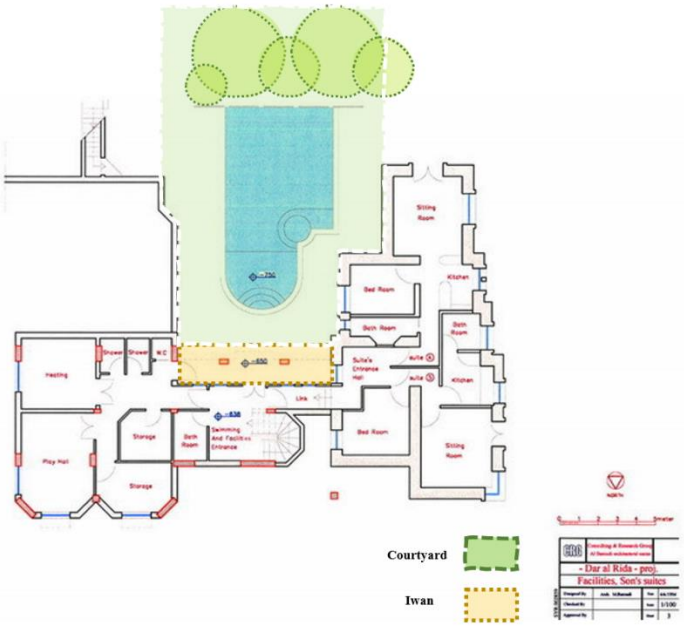


Figure 5.10: Ground plan of Dar Al-Rida (Url-29).

The house from the southern exterior façade contains a modern type of Iwan with a bay window viewed on the swimming pool. While on the corner we find stoned stalactites. From the plan, we can find that walls differed from the western side since it was an old building.

On the exterior facades, there is colored masonry which characterizes the Damascene architecture which is Ablaq. Furthermore, he used ecological local material which play important role in climatic treatment (Url-29).

To increase the privacy for external facades, the architect used shutters on windows, except the windows on the inner courtyard.

The interior of the house includes different geometrical decorations that expressed the richness of Damascene architecture from the stoned colored walls with tiny ornaments, tiles, and arches. Moreover, wooden Ajami ceilings.

Figure 5.11: Collection photos of Dar Al-Rida images courtesy of Mohammad Khayri Al Baroudi.

Next table is an evaluation of Bioclimatic House within the architectural.

Table 5-5: An Evaluation of Dar-AL-Rida

Dar-AL-Rida				
Architectural Values		**Evaluation**	**Per value**	**percentage**
Islamic values and concepts	37- The privacy (opening inward).	✓	**3**	60%
	38- Courtyard centralization.	**x**		
	39- Creating inner paradise.	✓		
	40- Simplicity in construction.	✓		
	41- Islamic building codes.	**x**		
Environmental concepts and values	42- Climate Treatment (Climate Control).	✓	**2**	100%
	43- Contrast between the closed and open spaces.	✓		
Technical values.	44- Variety of building methods with a variety of materials.	✓	**3**	100%
	45- The organic expression of architectural elements.	✓		
	46- Architectural expression of structural elements.	✓		
Spatial concepts.	47- Interior space.	✓	**3**	100%
	48- Exterior space.	✓		
	49- Transitional spaces.	✓		
Aesthetic concepts and values	50- Human scale.	✓	**3**	100%
	51- Geometrical Formations and Decorations.	✓		
	52- Harmony in Architectural Formation.	✓		
Socio-economic values	53- Social concepts	✓	**1**	50%
	54- Economic Considerations	**x**		
Total	18	18/15		85%
Notice	This house was a copy of a traditional Damascene house with using contemporary materials for construction and shutters for windows.			

5.2.4. Suburban Villa

This house was constructed about 1986 located in the suburb of Damascus. and designed by the Polish architect wojciech zabłocki for the ruling family. This architect has designed few projects in Syria, and he took his reputation after his design for the Olympic city in Latakia.

The architect (Zabłocki, 2017) was proposed to make his project as a sculpture. After he saw the Damascene architecture, his concept was to use the architectural concepts in accordance with modern requirements. Design idea was central courtyard with fountain in the middle, while, in the axis of the courtyard there is an Iwan in front of Iwan there is a waterfall also.

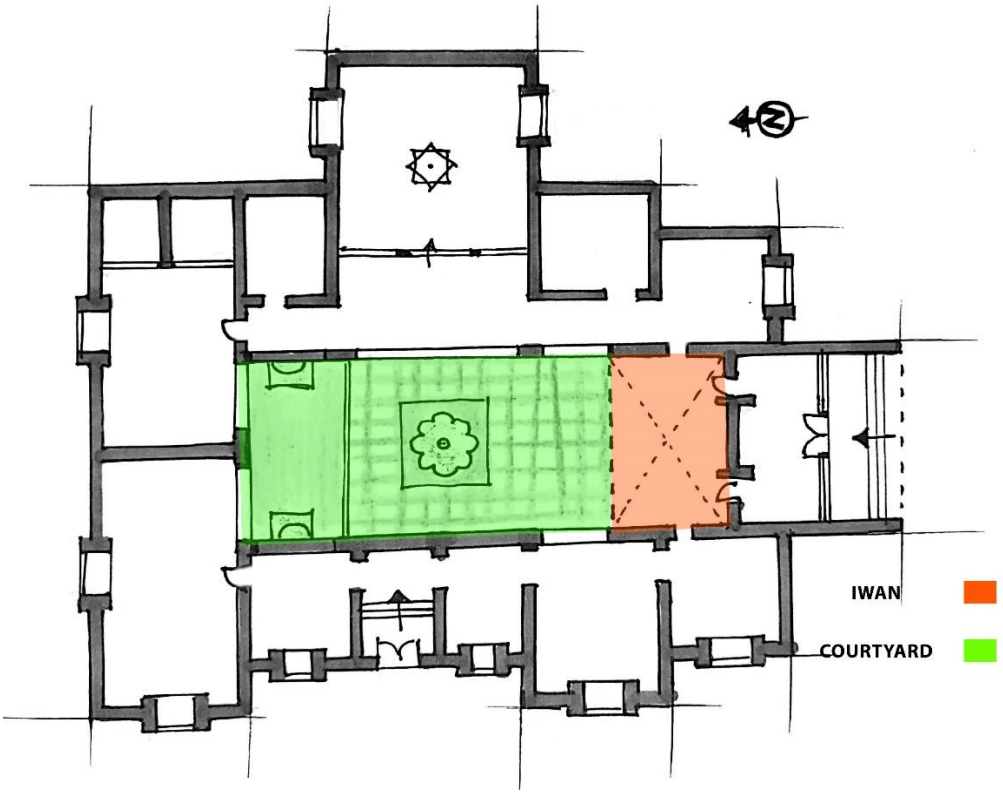


Figure 5.12: Plan of Suburban villa By Author.

For exterior facades he reformed the Mashrabiya and cantilevers, by making protruding wide windows covered with wooden lattice. In addition, main entrance was constructed as bulky mass with ogival arch (Zabłocki, 2017).

Villa expressed the simplicity with reintroduce design elements of Damascene architecture.

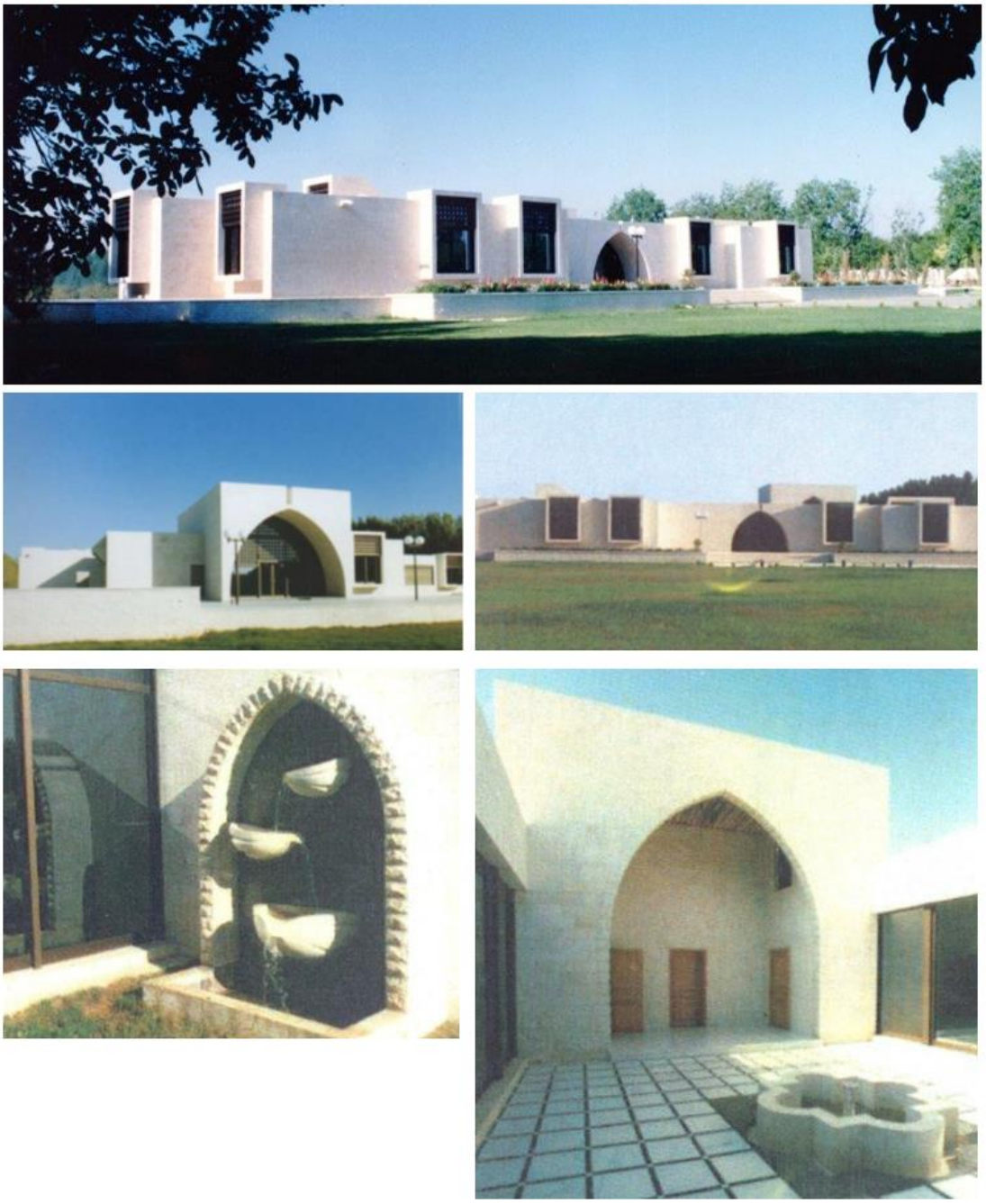


Figure 5.13: Collection photos of Suburban villa *(Zabłocki, 2017)*.

Next table is an evaluation of Bioclimatic House within the architectural.

Table 5-6: An Evaluation of Suburban Villa.

Suburban Villa				
Architectural Values		**Evaluation**	**Per value**	**percentage**
Islamic values and concepts	55- The privacy (opening inward).	✓	**4**	80%
	56- Courtyard centralization.	✓		
	57- Creating inner paradise.	✓		
	58- Simplicity in construction.	✓		
	59- Islamic building codes.	**x**		
Environmental concepts and values	60- Climate Treatment (Climate Control).	✓	**2**	100%
	61- Contrast between the closed and open spaces.	✓		
Technical values.	62- Variety of building methods with a variety of materials.	✓	**1**	33.3%
	63- The organic expression of architectural elements.	**x**		
	64- Architectural expression of structural elements.	**x**		
Spatial concepts.	65- Interior space.	✓	**3**	100%
	66- Exterior space.	✓		
	67- Transitional spaces.	✓		
Aesthetic concepts and values	68- Human scale.	✓	**2**	66.6%
	69- Geometrical Formations and Decorations.	**x**		
	70- Harmony in Architectural Formation.	✓		
Socio-economic values	71- Social concepts	✓	**1**	50%
	72- Economic Considerations	**x**		
Total	18	18/13		71.6%
Notice	This villa was new style of traditional Damascene house by focusing on the concepts which is very essential point, then reform the traditional elements.			

5.2.5. Example From Housing Competition

After the Syrian revolution and the spreading of Syrian refugees in the big land, people have known about this country more than before. Since Damascus is the capital city and it was the oldest capital city in the world, most of the architectural competitions about the reconstruction of Syria are focusing on the Damascene architecture. Recently, several proposal projects were shared on the websites. And there were some distinctive attempts about the residential and public buildings in Syria.

One of the good examples was designed for high rise building, with a repeated courtyard on each floor, it works as a lung of the building, not only for environmental aspects but also because it is the best concept of the traditional Damascene house.

Even the facades of the building were simple with the modern type of arches. And the green element giving the building beautiful decoration also.

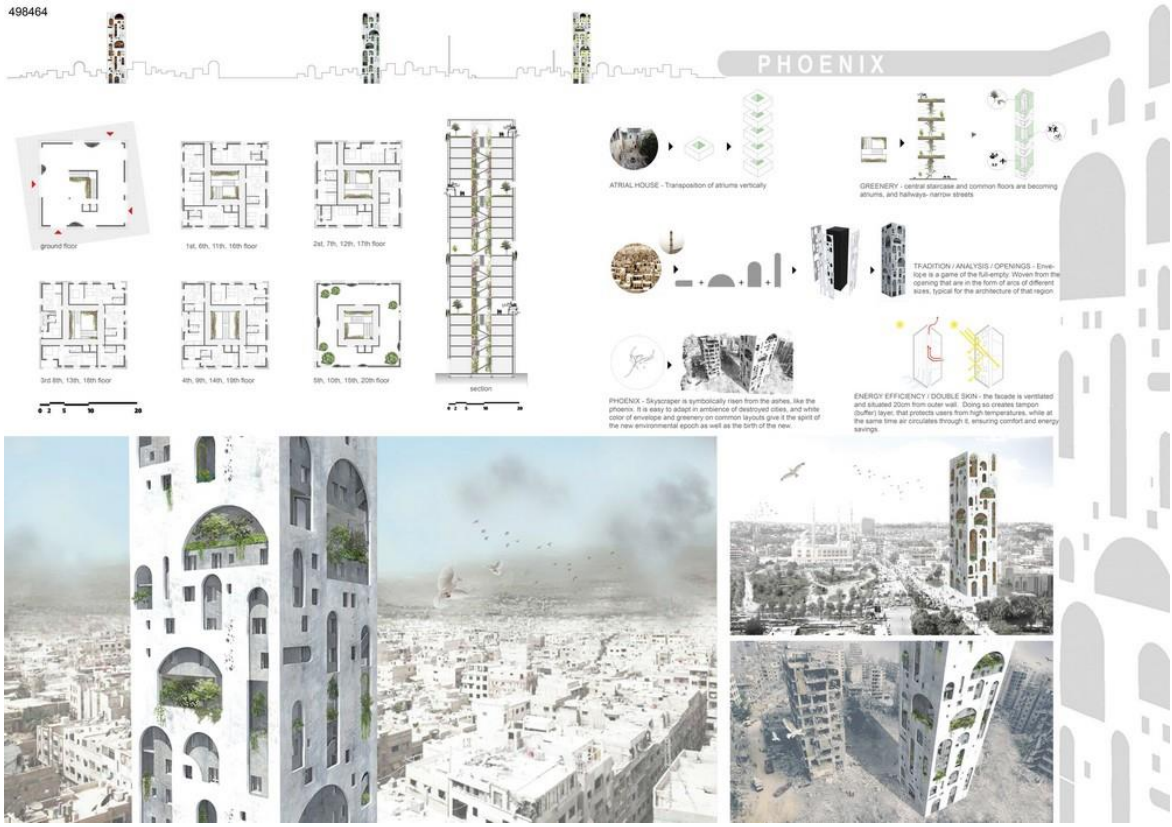
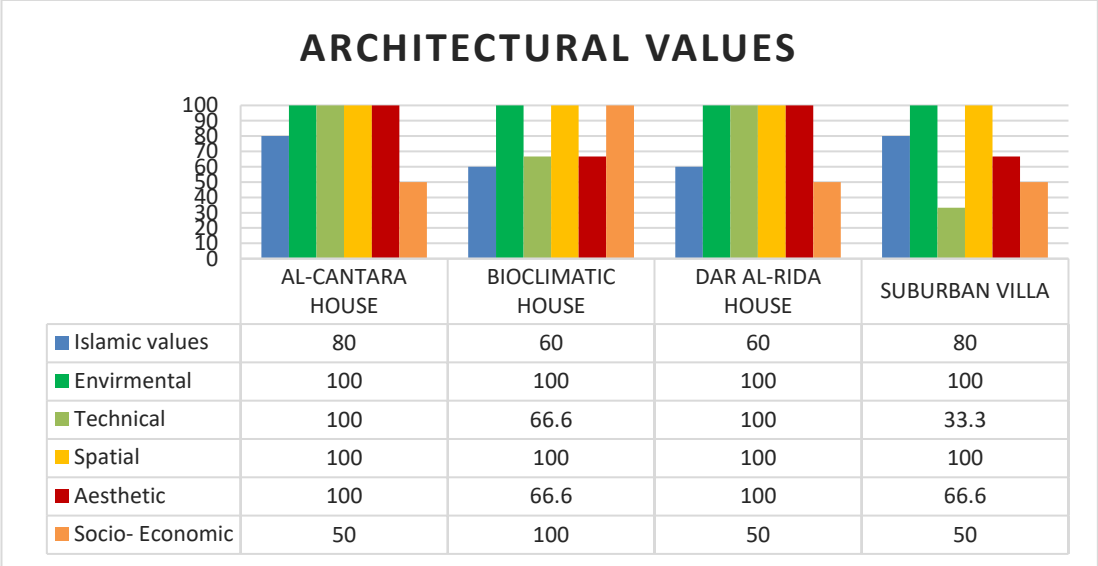


Figure 5.14: Example from Housing Competition (Url-30).

From the previous analysis we can make a comparison among the examples and concludes some results.



	AL-CANTARA HOUSE	BIOCLIMATIC HOUSE	DAR AL-RIDA HOUSE	SUBURBAN VILLA
Islamic values	80	60	60	80
Envirmental	100	100	100	100
Technical	100	66.6	100	33.3
Spatial	100	100	100	100
Aesthetic	100	66.6	100	66.6
Socio- Economic	50	100	50	50

Figure 5.15: Comparison among the examples.

Firstly, AL-Cantara house and Dar-Al-Rida house were a copy of the luxurious traditional house with using some new modern materials. Moreover, the bioclimatic house was focusing on the climatic aspect and focused on the low-cost building materials. Therefore, the house was a copy of a traditional house, but the architect took the only simplicity of the traditional buildings and discarding the other aspects. However, the suburban villa was concentrating on the concepts of the traditional Damascene house not imitating the traditional elements, the design was suitable for contemporary demands.

Finally, although the previous modern examples are individual houses like villas still is a step to spread the traditional architecture in Damascus on every type of domestic buildings not only on individual houses. Unfortunately, after long searching, we couldn't reach low-income houses in Damascus that applied some architectural values, but maybe this research could hint at this issue and may some architects make some attempts in their future designs.

6. RESULTS AND RECOMMENDATIONS

6.1. RESULTS

- This research briefly concluded the changing process of Damascene domestic architecture. Moreover, how the Damascene architecture gained the most beautiful form during the Ottoman period. Especially during this period, the architects and builders used the precedent values and form then reintroduced them according to Islamic, environmental requirements and human needs.
- At the beginning of the twentieth century, novel imported concepts have emerged, which had imposed on Damascus and its architecture. As a result, authenticity and local identity features have defaced, which creates a gap between the past and the present. These modern planning and designing ideas were not working to achieve the person, community, and environment requirements together. And the traditional concepts weren't put in consideration neither designing nor planning, this is not only important to preserve the inherited social values and concepts but also to preserve the importance of the place and its distinctive personality.
- Ottoman heritage in Damascene domestic buildings is full of architectural principles that are issued to fit the place, environment, climate, and the human scale. These principles are constants that cannot abandon to reach a successful contemporary architecture with a distinctive identity.
- The construction of the Damascene house during the Ottoman period is also has known for its durability and resistance to climate and natural factors, by using different type of stones, mud and woods.
- Ottomans were concerned with the notion of Umma which means the unity of the Muslim community. This notion turned to their architecture also by creating compact fabric for the city to form one body as they did in Damascus. In addition, the simplicity of exterior facades in the whole city doesn't matter if the owner is rich or poor, while each person creates his own paradise in accordance with his ability to decorate his house to feel the belonging to his family also.

- The Courtyard house has known before Ottoman period but the decoration of the inner facades of the courtyard take the most beautiful form in Ottoman period.
- The Damascene house combined the Turkish style with Arabic style by availability of sofa (Turkish) with courtyard (Arabic) since many houses contain sofa style in the ground or the first floors.
- In the precedent eras, they cared about the design of palaces by using different types of decorations. However, the Ottomans have enriched all houses in Damascus with decorations to represent the paradise for each dweller. Accordingly, there is no random decoration in the Damascene house because each detail had its function aesthetically, environmentally or constructional.
- One of the characterized methods to provide the privacy of the house during the Ottoman period was using the inclined entrance, which was to abstain the stranger visitors from seeing the family while they are moving or sitting in the courtyard or Iwan.
- The Islamic values of Ottoman houses in Damascus cared about privacy. Not only for the dwellers but also to provide privacy for neighbors. By locating the entrances and windows that were not facing each other. Furthermore, they care about the feeling of safety at homes by making the houses inward looking and isolate the house from the noise.
- Islam as a religion does not contradict to benefit from using new techniques, building materials, and forms that derived from them since Islam classified them as variables, but through respecting the person with his beliefs and traditions, which are constants.
- Terms of sustainability and environmental have been employed in the Damascene houses by working on different climate treatments starting from the urban fabric and ending with using of various materials in the house.
- The new image of the contemporary architectural scene is not by discarding the architectural heritage. On the contrary, by returning to its renewed intellectual principles.

- There is a necessity to change the overview to traditional architecture as it is forms and elements, whereas it is an intellectual architecture that includes many values and concepts. Moreover, we can create contemporary architecture suitable for environmental, social, and economic needs, instead of using the geometrical forms and elements and Stick them in contemporary architecture.
- Islamic architecture through its design it is not represented by domes, courtyards and decorations, on the contrast it is group of values that applied on the Muslim house.
- Authenticity and contemporary are not contradictory since there are a common point between them and represented by the modern innovation and intellection, with preserving the local identity which derives its personality from the values and principles of the community.
- The height of the building is not an obstacle to abstain from using the courtyard, whereas through creation and innovation to find non-traditional solutions to employ the courtyard in buildings.
- The architectural values employed on Ottoman houses in Damascus are suitable for every time and place since they depend on the concepts that are concerned with the spirit and intellection of architecture, not the forms.
- The Ottomans cared about relationships among the family members particularly, and the relationship with neighbors generally. This issue is reflected in the Damascene house since it has spaces that provide the best places for meetings and ceremonies and many other occasions. Besides, the compact fabric provides strong interactions between the neighbors.
- The Damascene house has enormous economic benefits since it provides the light and heat from the courtyard and thick stone walls.
- The analytical contemporary buildings in chapter five are important examples in Damascus and motivate the architects to benefit from the intellectual heritage and to encourage their innovation. These examples will highlight the reviving of Damascene domestic architecture.

- The economic factor of Damascene house was very clear since each house was constructed according to the habitants need and ability of finance.

6.2. RECOMMENDATIONS

- The Damascene houses during the Ottoman period deserve to be studied in tiny details not only to analyze or understand their development but also as examples of sustainable building. From these houses, we can learn many lessons to keep the identity of the city.
- Architect must consider the use of the architectural elements and distinctive features of the city for two reasons. The first: the suitability of the traditional elements for the climate and the environment. The second: Preserving the local identity and continuity between the past and the present. However, without understanding this process to reuse or repetition of traditional architectural elements as they were in the past. Whereas, it is necessary to develop them and provide the balance between the intellectual and spiritual factors of man and his contemporary needs and requirements.
- Not to blindly imitate the Western architecture that increased in Damascus as if it were fixed regulations that are suitable for every time and place.
- The necessity of educating future generations that we have a rich urban heritage that keeps us away from the rapid formation.
- The domestic buildings emerged from the people's needs in the community. If we want to build with new building materials, there is an essential aspect to provide dwellings suitable for living demands. Such as the Damascene houses during the Ottoman period, which gave the person priority and made the house proper to the person's requirements.
- The architect should consider the past, present, and future through his design. Because his architectural designs represent the identity and the authenticity of his country.
- Reactivate the notion of Umma that applied by the Ottoman, starting from the architectural side to achieve balance and equality for the community by focusing on

the simplicity of the exterior facade and enriched the interior. This move will be a part of many other procedures that should be in consideration to achieve this notion.

- Benefiting from the environmental values that applied in Damascene houses during the Ottoman period since it was a successful design and re-introduce the concepts with modern requirements to reach the sustainability in dwellings.
- Emphasizing the importance of courtyard in the house, such it was the lung of Ottoman house in Damascus since it has given the dwelling the privacy, aesthetical, natural, safety, calmness, and spiritual characteristics.
- Addressing the shortage of building codes by establishing conditions that regulate and oblige owners to achieve privacy and respect the rights of the neighbor.
- Emphasizing the duties of government to preserve the authenticity and modernity of Domestic buildings. Especially, in the future of Syria.
- Considerate the Damascene house as it is the best example of a sustainable house in Damascus and trying to employ its architectural values in modern domestic buildings.
- Provide a variety of solutions to achieve economic buildings for low-income people also by benefiting from the Ottoman house in Damascus.
- Reconsideration of regulations and strict legislation which led to block the architectural intellection, by thinking of setback distances, protrusions, proportions of construction and proportions of spaces which restrict the architect from employing the inherited architectural values in his design.
- Reconsideration of architectural curriculums, which include the residential buildings, and emphasizing how the domestic Ottoman buildings in Damascus were the best example to teach in the faculties of architecture. Through giving the students chances to apply the architectural values on their projects, to gain the ability to implement these values on the working stage after graduation.

6.3. CONCLUSION

In conclusion, we are as architects should benefit from the inherited architecture to keep the authenticity and the identity of the city. The architectural values that derived from the Damascene domestic buildings during the Ottoman period should consider through the design process since are represent the most successful example of domestic buildings in Damascus. Moreover, these values are Adaptable to every era and place and care about the human being. Finally, architects with their creativity can employ architectural values under modern requirements to achieve a modern design with local spirit.

REFRENCES

Abbas, F., Hakim Ismail, L., & Solla, M. (2016, February). A REVIEW OF COURTYARD HOUSE: HISTORY EVOLUTION FORMS,. *ARPN Journal of Engineering and Applied Sciences, 11*(4), 2557-2563.

Abdin, Y. (2012). *Damascene, upon the emergence and growth of the city The history of the sanctity of the place.* Retrieved October 13, 2020, from 360˚ Architectural Blog: https://360th.wordpress.com/%D8%A3%D8%B3%D8%A7%D8%AA%D8%B0%D8%A9-%D8%A7%D9%84%D9%83%D9%84%D9%8A%D8%A9/%D9%85%D8%A7-%D8%A8%D8%B9%D8%AF-%D8%A7%D9%84%D8%AF%D9%83%D8%AA%D9%88%D8%B1%D8%A7%D9%87/

Abdin, y., & AL-Masri, I. (2008, May). Study the influence of contravention building system on planning methods of Damascus. *Yassar Abdin* . Damascus, Syria: Damascus University. Retrieved July 16, 2020, from 360˚ Architectural Blog : https://360th.wordpress.com/%D8%A3%D8%B3%D8%A7%D8%AA%D8%B0%D8%A9-%D8%A7%D9%84%D9%83%D9%84%D9%8A%D8%A9/%D9%85%D8%A7-%D8%A8%D8%B9%D8%AF-%D8%A7%D9%84%D8%AF%D9%83%D8%AA%D9%88%D8%B1%D8%A7%D9%87/

Abdulrahman, A. (2008). *Islamic architecture in Damascus.* Damascus: Directorate of Museums and Antiquities.

Abu ghazalah, I. (2019, June 10). *History of Damascus*. Retrieved October 17, 2020, from Mawdou'u: https://mawdoo3.com/%D8%AA%D8%A7%D8%B1%D9%8A%D8%AE_%D9%85%D8%AF%D9%8A%D9%86%D8%A9_%D8%AF%D9%85%D8%B4%D9%82

Agoston, G., & Masters, B. (2009). *Encyclopedia of the OTTOMAN empire.* New York: Infobase Publishing.

Akbar, J. (1988). *Crisis In the Built Environment, The case of the Islamic City* (Vol. 1st). (J. Shaw, Ed.) Singapore: Concept Media Pte Ltd.

AL Asali, M., & Shahin, I. (2016). Rural habıtatıon ın syrıa: the culture of tradıtıonal archıtecture and ıts role ın the reconstructıon process. *METU JFA, 33*(2), 101-119.

Alafandi, R., & Abdul Rahim, A. (2013). SYRIAN PALACES IN OTTOMAN STYLE. *International Conference on Architecture and Built Environment* (pp. 765-780). Kuala Lumpur: International Islamic University Malaysia.

Aldahabi, J. (2016). Provide standard measurement requirements of urban planning for disaster management in existing cities. *published Doctoral dissertation*. Damascus, Syria: Damascus University.

Al-Hafith, O. (2014). Courtyard as a design pattern in multistory housing buildings: The effective design characters on courtyard insolation -Mosul City as a Case Study. *The 1st international scientific conference of Cihan University.* Erbil: Cihan University.

Al-Hallaq, N. (2012). The colonialist in the local character in architecture and urbanism. *Damascus University Journal of Engineering Sciences, 8*(1), 247-271.

Alhawasli, H., & Farhat, Z. (2017). Response of Domestic Damascene Architectural Elements to the Climatic Factors between the Traditional and Modern Times. *American Journal of Civil Engineering and Architecture, 5*(2), 40-46.

Alkinani, K. (2006). The planning of the Arab Islamic city, privacy and modernity. *Journal of Planning and Development*(15), 1-24.

Al-Kodmany, K. (1999). Residential visual privacy: Traditional and modern architecture and urban design. *Journal of Urban Design, 4*(3), 283-311.

Almulla Hwaish, A. N. (2015). Concept Of The "Islamic House"; A Case Study Of The Early Muslims House. *4th IASTEM International Conference* (pp. 86-93). Amsterdam: academia.

Alshamaylah, A. (2016). Authenticate the architectural term for the elements of the Arab Islamic house. *Journal of Applied Sciences in Jordan, 18*(1), 21-36.

Al-Shihabi, Q. (1996). *Ornaments of Islamic architecture in Damascus.* Damascus: Minstry of Culture.

Al-Ulwan, H., & Hasan Beik, Y. (2017). The harmony between architecture and nature. *Emirates Journal of Engineering Research, 22*(1), 37-55.

Amro, D., & Bahauddin, A. (2015, February). Analysis of the Interior Design Components in Traditional Courtyard Houses in Irbid, Jordan. *Advances in Environmental Biology, 9*(3), 117-122.

Bahnasi, A. (1974). *the Syrian archaeological annals*, 137-140.

Bahnasi, A. (1979). *Aesthetic of Arab Art.* Kuwait: Council of National Culture, Arts and literature.

Bahnasi, A. (2002). *Urbanism of Damascus (Omran Al-Fayha'a)* (1 ed.). Damascus: Dar Al-Fikir.

Behsh, B. (1988). The Traditional Arabic House. Its Historical Roots. *Tidskeift for Arkitekturforskning, 1*(4), 16-30.

Burns, R. (2005). *Damascus: A History* (2nd ed.). New York: Routledge.

CORPUS Levant. (2004). *Traditional Syrian Architecture.* (S. Caso, Trans.) Avignon, France: CORPUS Levant.

Dincyurek, O., Mallick, F. H., & Numan, I. (2003). Cultural and environmental values in the arcaded Mesaorian houses of Cyprus. *Elsevier, 38*, 1463 – 1473.

Eissa, M. (2015). Big events in urban life cycle analysis; the case of Damascus. *published master dissertation*. Portugal: Universidade do Minho.

Fathi, H. (1980). *Poor architecture.* Egypt: Nahdet Misr Publishing House.

Fathi, H. (1988). *Natural Energy and vernecular architecture* (1st ed.). Beruit: The Arab Foundation for Study and Publishing.

Faculty of architecture. (2009). Damascus university, Syria.

Fayyad, I. (2018). An Example of Domestic Mamluk Architecture in Damascus (14th and 15th centuries). *Ash-Sharq, 2*(2), 136-156.

Ferwati , S., & Mandour, A. (2008, March). Proportions And Human Scale In Damascene. *International Journal of Architectural Research, 2*(1), 247-261.

Ferwati, M. (1992, December). A Geographical Semiotic Analysis Of Four Damascene Residential Neighbourhoods: Spatial Design And Behavioural Relations. *published Doctoral dissertation*. London: University of Ontario.

Foroozani, M. (1991). Principles of aesthetics in Islamic architecture. *Periodica Polytechnica Architecture, 35*(3-4), 189-199.

Fries, F. (2000). Damas (1860-1946) La mise en place de la ville modern. *published Doctoral dissertation*. Paris, France: University of Paris.

Hakky, R. (1995). The Tekkiye Süleymaniye In Damascus: Its Setting And Spatial Qualities. *METU JFA, 15*(2), 37-51.

Hamed Alkattan, a. a., & Kasim, M. M. (2016, April). Towards a contemporary concept of environmental sustainability in Islamic architecture. *Journal Of Al Azhar University Engineering Sector, 11*(39), 790-809.

Herzfeld, E. (1942). Damascus: Studies in Architecture I. In E. Herzfeld, & R. Ettinghausen (Ed.), *Ars islamica* (Vol. 9). Michigan, USA: University of Michigan Press.

Herzfeld, E. (1946). Damascus Studies in Architecture III. In E. Herzfeld, & R. Ettinghausen (Ed.), *ARS ISLAMICA* (Vols. 11-12). of Michigan: University of Michigan Press.

Ibrahim, A. (1982). *Establishing civilizational values in building the contemporary Islamic city.* Cairo, Egypt : Center of Planning and Architectural Studies.

Ibrahim, D. F. (2017). Islamic content and its effect in crystalizing the design vision of contemporary housing. *Architecture, Arts and Humanistic Science Magazine*(5), 80-93. Retrieved from https://platform.almanhal.com/details/article/101247

JICA. (2003). *The Study on Urban Planning for Sustainable Development of Damascus Metropolitan Area in the Syrian Arab Republic.* Urban and Cultural Heritage. JICA (Japan International Cooperation Agency). Retrieved January 10, 2020, from https://openjicareport.jica.go.jp/618/618/618_313_11880648.html

JICA. (2007). *The study on urban planning for sustainable development in the old capital of Damascus.* Japanese Cooperation for Urban Planning. Damascus: Ministry of Local Administration and Environment.

Jiroudy, M. (2012). *Re-Thinking Rural Architecture In Syria (A Traditional Approch To Contemprory Living).* Retrieved November 26, 2020, from A Global Village: https://www.aglobalvillage.org/journal/issue8/materials/syria/

Khair, S. (1969). *Damascus City.* Damascus: Ministry of Culture and Tourism.

Khlaif, S. (2018, September 22). *Information about Damascus city*. Retrieved July 23, 2020, from Mawdou'u: https://mawdoo3.com/%D9%85%D8%B9%D9%84%D9%88%D9%85%D8%A7%D8%AA_%D8%B9%D9%86_%D9%85%D8%AF%D9%8A%D9%86%D8%A9_%D8%AF%D9%85%D8%B4%D9%82

Khouli, M. B. (1975). *Climatic effects and Arab architecture.* Bierut: Dar Al-Maaref.

Khudur, M. (2016, September 28). *Damascus the city of Jasmine*. Retrieved October 09, 2020, from Mawdou'u: https://mawdoo3.com/%D8%AF%D9%85%D8%B4%D9%82_%D9%85%D8%AF%D9%8A%D9%86%D8%A9_%D8%A7%D9%84%D9%8A%D8%A7%D8%B3%D9%85%D9%8A%D9%86

Kibrit, Z. (2000). *Damascene House* (1st edition ed.). Damascus, Syria: Al-Salhani Foundation.

Küçükerman, Ö. (1973). *Anadoluʾdaki geleneksel Türk evinde mekân organizasyonu açısından odalar.* Istanbul: Türkiye Turing ve Otomobil Kurumu.

Lababedi, Z. (2008). The Urban Development of Damascus:. *published Doctoral dissertation*. London: University College London.

Lynch, K. (1960). *The Image of the City.* London: Massachusetts Institute of Technology.

Malik, S., & Mujahid, B. (2016). Perception of House Design in Islam: Experiences from Saudi Arabia, and Pakistan. *Islamic thought and civilization, 6*(2), 59-62.

Mansour, H. (2015). The lost identity of the city: The case of Damascus. *Citta 8th Annual Conference On Planning Research / Aesop Tg Public Spaces & Urban Cultures* (p. 16). Porto: University of Porto.

Matsubara, K. (2011). Urban Conservation based on the International Cooperation - A case study of the Qanawat south area, Damascus-. *The Proceedings of the International Symposium on Urban Planning*, 427-436.

Melnik, V. (2019). The Damascene architecture of the post-Ottoman period and the influence of European culture (baroque style) on the Damascene traditional house (post-nineteenth century - Tthe beginning of the twentieth century). *International Journal of Civil Engineering and Technology (IJCIET), 10*(03), 2143-2158.

Mikhael, S. (2004). The privacy and the role of the Arab architect in solving the problem of housing architecture (a comparative analytical study of models from Damascus for traditional housing and during the French Mandate and beyond). *Damascus University Journal of Engineering Sciences, 20*(2), 239-266.

Mousa, N., & Habib, B. (2013). Factors affecting the planning of the Arab-Islamic city. *Journal of Girls Education College for Humanities*(13), 164-194.

Mousa, Y. (2020, January 02). *Architecture in Syria (From the spaciousness of the Damascene house to the narrow concrete blocks)*. Retrieved July 16, 2020, from Noon post: https://www.noonpost.com/content/35322

Mousli, K., & Semprini, G. (2015). Thermal performances of traditional houses in dry hot arid climate and the effect of natural ventilation on thermal comfort: a case study in Damascus. *Energy Procedia, 78*, 2893-2898.

Nassrah, M. (2018, August 26). Proportional system in architectural Designing of Qasr al-Hayr al-Gharbi and its Portal. *Tartous University Journal for Research and Scientific Studies, 2*(2), 18-39.

Neglia, G. (2012, December 01). Processes of Formation of Ottoman Damascus. *Bulletin d'études orientales*, 223-242.

Rabah, S. (2003, April). Muslim Architecture Under Seljuk Patronage (1038-1327). (S. Al-Hassani, Ed.) *Foundation for science technology and Civilisation*, 1-13.

Rabbat, N. (2020, March 19). *Damascus.* Retrieved October 09, 2020, from Encyclopedia Britannica: https://www.britannica.com/place/Damascus

Raymond, A. (1991). *Grandes VIlles Arabes à l'époque Ottomane* (Vol. 1). (L. Faraj, Trans.) Cairo: Dar Al-Fikr for Studies and Publishing.

Rihawi, A. (1969). *Damascus city.* Damascus, Syria: Self published.

Rihawi, A. (1972). The palaces of the rulers in Damascus. *the Syrian archaeological annals*, 43-44.

Rihawi, A. (1979). *Arab Islamic Architecture.* Damascus: Ministry of Culture.

Saker, A. S. (2014). Visual Study of the Surrounding of Old Damascus City: (visual continuity and the effect of inside the city upon the surrounding Area). *Tishreen University Journal for Research and Scientific Studies*, *36*(3), 263-282.

Scardigno, N. (2014). Toward an A Priori Sustainable Architecture. *arts*(3), 15-26.

Shahran, A. F. (2018). A Study of Single Family Housing in Libya. *published Doctoral dissertation*. NOVI SAD, Serbia: University Of Novi Sad.

Soufan, A. (2004). Istanbul–Damascus: transcultural memory and architecture of Modernity prototyping. *AD Architectural Design, 74*(6), 757-784.

Soufan, A. (2018, September). Post-war Reconstruction, Authenticity and Development of Cultural Heritage in Syria. *ICOMOS University Forum, 1*, 1-18.

Sthapak, S., & Bandyopadhyay, A. (2014). Courtyard houses: An overview. *Recent Research in Science and Technology*, *6*(1), 70-73.

Touma, A. (2011). *Antoine Touma House Presentation Panels.* Retrieved November 24, 2020, from ARCHNET: https://archnet.org/sites/6484/publications/2239

Twain, M. (1911). *Innocents Abroad.* London : Harper Bros.

UNESCO. (2013). *Ancient City of Damascus*. Retrieved Ocober 09, 2020, from UNESCO World Heritage Centre: https://whc.unesco.org/en/list/20/

Waly, T. (1992). *The courtyard pattern in the architecture of the house.* Bahrin: Engineering Center.

Waziri, Y. (2004). *The Islamic architecture and environment.* Kuwait: Alam Al-Maarifa.

Weber, S. (2007). Changang cultural references: Architecture old Damascuse in the Ottoman period (1516-1918). In C. Maurice, M. Cerasi, A. petruccioli, A. Sarro, & S. Weber (Eds.), *Multicultural urban fabric and types in the South and* (Vol. 102, pp. 190-223). Beirut, Libanon: Orient - Institut Beirut.

Wind, B., & Ibrahim, B. (2020, January 14). The war-time urban development of Damascus: How the geography- and political economy of warfare affects housing patterns. *Habitat International, 96*, 1-14.

Wulzinger, K., & Watzinger, C. (1984). *Islamic monuments in Damascus city.* (Q. Twair, Trans.) Damascus.

Yaghi, G. (2011). *The archaeological monuments of the Islamic civilization in Syria.* Rabat: Islamic Educational, Scientific and Cultural Organization (ISESCO).

Yaghi, G. (2013). Interventions upon the urban heritage of the old Damascus. *Alturath Alsha'bi*, 22-32.

Yahia, M., & Johansson, E. (2014). Evaluating the behaviour of different thermal indices byinvestigating various outdoor urban environments in the hot dry city of Damascus, Syria. In M. W. Yahia, *Towards Better Urban Spaces in Harmony with Microclimate: Urban design and planning regulations in hot dry Damascus, Syria* (pp. 129-154). Lund, Sweden: Lund University.

Zabłocki, W. (2017). My Inspirations From Traditional Syrian Architecture. *Art Of The Orient, 6*.

Zeeland, R. (2013). *Revealing Damascus.* Delft: Faculty of Architecture Technical University of Delft.

Url-1<https://www.google.com/search?q=syrian+map&tbm=isch&ved=2ahUKEwi9r-uz36PtAhUElBoKHTrFDjoQ2cCegQIABAA&oq=syrian+map&gs_lcp=CgNpbWcQAzICCAAyBAgAEB4yBAgAEB4yBAgAEB4yBAgAEB4yBAgAEB4yBAgAEB4yBggAEAUQHjIGCAAQBRAeOgQIIxAnOgQIABBDULohWOszYKc7aABwAHgAgAHl >, Retrieved October 18, 2019.

Url-2 < https://bawaba-sy.com/2019/03/30/%D9%82%D8%B5%D8%B1-%D8%A7%D9%84%D8%AD%D9%8A%D8%B1-%D8%A7%D9%84%D8%BA%D8%B1%D8%A8%D9%8A/ >, Retrieved October 20, 2020.

Url-3.<https://www.alalamtv.net/news/1970378/%D8%A7%D9%84%D8%AA%D9%83%D9%8A%D8%A9-%D8%A7%D9%84%D8%B3%D9%84%D9%8A%D9%85%D8%A7%D9%86%D9%8A%D8%A9-%D8%A7%D9%84%D8%A3%D8%AB%D8%B1%D9%8A%D8%A9-

%D9%81%D9%8A-%D8%AF%D9%85%D8%B4%D9%82>, Retrieved October 29, 2020.

Url-4 < http://www.dgam.gov.sy/index.php?d=252&id=641 >, Retrieved October 30, 2020.

Url-5<http://esyria.sy/sites/code/index.php?site=damascus&p=stories&category=todayimg&filename=201408250059011 >, Retrieved October 10, 2019.

Url-6 < https://tasks.hotosm.org/project/1694 >, Retrieved October 10, 2019.

Url-7<https://www.alaraby.co.uk/entertainment/2016/11/8/%D9%82%D8%B5%D8%B1-%D8%A7%D9%84%D8%B9%D8%B8%D9%85-%D9%81%D9%8A-%D8%AF%D9%85%D8%B4%D9%82-1 >, Retrieved November 17, 2019.

Url-8 < https://www.kuna.net.kw/ViewPics.aspx?id=53432 >, Retrieved November 17, 2019.

Url-9 < https://archnet.org/sites/6416/media_contents/76410 >, Retrieved November 28, 2020.

Url-10 < https://gulfnews.com/world/mena/old-damascus-property-transfer-raises-ire-of-residents-1.2227885 >, Retrieved January 05, 2020.

Url-11<https://i.pinimg.com/originals/fa/33/9b/fa339bc1885e13781ea52d6a5dc1bf6a.jpg >, Retrieved January 05, 2020.

Url-12 < https://tr.pinterest.com/pin/419327415301454958/ >, Retrieved January 05, 2020.

Url-13 < https://archnet.org/media_contents/4542 >, Retrieved November 28, 2020.

Url-14 < http://web.mit.edu/akpia/www/AKPsite/4.239/Azem/Azam%20Palace.html >, Retrieved November 27, 2020.

Url-15 < https://commons.wikimedia.org/wiki/File:Damascene_window.jpg >, Retrieved November 27, 2020.

Url-16<https://ar.wikipedia.org/wiki/%D9%85%D9%83%D8%AA%D8%A8_%D8%B9%D9%86%D8%A8%D8%B1 > Retrieved February 22, 2020.

Url-17 < https://syriaphotoguide.org/damascus-beit-khalid-al-azem-%D8%AF%D9%85%D8%B4%D9%82-%D8%A8%D9%8A%D8%AA-%D8%AE%D8%A7%D9%84%D8%AF-%D8%A7%D9%84%D8%B9%D8%B8%D9%85/?doing_wp_cron=1583064750.4159960746765136718750 >, Retrieved March 03, 2020.

Url-18 < https://archnet.org/sites/6417/media_contents/76437 >, Retrieved November 2020, 27.

Url-19 < https://archnet.org/media_contents/4302 >, November 27, 2020.

Url-20<https://ar.wikipedia.org/wiki/%D9%85%D9%83%D8%AA%D8%A8_%D8%B9%D9%86%D8%A8%D8%B1#/media/%D9%85%D9%84%D9%81:Damascus,_Maktab_Anbar,_servants'_courtyard.JPG >, Retrieved March 03, 2020.

Url-21<https://naseemalsham.com/uploads/image/Landmarks/2013/Maktab_3nbar/Maktab_3nbar_10.jpg >, Retrieved November 27, 2020.

Url-22 < http://www.lovedamascus.com/en/what-to-see/tourist-attractions/al-akiba/011ta001/house-of-khaled-al-azem >, Retrieved November 28, 2020.

Url-23<https://www.facebook.com/TheAZEM.Palace/photos/a.585121451598418/596983260412237/?type=3&theater >, Retrieved March 09, 2020.

Url-24<https://www.facebook.com/TheAZEM.Palace/photos/pcb.613911372052759/613910208719542/?type=3&theater >, Retrieved March 09, 2020.

Url-25<https://www.facebook.com/TheAZEM.Palace/photos/pcb.599381943505702/599381060172457/?type=3&theater >, Retrieved March 09, 2020.

Url-26 < https://souriat.com/2016/01/19011.html >, Retrieved September 04, 2020.

Url-27 < https://www.flickr.com/photos/charlesfred/44414382170/in/photostream/ >, Retrieved December 05, 2020.

Url-28<https://www.facebook.com/dimashq.now/photos/pcb.1468600093265598/1468599816598959/?type=3&theater >, Retrieved March 09, 2020.

Url-29 < https://archnet.org/sites/5161/media_contents/46782 >,Retrieved October 15, 2020.

Url-30 < https://www.archdaily.com/792525/matterbetter-announces-winners-of-syria-post-war-housing-competition >, Retrieved November 27, 2020.