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Translation of Islamic Culture into Arabian Architecture

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Dedicated to:

My big family, the Muslim community;

And to

My small family; my parents, my Husband and my Children

Who have supported and encouraged me during the study presented in this thesis.

DISCLAIMER

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or other university or other institute of learning

Mona Attia Omar

ABSTRACT

In the past, researchers in the field of art and architecture have searched for a definition of Islamic architecture, its history and its social meaning. This study focuses on the Islamic culture of the Arab world and its influences on the architecture of the region, giving an overview of contemporary architecture in the Arab world, its situation, cultural crisis and hope for the future.

This research aims to identify the principal characteristics of Islamic architecture, which embody the needs and demands of Muslims according to their Islamic teachings. Muslims form one of the biggest communities in the world, which is suggested to be more than one fifth of the world's population, about one and half billion.

This community has special architectural needs related to their religious teachings, traditions and culture, because Islam is not only a religion, it is a complete way of life, which covers all social, political, economic, educational, cultural, hygienic, and behavioural aspects.

For a great number of people, the concept of Islamic architecture denotes tangible characteristics of some architectural features like *Mashrabiah*, arch, dome, or any other architectural pattern that distinguishes this typical style of architecture. But, Islamic architecture is more than just a spectacle of domes and minarets; it is a deep expression of a rich culture that has unified countries across the globe.

In the last fifty years, contemporary architecture of the Muslim world in general, and the Arab world in particular, has been exposed to several outside influences that have eventually caused it to be alienated from its particular sense of identity and, thus, to lose its character. It is believed that such matter requires immediate attention towards attempting a "revival process" by uncovering the bases and principles of Islamic architecture, as manifested throughout Islamic history. These principles could be integrated and molded into the contemporary architecture of the Arab world, which reflects a rather complicated and, sometimes, contradicting set of values.

The aim of this study is to develop an appropriate definition for Islamic architecture of the Arab world in terms of Islamic teachings and doctrine.

Associated with this aim, this research will include within its scope:

- Understanding Arabian Islamic culture, traditions and environment and how they have affected architectural design.
- Translating some principles from Islamic doctrine, which can be applied to architectural practice, and to recognize Muslims' architectural needs and demands, according to Islamic teachings.
- Developing architectural standards that satisfy Muslims architectural needs and a definition of what, in an Islamic context, could be considered as successful Arabian Islamic architecture.
- Analyzing to what extent contemporary architecture meets Muslims' needs, according to their Islamic teachings by undertaking a Case Study of pre-Modern and contemporary architecture in Egypt.

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March 2000

{{ In The Name of God, the Most Beneficent, the Most Merciful }}

TRANSLATION OF ISLAMIC CULTURE INTO ARABIAN ARCHITECTURE

(A Case Study of Pre-Modern and Contemporary Architecture in Egypt)

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PART I

CHAPTER 1: INTRODUCTION

PART I. INTRODUCTION

CHAPTER 1. INTRODUCTION

1.1 THE PROBLEM

In the past, researchers in the field of art and architecture have studied Islamic architecture, its history and social meaning. Despite this, it has been difficult to claim an accurate definition of Islamic Architecture. For a great number of people, the concept of the Islamic architecture denotes tangible characteristics of some architectural features like *Mashrabiah*, arch, dome, or any other architectural pattern that distinguishes this typical style of architecture (Ibrahim 1980). But, Islamic architecture is more than just a spectacle of domes and minarets; it is a true expression of a rich culture that has unified countries across the globe (Michell et al. 1978).

The most beautiful patterns, which represent the features of the Islamic architecture, can be seen in the official buildings, like those of Mamluks' period in Egypt, Ommayad's in Syria, Abbaside's in Iraq and Spanish or Persian architecture. But have they fulfilled Muslims' needs according to their Islamic doctrine?

Although early study of Islamic architecture was carried out in the end of the nineteenth century, no culturally appropriate definition for Islamic architecture in general has since arisen. This represents a serious gap in the knowledge required for the efficient understanding and application of Islamic architecture, whether inside or outside the Arab world.

1.2 THE AIM

The aim of this study is to develop an appropriate definition for Islamic architecture of the Arab world, in terms of Islamic teachings and doctrine.

Associated with this aim, this research will include within its scope:

- Understanding Arabian Islamic culture, traditions and environment, and how they have affected architectural design.
- Translating principles from Islamic doctrine, which can be applied to architectural practice, recognizing Muslims' architectural needs and demands according to

Islamic teachings.

- Developing architectural standards that satisfy Muslims architectural needs, and a definition of what, in an Islamic context, could be considered successful Arabian Islamic architecture.
- Analyzing to what extent contemporary architecture meets Muslims' needs according to their Islamic teachings compared to the pre-Modern Islamic era.

1.3 RESEARCH APPROACH

To achieve the aim of this thesis, part 2 discusses the background of Islamic architecture; Chapter 2 defines Arabs and their culture, giving brief historical and geographical review of Arabs and Arab world, analyzing climate, and recognizing the main features of Arabian architecture. Chapter 3 is concerned with: explaining the meaning of Islam; analyzing the *Five Pillars of Islam* (application of faith; recognizing *Articles of Faith*, introducing Islam as a *Code of Life*, reviewing the *Resources of the Islamic Legislation* (Shari'ah law; and, introducing *Muslim's Rite*. Finally, chapter 3 concludes how Islamic teachings have directly and indirectly affected architecture.

Chapter 4 briefly reviews the history of Islamic architecture on chronological and geographical basis and demonstrates architectural elements of Islamic buildings, development of religious, residential, and public buildings, recognizes main characteristics. Models of different types of buildings, during different historical periods, have been selected to demonstrate their architectural and urban design basis which emanated, from the Islamic faith and *Shari'a* (Islamic law), and the environmental impacts and modes of Muslim's life.

Part 3 of this thesis determines the cultural and religious factors that have affected Arabian Islamic architecture. Therefore, chapter 5 reviews the literature concerning Islamic architecture, criticizing and comparing the Western viewpoint of Islamic architecture with the Muslim viewpoint. The chapter explains the Islamic perspective of the architectural theory, and discusses Islamic theory in architecture. Further, the chapter reviews the Islamic concept of architecture in general and of specific types of buildings in particular, such as mosques, residential and public buildings.

Chapter 6 speculates and tests two substantial questions: Firstly, what is the meaning of

'Islamic Architecture'? Considering both Western and Muslim viewpoints; secondly, does contemporary architecture fulfil Muslims' needs and demands according to Islamic teachings? This will be examined against the crisis of Arabian contemporary architecture through the existing literature.

Chapter 7 is aimed to develop a further understanding of the role of architectural practices by analytical study of buildings from the Pre-modern Islamic periods and contemporary architecture in Egypt by undertaking the following:

- Setting architectural standards and principles that satisfy Muslims architectural needs by reintroducing (rewriting, classifying and arranging) Islamic architectural principles concluded in chapter 5 and putting them in schedule forms as a scale using a suggested points system to measure whether, or not, the selected buildings are Islamically successful.
- Analyzing architectural plans, sections and elevations of the selected buildings, through both writing and drawings, and identifying their strengths and/or weaknesses in conforming to Islamic concepts.
- Applying the emerged definitions and architectural standards on specific contemporary buildings of Hassan Fathy and others and examining to what extent contemporary architecture meets Muslims' needs according to their Islamic teachings.

Chapter 8 reviews the conclusions and the answers of the previous questions, regarding contemporary architecture and fulfillment of Muslims' needs, and how the success of the Arabian Islamic architecture lies in following particular standards to fulfill Muslim's needs. Finally, a criterion of successful Islamic architecture and definition of Islamic architecture are suggested. This chapter also introduces summary of the contributions of this thesis to the body of Islamic architectural knowledge and ideas for future research.

ART II. BACKGROUND

CHAPTER 2: INTRODUCING ARABS

PART II. BACKGROUND

(Variable and stable factors in Islamic architecture)

CHAPTER 2 INTRODUCING ARABS

(Variable factors in Islamic architecture)

2.1 INTRODUCTION

Throughout history, architecture has been a mirror reflecting the religious, social, cultural and political character of civilizations. These elements have been the subject of change from time to time and from one place to another, depending on these internal and external influences (Ibrahim, A. & Ibrahim, H. 1987). In this context, Arabian architecture may be considered as the manifestation of the above factors; e.g., religion, culture, social and political life, environment and history.

Muslims from a vast range of races, nationalities and cultures across the globe are united by common Islamic faith; figure 2.1 shows the distribution of Muslims in the world. Of these, only about eighteen percent live in the Arab world (Saheeh International 1995). Although Arabs form a minority of Muslims, they still occupy a distinct position in the Islamic world and play an important role for all Muslims, and consequent Islamic architecture, for the following reasons.

Arabia, which is regarded as the center of the Arab world, is the original homeland of Islam, where Prophet Muhammad was born, lived and buried (Goldschmidt 1983). Also, it is the original homeland of Islamic architecture (Wiet 1973).

Pilgrimage (*Hajj to Mecca – Muslims' Holy Land)* is one of the Five Pillars of Islam. Moreover, every mosque on earth should be oriented towards the *Kabah* in Mecca (figure 2.2).

Arabic calligraphy played a very important role in Islamic architecture (Bamborough 1977) it was used both religiously and artistically on the interiors and exteriors of buildings, especially mosques; and this will be explained later in this chapter.

Moreover, the use of Arabic language is an essential part of Islam. It acts as a religious bond, uniting people with common religious language. Arabic has given spiritual identity, a universal cosmopolitan entity to Muslims. Arabic is the common language of both the Holy Quran and the daily prayers.

The Arab world occupies the Middle East and North Africa; all Arab countries speak the same language (Arabic), embrace the same religion (Islam) and have shared a similar culture and history for more than fourteen hundred years. Therefore, the influences on the architectural prototypes were nearly the same across the whole Arab land (Ibrahim, A. & Ibrahim, H. 1987).

There are certain variable and stable factors that affect Islamic architecture. The variable factors are history (such as the influences of the pre-Islamic periods on Arabian Islamic architecture) and the environment (such as geography, geology, and climate) of a specific region (Ibrahim 1982). This chapter focuses on the variable factors that have affected Islamic architecture. Whereas the stable factors are "the teachings of Islam", which will be introduced in the next chapter.

As this research is concerned with applications of the effect of Islamic culture on architecture in the Arab world, it is worth introducing Arabs background, understanding the relationship between Arabs and Islam and recognizing the influences of Arabian factors (history, culture and faith), and environment (geography, geology and climate) on Islamic architecture.

To achieve this aim, this chapter defines Arabs and gives brief historical and geographical review of Arabs and Arab world. Also, analyzes climate, and recognizes the main features of Arabian architecture.

2.2 ARABS BACKGROUND

2.2.1 Who are Arabs?

Arabs may be defined as '*a people whose native language is Arabic and who regard Arab culture as their own,* (Dahman 1983). According to McPherson 1989, a gathering of Arab leaders some years ago defined an Arab in these words: "whoever lives in our

country, speaks our language, is brought up in our culture and takes pride in our glory is one of us". We may compare with this a definition given by a well-qualified Western source (Professor Gibb of Harvard) who stated that " all those are Arabs for whom the central fact of history is the mission of Muhammad *(p.b.u.h.) and the memory of the Arab Empire and who in addition cherish the Arabic tongue and its cultural heritage as their common possession". Neither definition, as may be noted, is purely linguistic. Both add a cultural, or at least, a religious qualification. Both must be interpreted historically, for it is only through the history of the peoples called Arab that we can understand the meaning of the term (McPherson 1989).

Arabs differ in many significant ways; they do not make up a single race of people. Some have dark skin, and some have a fair complexion. The majority of Arabs are Muslims but a few minorities are Christians and Jews. The word *Arab* originally referred to the nomadic tribes of the Arabian Peninsula in southwestern Asia. It now includes most people on the peninsula, in the area north of it, and northern Africa.

This dissertation discusses the approximately 200 million Arabs who live in 18 countries of the Middle East and northern Africa. These nations make up the Arab world, which covers about 13 million square kilometres. Arabic is the national language of every Arab country.

P.b.u.h. – means **p**eace **b**e **u**pon **h**im; Muslims use these initials after mentioning the name of Prophet Muhammad (p.b.u.h) or any other Prophet to express their love and respect.

For thousands of years, the Arabs lived in a desertlike region that had few known natural resources. The 18 nations of the Arab world are Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the United Arab Emirates and Yemen (figure 2.3).

In her research, Nassar (1993) identifies Arabs and their architecture and sheds light on its characteristics. She finds that the regional characteristics of architecture in the Arab world manifest a distinct sense of unity despite the variety of each state.

This homogeneous unity has been emphasized by common factors that covered more than centuries. They all share the same Arabic language (the language of Quran) and communal history as well as an almost common religion. All these factors constituted a strong bond.

Eleven centuries ago inspired by the teachings of Prophet Muhammad and values of Islam, Muslim Arabs had become the rulers of a vast Empire stretching from Spain to Persia. In a short time, recognizing the advantages of the new religion, most of the natives of the Islamic Empire embraced Islam, adopted the Arabic language, and gradually become Arabs. Finally, an Arab civilization emerged and expressed in Arabic its Islam faith. It was not very long before the Arabic Empire disintegrated, giving way to independent rulers.

2.2.2 The Relationship Between Arabs and Islam

Muhammad, the Prophet of Islam, was a humble Arab man born in Mecca, the heart of Arab world. The Quran (Muslims Holy book) was revealed in the Arabic language to Prophet Muhammad, and it is still read in Arabic today.

The Arabic script is a visible link of Islam that can be seen throughout the Islamic world in countries of different races and cultural backgrounds (Bamborough 1977).

Because of the importance of the Arabic Language, not only for Islamic practices, but also for being the spine of the Arabic and Islamic culture, the following section explains the importance of this language.

2.2.3 The Arabic Language and Islam

Arabic language is very different from European languages. The Arabs write from right to left side, and their words often change their vowel sounds. Arabic uses sounds, which no single European letter can describe. For this reason, and because of all the vowel changes, Arabic words may be spelled in many different ways in the European alphabet, for example the name of the Prophet of Islam may be found written as Mahommet, Mohammed, Muhammad or Mehmet. The Holy book may be spelled Koran or Quran, and Mecca as Makka (Morrison 1990).

The word **Arabic** has been mentioned in The Noble Quran several times (Sakhr 1996), confirming the importance of Arabs and Arabic language for both, Islam and Muslims. For example:

The Noble Quran says (Khan & Al-Hilali 1996): In verse 12: 2: "Verily, we have sent it down as an **Arabic** Quran in order that you may understand".

In verse 39: 28; " An **Arabic** Quran, without any crookedness (therein) in order that they may avoid all evil which Allah has ordered them to avoid, fear him and keep their duty to him".

In verse 41: 3; * "*A Book whereof the verses are explained in detail - a Quran in **Arabic** for people who know*".

In Islamic terms this confirms the importance of the Arabic language.

The Arabic-speaking countries stretch for over 6000 kilometres, from the Atlantic to the Indian Ocean, and Arabic is a shared language over an area as big as the United States (Morrison 1990).

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* The verses in English are just translation of the meaning of the original script in Arabic. The translation could diverse from version to another, but the original Arabic script doesn't change.

Despite the importance of Arabs to Islam and Muslims, Islam has not given Arabs superiority over non-Arabs. All people are equal in Islam, the only criterion that distinguishes one from the other, and makes him better than the other, is the distinction of piety and righteousness (Nadwi 1997). It's reported by Abu Nadrah that the Prophet (p.b.u.h.) said in his Last Sermon *"O people! Your Lord is one. Your father Adam is one and he was created from clay, there is no superiority to an Arab over a non-Arab, and for a non-Arab over an Arab. Nor white over black or black over white except in piety"* (The Alim 1997, Musnad Ahmad, Hadith No. 22391).

2.2.4 The Arabic Language and Architecture

In addition to its use in books and in decoration of some objects of art, Arabic calligraphy was used both religiously and artistically on the interiors and exteriors of buildings, especially mosques, to avoid using pictorial representation of human being or animals, which is forbidden in Islam (Husain 1996). Then, Arabic calligraphy became an integrated part of Islamic architecture and one of the "true" treasures of Islam (Bamborough 1977).

2.3 BRIEF HISTORICAL REVIEW

Arabs have been identified as descendants of Ishmael, Abraham's son by his Egyptian wife Hagar. It is generally thought that the Arabs are very much like the ancestors of other peoples who speak Semitic languages, such as Hebrews, the Assyrians, and Arameans. In ancient times, groups of people migrated from the peninsula into neighboring areas. About 3500 BC, Semitic- speaking peoples of Arabian origin migrated into the valley of the Tigris and Euphrates rivers in Mesopotamia, supplanted the Sumerians, and became the Assyro-Babylonians. Another group of Semites left Arabia about 2500 BC and settled along the Eastern Shore of the Mediterranean Sea; some of these migrants became the Amorites and Canaanites of later times (Goldschmidt 1983).

The Arab region was the cradle of many religions: Jewry, Christianity and Islam. Besides, it is the homeland of many prophets. Moreover, it has many holy places and

sacred shrines of the major religions. It was the land of great civilizations that appeared in Egypt, Syria, Iraq, and the Arabian Peninsula. These civilizations have been referred to in the Holy Quran as 'Aad, Thamood, Sheeba and others (Ibrahim & Ibrahim 1987).

Nassar (1993) states that the cradle of civilization lies in the area called "Near East", composed of Mesopotamia (Iraq), Syria, Palestine, Egypt, Anatolia (Turkey), and Persia (Iran). Between these countries lies the Arabian Peninsula.

2.3.1 The Arabian Peninsula

The Arabian Peninsula, which covers an area of 3 million square kilometres, mainly forms the Kingdom of Saudi Arabia (figure 2.4). Despite that foreign occupation had divided the Peninsula into countries, states and Emirates, the Arabian peninsula - all through its history - was considered one united existence that witnessed and took part of great historical events.

2.3.2 The Arabian Peninsula before Islam

Although Arabian Peninsula was (historically) one continuous land, it consists of different climatic and geographic regions. The architecture of the peninsula was profoundly affected by the environmental conditions of each region. Moreover, its coastal regions were affected by the neighboring civilizations, due to the economical exchange with India, Persia (Iran), and Mesopotamia (Iraq) to the east, Africa to the south, and Ash-Sham (Syria, Lebanon and Jordan) and Egypt to the west. On the other hand, the Inland of the peninsula remained Bedouin in nature for quite a long time (Nassar 1993).

Generally, the existing monuments and architectural remains that belong to early phases of peninsular history are very rare. The Peninsula had witnessed successive civilizations connected with heavenly messages and prophets. The Muslims believe that most famous of which was *"Thamud"*, the people of the prophet Saleh, who settled down in the north west of the peninsula, and made their houses in the mountain, as stated in the Qur'aanic Verse, " *And remember when He made you successors after 'Aad (people) and gave you habitations in the land, you build for yourselves palaces in plains, and*

carve out homes in the mountains. So remember the graces (bestowed upon you) from Allah, and do not go about making mischief on the earth" - Quran verse 7:74 (Khan & Al- Hilali 1996).

The people *of "Thamud"* were proficient in sculpturing their houses into mountains. Their remarkable building technology can still be witnessed in *Madyan Saleh* in the north west of the Arabian Peninsula (Ibrahim & Ibrahim 1987).

Also, the most important building that survived through centuries was the first shrine built by Ibrahim at Mecca (or *Makkah*) as Muslims believe. As mentioned in the Holy Quran verse 3:96 (Khan & al-Hilali 1996): *"Verily, the first House (of worship) appointed for mankind was that at Bakka (Makkah), full of blessing, and a guidance for Al-Alamin (the mankind and Jinn).*

The Kingdoms of southern Arabia were subjected to frequent changes and warfare. Ma'in and Saba' (Sheba) were two of the earliest which rose to power. The powerful tribe of Himyar in the southwest gave its name to a contemporary civilization. Oman had been a center for trade and ship- building for many centuries.

2.3.3 The Arabian Peninsula after Islam

The birth of Prophet Muhammad was a momentous event in history. In 610, Prophet Muhammad experienced his first revelation and began his role as a prophet spreading the message of the one, All-powerful God. The turning point came in 622 when Prophet Muhammad and his companions migrated to Medina (the Hijrah), which is officially, considered as the beginning of the Muslim era (figure 2.5).

In its early stages, Islam concentrated on rebuilding the human character, the relation between man and God, man and people, and the behavior of the followers. Constructing great buildings and temples was not of great importance in Islam. On the contrary, the buildings in the beginning of Islam were characterized by simplicity and humbleness (Ibrahim & Ibrahim 1987).

Witnessing the merciful behaviour and character of the Prophet (Muhammad p.b.u.h), the people of Mecca voluntarily accepted Islam (Islam, Yussuf 1995).

When the message of Islam extended east and west, north and south, it was careful not to destroy any civilization, but to teach and explain the new religion. During the different historic periods to come, and under different rulers, the most important architectural events were limited to the extensions done in *Al-Haram* (Sacred Mosque) in Mecca and Medina (Nassar 1993).

In recent history, the Arabian Peninsula witnessed many raids and fighting between different tribes and families. In 1926, Abdul Aziz ibn Saud succeeded in gaining power over the different regions, and captured the holy cities and the whole Red Sea coastal province of Hijaz. In 1932, he declared himself King of Saudi Arabia.

2.3.4 Islam and the Caliphate

The Prophet Muhammad was born in Mecca about 570 AD and died in Medina in 632 AD. Mecca became the spiritual center of the new religion. From 633 to 661 AD Medina was the political center of a united Muslim state under the caliphs (vice-regents) who followed Muhammad. Arabian armies conquered Syria, Egypt and Sassanid Persia. After Egypt fell (642 AD), the tide of Muslim conquest swept west over the whole world of Northern Africa and over the Spanish peninsula. During this period of conquest the Quran was collected and canonized. Upon the removal of the caliphate to Damascus in 658, Arabia became less important. The shift (751 AD) of the center of Islam to Baghdad resulted in a further decline (figure 2.6).

From the 8th to the early 10th century, Arabia was merely a province under the Abbasid caliphs of Baghdad. Then the rule of Baghdad was successfully contested by the Qarmatians, a new Muslim sect, who controlled all of Arabia for a time during the 10 th century. Toward the end of the tenth century, the Qarmatians lost their power to various Bedouin tribes, and Arabia, again completely disunited, was divided among numerous petty governments. However, from 1075 to 1094 AD, Arabia acknowledged the spiritual leadership of the Abbasid caliph at Baghdad. In 1258 AD, the Mongols conquered Baghdad, and from that time, Baghdad had no influence over Arabia.

In 1269 AD Mecca and the Hejaz (al-Hijaz) region came under the control of emirs

(Muslim princes) from Egypt. When the Turks conquered Egypt in 1517 AD, they took control of the Hejaz and, thereafter, exerted considerable power in the rest of Arabia (The Alim 1997).

2.3.5 The Arab World Today

Today, an Arabic identity is claimed by more than 200 million people spread across Africa and Asia. Because Arabs do not live in one continent and their states are not federated into a single nation, they are commonly known as "the Arab world".

The main characteristics of Arabs' identity, which are the Arabic language, culture and Islamic religion, are now widely acknowledged.

There are four regions of the Arab world:

1. Greater Syria or the "Fertile Crescent" includes Iraq, Syria, Jordan, Palestine and Lebanon.
2. The Arabian Peninsula includes Saudi Arabia, Gulf states, Yemen, and Oman.
3. The Nile Valley includes Egypt, Sudan and forth to the south Somalia.
4. Al-Maghreb Al-Arabi (Arab West) includes Libya, Tunisia, Algeria, Morocco, and Mauritania.

Each of these regions had its own historical experience before Islam, which influenced the local architecture.

2.4 BRIEF GEOGRAPHICAL REVIEW

The Arab world occupies a very important part of the world. It is the link between the great continents Asia, Africa and Europe, with their natural, human and economical resources. Because of this significant geographical position, Arabian architecture was a subject of external influences. Hence, it was developed from many sources: for example Roman, Early Christian, and Byzantine styles were adopted in early Islamic architecture. Also, the influence of Sassanian architecture was of paramount significance.

The Arab world consists of different geographic zones. The architecture of the Arab region has been profoundly affected by the environmental conditions of each zone. Moreover, its coastal zones have been affected by the neighboring civilisations (Nassar 1993).

The Arab world extends from Mauritania in the west to Oman in the east. The Arab countries from Egypt and Sudan eastward are in a region called the *Middle East,* a term that describes its central geographic position. Throughout history, the Arab world has been an international crossroads. As a result, it has often come under foreign rule and influence. The Arab world has many physical characteristics that have forced most Arabs to live in certain areas. For example, vast deserts cover about half the land, and almost every Arab country has some mountains. Water is scarce, and the Arabs must use their limited supply sparingly. As a result, most Arabs live in the fertile valleys of the Nile, Euphrates, or Tigris Rivers, or along the coast of the Mediterranean Sea (Fletcher 1996).

2.5 BRIEF GEOLOGICAL REVIEW

The geology of the Arab world has had a major influence on the construction materials used in Islamic architecture, and its architectural prototypes (Ibrahim 1982).

The Arab world expends on huge area of land, which covers about 13 million square kilometers South Asia and North Africa (Nassar 1993). This huge area has provided wide range of construction materials, such as marble, stone, brick, timber, plaster, and adobe. Building methods and even architectural style were affected by the great variation between the materials available in the different countries. Domes, for instance, were either of brick covered externally with plaster or faience (as in Iraq), or of stone (as in Egypt), or occasionally of timber. Particularly fine limestone was available from quarries near Cairo. Plaster ornament reached a high level of intricacy and beauty in Egypt and elsewhere (Fletcher 1996).

2.6 CLIMATE OF THE ARAB WORLD

2.6.1 General

The climate in the Arab world has had a great influence on Islamic architecture. Arab architects have succeeded in tackling climatic problems of this region (El- Kholy 1977). Because of its major effect on Islamic architecture, Arabian climate is described in this section.

Temperatures vary throughout the Arab world, but they usually range from mild to extremely hot. Along the Mediterranean coast, temperatures average 7 ° C in winter and 27 ° C during the summer. Farther inland, temperatures vary more with the season. Baghdad, the capital of Iraq, has cool winters, with an average temperature of 11 ° C. From June to September, the temperature there averages 34 ° C. In the Arabian Peninsula, for example in Saudi Arabia, the temperature sometimes drops below the freezing degree in winter and reach as high as 49 ° C during summer.

Annual rainfall totals are less than 13 centimeters in most parts of the Arab world. The Sahara and other deserts have no rain for years at a time. But the areas along the Mediterranean Sea have from 51 to 89 centimeters of rain yearly.

2.6.2 Classification of Arab world climatic zones

In his research, El- Kholy (1977) classifies the Arab world into 3 major climatic zones (figures 2.7, 2.8, 2.9) as following:

2.6.2.1 Hot-dry zone

This zone covers a wide range of the Arabian deserts, which is about four fifth of the Arab world area. It includes the great desert, which is a continuos land covering a wide area in Egypt, Libya and Sudan. It reaches its longest expanse in south Sudan latitude 13 North, also it is found in separate locations in Tunis, Algeria, and Morocco. This region covers also Arabian Peninsula in Arab East, excluding some Heights such as the Volcanic Hill in Yemen and its expanse Ash-Sham (Syria, Lebanon, Jordan) and Iraq, and Green Mountain in Libya, Ash-Shatt Hill in Morocco, where the weather in these

high locations is different than the other low parts of the region.

2.6.2.2 Hot-humid zone

This zone exists only in south Sudan, the typography of this part is mostly flat, except the south and east parts where hills and mountains are found. Mostly many types of Savanna cover this region. Unlike the dense Equatorial forests, Savanna also penetrates some forests' trees due to the drought season.

2.6.2.3 Warm-moderate zone

This zone covers northern parts of Arab world, including Mediterranean coasts and west parts of Ash-Sham's hills, and also At-Tel region in Western Arab world. A wide range of the Arabian deserts, which form about four fifth of Arab world area.

The weather of this region is known by its drought and high temperature in summer, rainfall season in winter, clear skies and sun rise most days of the year.

2.7 SUMMARY

As this research concerns applications of Islamic culture on architecture in the Arab world, this chapter introduced Arabian background, explained the relationship between Arabs and Islam, and mentioned the Arabian factors (history, culture and faith), and environment (geography, geology and climate) which could influence Islamic architecture.

The above factors have interacted together and produced some unique features that have given the Arabian Islamic architecture its identity. Some of these features could be identified as: a particular expression of architectural elements, contrast between void and solid surfaces, architectural expression of structural elements, harmony and intonation in the architectural forms, integration of spaces, introvert design (by using internal court), gradual external cross-section, environmental control and climatic treatment, geometric patterns, utilizing landscaping, and variety of construction methods. Chapter 4 will explain these features in more detail.

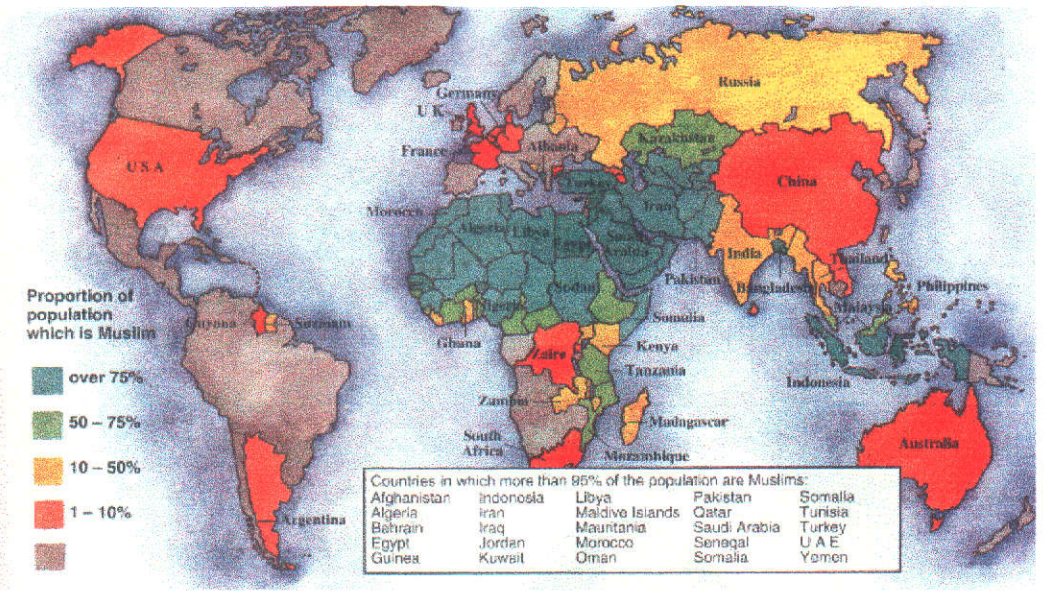


Figure 2.1- Distribution of the Muslims in the world (after Husain, 1996)

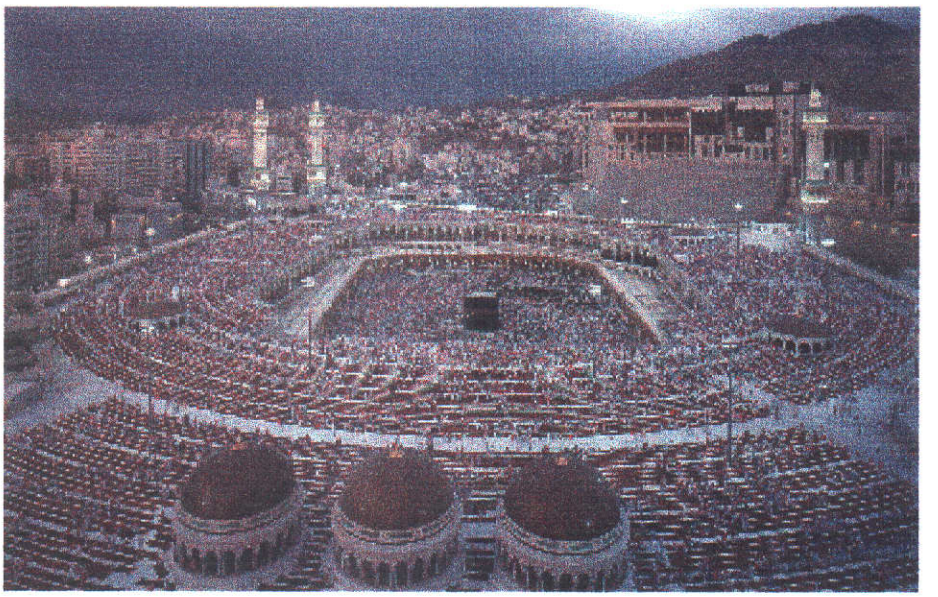


Figure 2.2 – The Ka'bah in Mecca – Muslims' Holy Land (after Husain, 1996)

Figure 2.3 – The Arab Countries (after The World Book Encyclopedia, 1992)

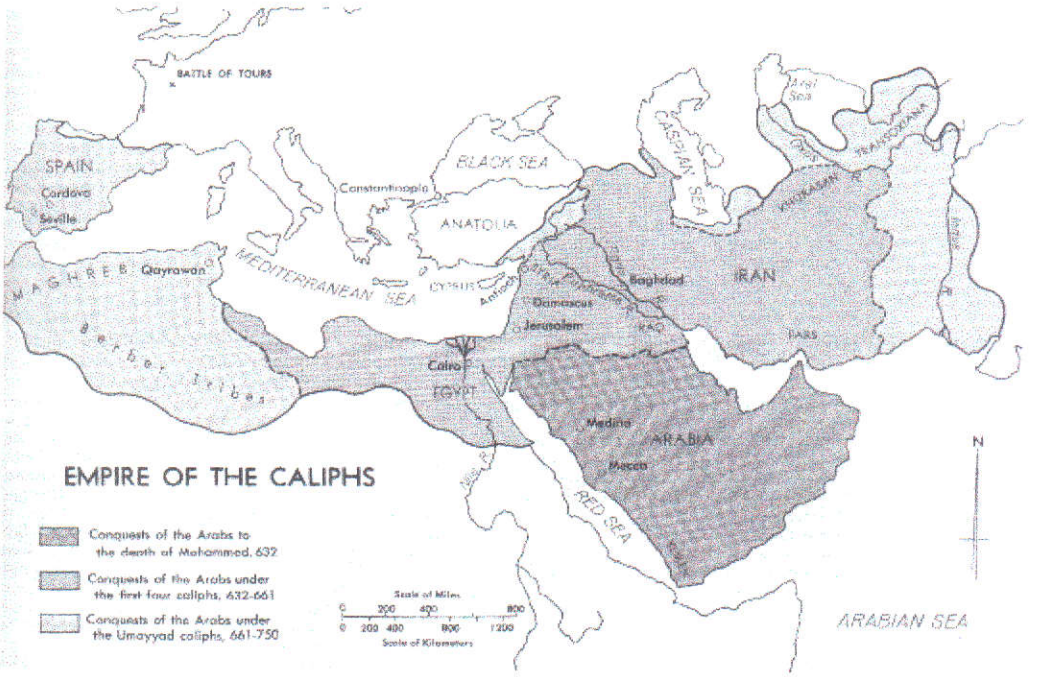


Figure 2.4 - Empire of the Caliphs (after Encyclopedia Americana, 1992)

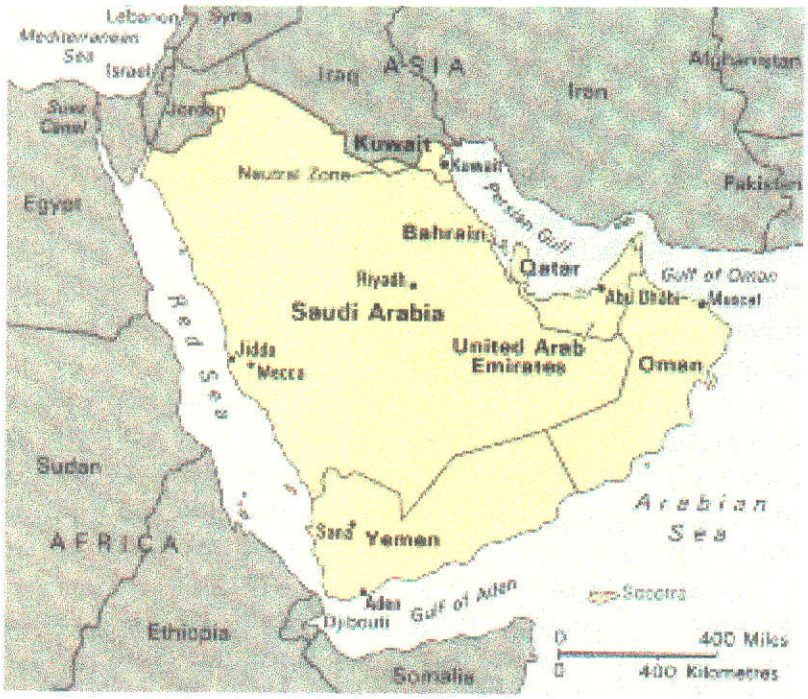


Figure 2.5 - The Arabian Peninsula (after The World Book Encyclopedia, 1992)

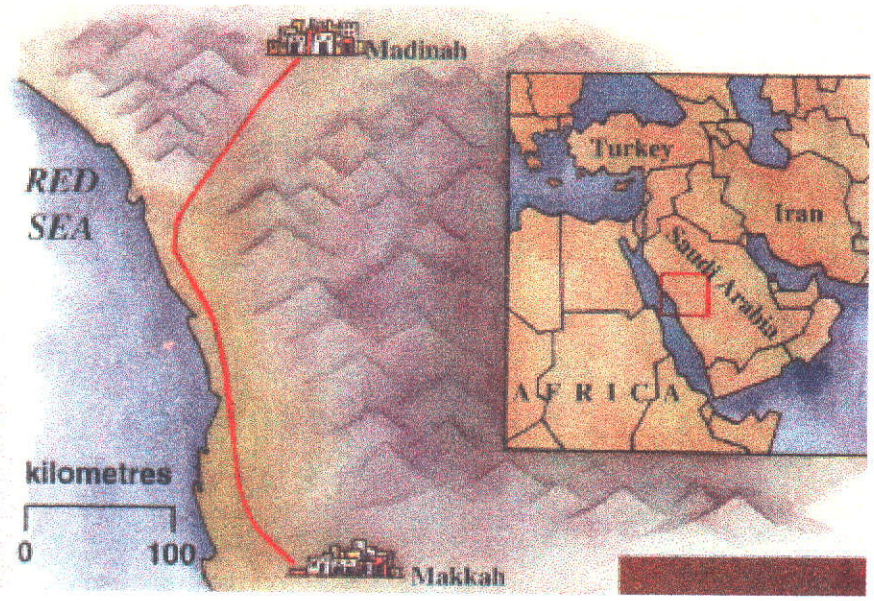


Figure 2.6 - Hijra from Mecca to Madina – The beginning of the Islamic State and Islamic Calendar (after Husain, 1996)

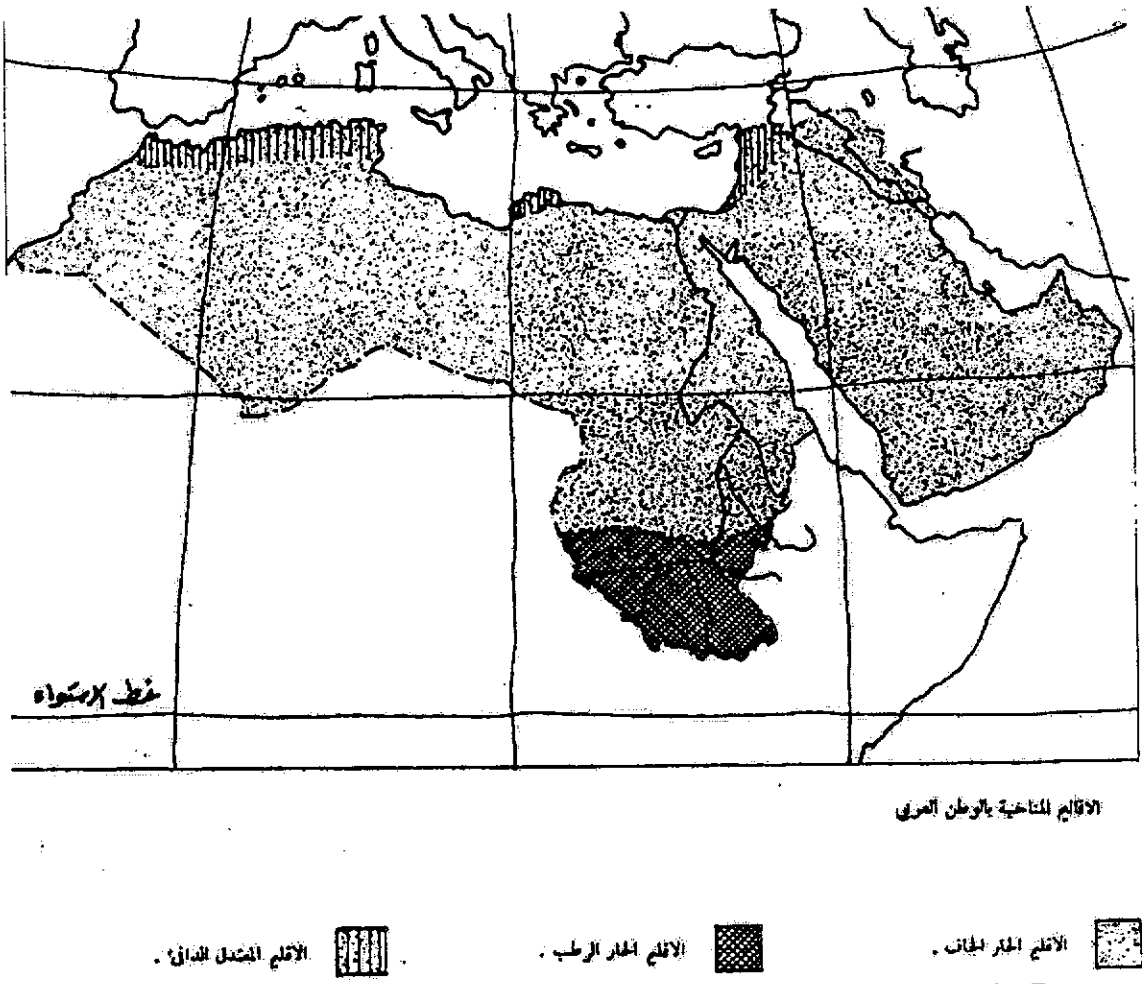


Figure 2.7 - Climatic zones in the Arab world (after El- Kholy, 1977)

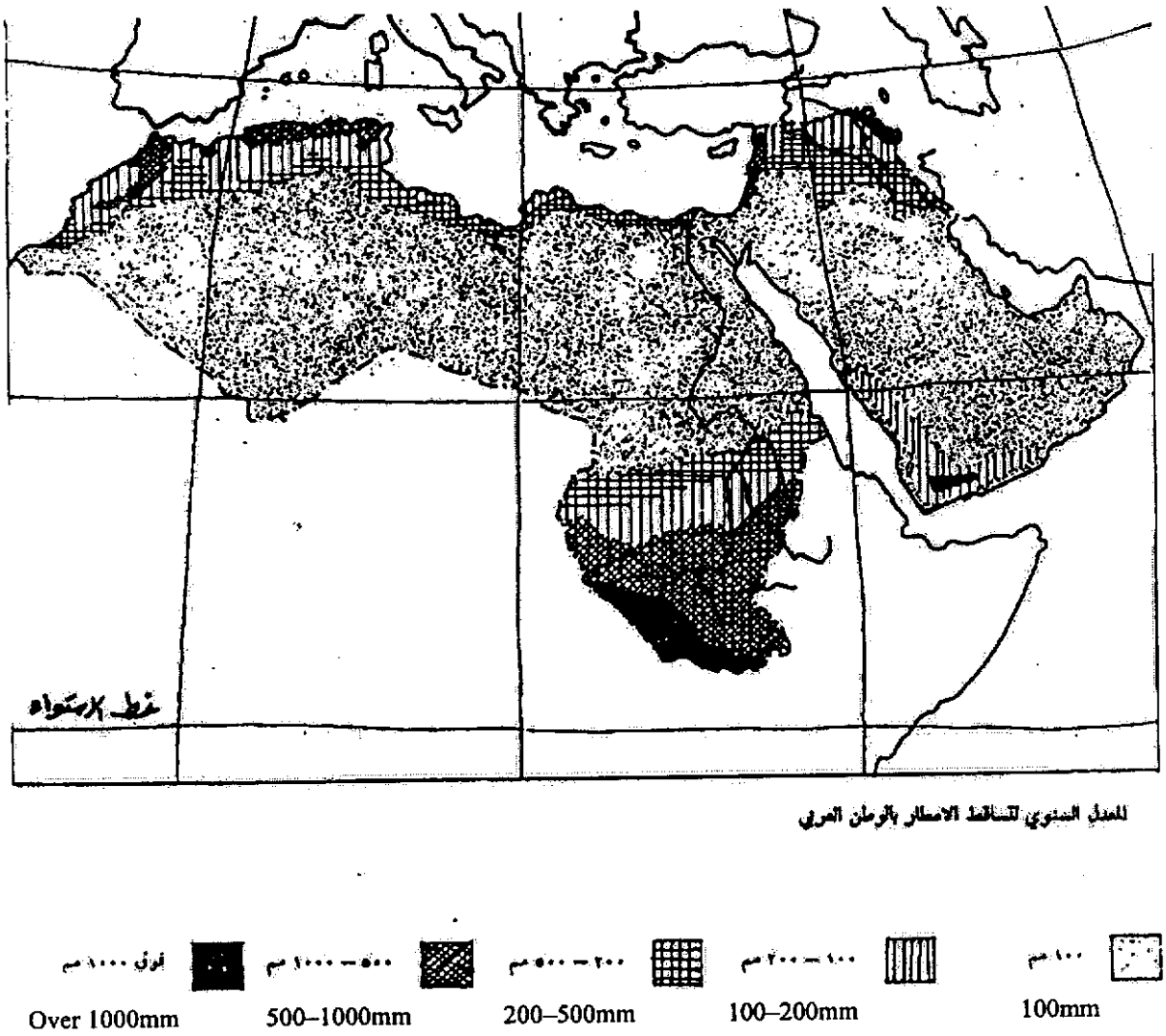


Figure 2.8 - Annual average of rainfall in the Arab world (after El- Kholy, 1977)

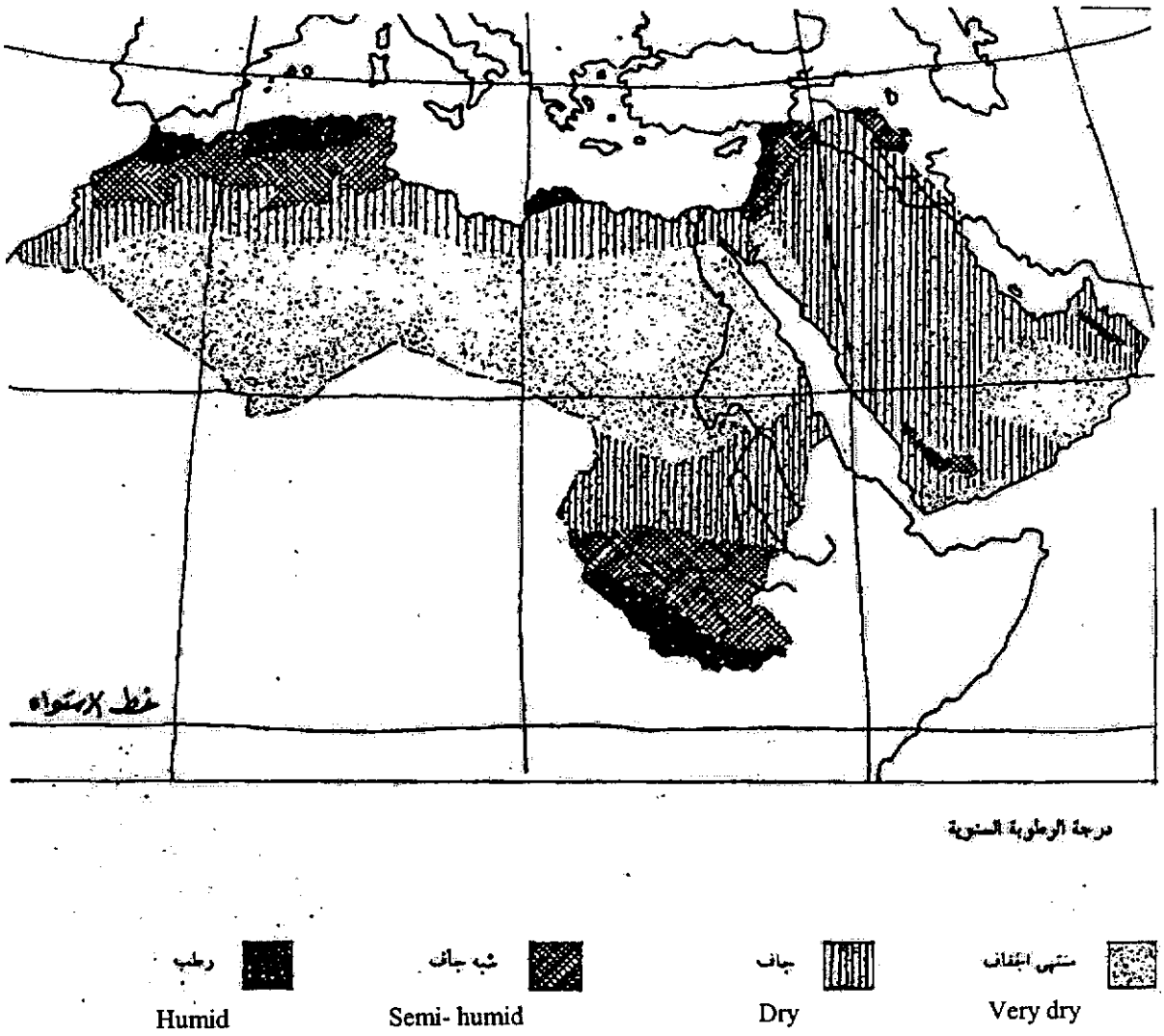


Figure 2.9 - Relative humidity in the Arab world (after El- Kholy, 1977)

CHAPTER 3: INTRODUCING ISLAM

CHAPTER 3 INTRODUCING ISLAM

(Stable 'fixed' factors in Islamic Architecture)

3.1 INTRODUCTION

To understand Islamic architecture, we should first understand Islam and Islamic law, the motive power of Islamic architecture. The previous chapter introduced Arabs, their origin, history, and environment (geography, geology and climate), which have affected directly and indirectly the Arabian architecture as variable factors. But the major factor that has affected the Arabian architecture and given it its character and identity is the Islamic doctrine.

This chapter aims to introduce Islam and give an idea about the major principles of Islamic faith and the basics of Islamic practices that may affect Muslims' architecture. Chapter 5 will explain the Islamic teachings that could directly or indirectly affect Muslims' buildings, and how that could affect their architectural and urban design.

To achieve these aims, this chapter is concerned with: explaining the meaning of Islam, analyzing the Five Pillars of Islam (application of faith), recognizing Articles of Faith, introducing Islam as a Code of Life, reviewing the resources of the Islamic Legislation (*Shari'ah* law), and Introducing Muslim's Rite. Finally, concluding how Islamic teachings have directly and indirectly affected architecture.

The West has long admired the architecture of the Islamic world, but this fascination has mostly lacked any real understanding of the beliefs and way of life of those for whom these buildings were erected. Islamic culture has unified nations across the globe over some thousand years and more (Michell, et al. 1978) (figure 3.1 shows the Muslim countries).

Gaston Wiet (1974), a Western researcher in Islamic architecture, describes Islam as " the greatest unifying power that has ever exist; Islamic art, then, may be considered as the whole ensemble of art produced in those countries which were subject to the law of Islam".

The Islamic context of architecture is directly or comparatively related to Quranic instructions and the Sunnah of the Prophet (Muhammad p.b.u.h.). Islam aims at building the Muslim character on clear basis, determining his social behaviour as an individual related to a social group on the one hand, and as an individual who has his own privacy on the other.

A better understanding of the formal values in the architecture of the Islamic periods in a specific time and place comes after understanding the Islamic context in which it has existed. The Islamic context firstly, determines the forms and spaces composing the architectural work and organizes the functional relations between them. Secondly, it determines artistic expression through local building materials and methods, which is additional to the technical and cultural inherited values of the society, and which does not contradict Islamic content. Architecture of the Islamic society derived its sources, in early Islamic ages, from the cultural backgrounds of the region in which it existed. Later, it was able to formulate its own image that reflected the newly established Islamic values of the society. These values were derived from the Quran and Sunnah of the Prophet (Muhammad p.b.u.h.), the basic sources of *Shari'ah* and conviction. It is through logical comparison that architectural design contexts could be derived from the Quran and Sunnah, since the Quran includes in its verses all the needs and duties of the Muslim in this world and in the hereafter (OICC 1992).

3.2 THE MEANING OF ISLAM

ISLAM is derived from the Arabic root *"SALEIMA"*: peace, purity, submission and obedience in the religious sense. Islam means submission to the will of God and obedience to His law. As Muslims believe, everything and every phenomenon in the world, other than man, are administered totally by God-made laws; they are obedient to God and submissive to His laws, they are in a state of Islam. Man possesses the quality of intelligence and choice, thus he is invited to submit to the will of God and obey His law (Maududi 1984).

Not only Muslims have believed in this ideology, but also some non-Muslim thinkers adopted it; Thomas Carlyle wrote in his book – 'Heroes and Hero – Worship': *" And*

then also Islam – that we must submit to God, that our whole strength lies in resigned submission to Him, whatsoever He does to us, the thing he sends to us. Even if death and worse than death, shall be best, we resign ourselves to God". The same author continued *"If this be Islam," says Goethe, "Do we not all live in Islam"?* Carlyle himself answers this question of Goethe, *"Yes all of us that have any moral life, we all live so. This is yet the highest wisdom that Heaven has revealed to our earth."* (Rao 1992).

As Muslims believe, Islam dates back to the time of Adam (the first human being created by God Almighty, and the first man thought to have occupied the earth) and its message has been conveyed to man by God's Prophets and Messengers including Abraham, Moses, Jesus and Muhammad. Islam's message has been restored and enforced in the last stage of the religious evolution by God's last Prophet and Messenger Muhammad. The word *Allah* in the Arabic language means God, or more accurately The One and Only Eternal God, Creator of the universe, Lord of all lords, King of all kings, Most Compassionate, Most Merciful. Arabic speaking Jews and Christians also use the word *Allah* to mean God (Elmasry, undated).

3.3 THE FIVE PILLARS OF ISLAM (APPLICATION OF FAITH)

At the heart of the Islamic Law stand the Five Pillars (Dickie 1978). God has laid down for Muslims five major exercises of faith, some are daily, some weekly, some monthly, some annually and some are required as a minimum of once in a lifetime. These exercises of faith are to serve man's spiritual purposes, satisfy his human needs and to mark his whole life with a Divine touch. These major exercises of faith, as Saheeh (1995), are:

3.3.1 The declaration of faith (*Shahadah*)

"There is no deity (worthy of worship) except God, and Muhammad is His messenger". This declaration of faith called *A-Shahada*, a simple formula which all of the Muslim pronounces. The concept of *"no deity except God"* is always alive in the Muslim's heart. He/she recognizes that God alone is the Creator, that He alone is the Provider and Sustainer that He is the true Reality, the source of all things - of all benefit and harm.

This requires that He be worshipped and obeyed.

Entry into contractual relationship with one' s Creator is by pronouncing the *Shahada*, '*attestation of faith*', whereby one becomes a subject to ritual obligations, and all the rest of the Law follows, beginning with the observance of the Five Pillars (Dickie 1978).

It is an assertion of this thesis that the First Pillar of Islam *" the Shahadah"* has directly affected Muslims' architecture. It is the foundation and the core of Islamic faith. The acceptance of faith is the first step to accept and obey all other teachings and commands of Islam, and of course all other criteria that directly, and indirectly, have formed the Islamic Architecture.

3.3.2 Prayer (*Salah*)

Praying, to the Creator on a daily basis, has many objectives. For example, it allows constant communion between man and God, it brings to mind 'God- consciousness', and forgiveness of sins (Nadwi 1997). God (*Allah*) does not need man's prayer because He is free of all needs. *Salah* or prayer is for man's benefits, which are immeasurable, and the blessings are beyond imagination.

3.3.2.1 Obligatory *Salah*

Offering of *Salah* is obligatory upon every Muslim male and female who is sane and mature. Requirements of *Salah* are: performing of ablution (*Wudu*), purity of the whole body, clothes and ground used for prayer, dressing properly and having (or declaring) the intention and facing the *Qiblah* (the direction of the *Kabah* in Mecca - figure 3.2). The obligatory *Salah*s are the Five Daily *Salahs*, the Friday's noon congregation *Salah* and the funeral *Salah*.

3.3.2.2 Times of the obligatory Five Daily *Salah*

Early Morning - after dawn and before sunrise.

Noon - after the sun begins to decline from its zenith until it is about midway on its course to set.

Mid-afternoon - after the expiration of the noon Salah time until sunset.

Sunset - immediately after sunset until the red glow in the western horizon disappears.

Evening - after the expiration of the sunset Salah until dawn.

The Second Pillar of Islam *"the Salah"* has the utmost influence on Muslims' Architecture. According to Prophet Muhammad's teachings, Muslim men are still asked to perform the five daily prayers together in the Mosque. For this reason the Mosque should be the center of Muslims' neighbourhood or residential area, and to be closed, accessible for everyone (figures 3.3, 3.4). And also many other activities could be run in the mosque (other than prayers). In his comprehensive study of mosques, Rasdi (1998) explains that the eternal idea of the mosque is as a building mainly for the organization and development of the Muslim community in all aspects of life. To achieve this purpose the mosque must situated in a more 'permanent' social context. Rasdi (1998: pp. 247- 249) explains that the mosque institution must fulfill two fundamental objectives. Firstly, it must provide the necessary programs facilities to develop the Muslim community in such a manner that the members are able to act individually and collectively towards building a truly Islamic social and physical environment. Secondly, it must encourage and provide opportunities for Muslims to develop social unity and strengthen their feelings of brotherhood. The abovementioned objectives can be achieved through the organization and implementation of a verity of educational, social, welfare, economic and ritualistic programmes.

3.3.3 Fasting (*Siyam*)

Fasting is abstaining completely from eating, drinking, intimate sexual contacts and smoking from the break of dawn till sunset. It is an Islamic institution, which teaches man the principle of sincere love of God. Fasting teaches man a creative sense of hope, devotion, patience, unselfishness, moderation, willpower, and wise saving. Obligatory fasting is done once a year for the period of the month of *Ramadan*, the ninth month of the Islamic year. Fasting of *Ramadan* is a worship act which is obligatory on every adult Muslim, male or female if he/she is mentally and physically fit and not on a journey. There are, however, some exceptions, e.g., in case of travel or sickness, and women during their period of menstruation and while nursing their child.

The third Pillar of Islam Fasting or *"Siyam"* has some effect on Muslims' Architecture.

An example of this is the case "*Mawaed ur-Rahman*", which is a gathering prepared by rich Muslims to feed a huge number of poor Muslims every day in every neighbourhood during the month of *Ramadan*. This case should be taken into consideration when designing a mosque, to provide a huge area to fit this big number of guests, and also to organize many several public gatherings, such as celebrating the end of Ramadan "*Eidul-Fitr*", one of the two biggest Muslims' festivals.

3.3.4 Charity Giving (*Zakah*)

Charity giving is an act of worship and spiritual investment. The literal meaning of *Zakah* is purity and it refers to the annual amount in kind or coin which a Muslim with means must distribute among the rightful beneficiaries. *Zakah* does not only purify the property of the contributor, but also purifies his heart of selfishness and greed. It also purifies the heart of the recipient of envy and jealousy, of hatred and uneasiness and fosters instead good will and warm wishes for the contributors. *Zakah* is paid on the net balance after paying personal expenses, family expenses, due credits, taxes, etc. The humanitarian and social-political values of *Zakah* could directly affect Muslims' Architecture.

It is believed that, whenever every Muslim on earth pays his or her annual amount of charity *'Zakah'*, Muslim countries could improve their urban environment, architectural conditions, and provide reasonable shelter for all needy and homeless people. It is believed that about 50 million people are homeless all over the world, many of them in Muslim countries (figures 3.5, 3.6, 3.7).

Ismail Serageldin (1995) believes that many of the rich appear to turn their backs on the poor, and selfish interests seem to displace enlightenment, even though we are all neighbours. Now more than ever is a time for a united front of caring.

The Muslim world exhibits extremes of wealth and poverty, of climate and terrain, of solidarity and strife; all held together by one common thread, a profession of faith in Islam. But the thread, like every thing else, is overwhelmed by the global contradictions of our time.

Professor Abdel-Baki Ibrahim mentioned that he has already founded an organization,

"The Central Society for Sheltering the Needy". One of its activities is to receive money of *Zakah* and charity to help poor and needy people building their own homes, and to improve their urban environment (Ibrahim 1999).

3.3.5 The Pilgrimage (*Hajj*)

Pilgrimage to Mecca, at least once in a lifetime, is obligatory upon every Muslim male and female who is mentally, physically and financially fit. It is the largest annual convention of faith on Earth (in 1989: 2.5 million). Peace is the dominant theme as Muslims believe, peace with God (*Allah*), with one's soul, with one another, with all living creatures.

Muslims from all walks of life, from every corner of the globe assemble in Mecca in response to the call of God (*Allah*). It is to commemorate the Divine rituals observed by the Prophet Abraham and his son Ishmael, who are, as Muslims believe, the first pilgrim to the house of God (*Allah*) on Earth, the *Kabah*. It is also to remember the grand assembly of the Day of Judgement when people will stand equal before God (*Allah*) (figures 3.8, 3.9).

The fifth Pillar of Islam, Pilgrimage or *"Hajj"* affects architecture. At the center of Islam (both geographically and spiritually) stands the *Ka'bah*. The *mihrab* (Sanctuary) of every mosque is aligned with it, and to it every Muslim turns to pray; thus the whole of Islam can be seen as a wheel with the spokes radiating from the *Ka'bah* (Michell, et al. 1978).

3.4 THE SIX ARTICLES OF FAITH

The Alim (1997) explains the six articles of faith that every Muslim should believe in;

3.4.1 God (*Allah*), the One and Only God

A Muslim believes in one God, Supreme and Eternal. God has no father or mother no sons nor was He fathered, none equal to Him. He is God of all mankind, not of a special tribe or race. God creates in man the mind to understand, the soul and conscience to be good and righteous, the feelings to be kind and humane. He is Needless and Independent. God asks man to know Him, to love Him and to enforce His law for man's

benefit. The mosques and many other religious buildings (such as *Madrasa, Khanqah,* and *Tekeyyah*) have been erected to worship the one God (*Allah*); sections 4.4.1 and 4.4.2 explain this point in detail.

3.4.2 Messengers and Prophets of God

A Muslim believes in all the Messengers and Prophets of God without any discrimination. All messengers were mortals, human beings, endowed with divine revelations and appointed by God to teach mankind. Their message has been the same and it has come from One and the Same Source (God), and it has been to submit to His will and to obey His law.

Believing in all Messengers and Prophets of God has obligated Muslims to respect and care about all other divine religions. This factor has had direct effect on architecture by offering architectural conservation for non-Muslim historical religious buildings in all Muslim countries, and considering those buildings as an architectural heritage. It is documented that one of the oldest synagogues and one of the oldest churches in the world are in Muslim countries (Badawi 1998).

3.4.3 Revelations and the Quran

A Muslim believes in all scriptures and revelations of God, as they were complete and in their original versions. Revelations were given to guide the people to the right path of God (*Allah*) and sent down to the prophets and messengers, and to convey it to their fellow men. The Quran is the sacred book of the Muslims. It deals with man and his ultimate goal in life. Its teachings cover all areas of this life and the life after death. Muslims till today memorize the Quran word by word as a whole or in part (Fig. 3.10).

The importance of the Quran has entailed the erection of special educational buildings (*Al-Kuttab*) to teach and explain the verses of this holy book; section 4.4.5 explains this point in details.

3.4.4 The Angels of God (*Allah*)

There are purely spiritual and splendid beings created by God (*Allah*). They require no food or drink or sleep. They have no physical desires nor material needs. Angels spend their time in the service of God (*Allah*), each charged with a certain duty.

Believing in angels has had a direct effect on Islamic architecture; Muslims believe that angels do not enter any building containing human or animal pictures, according to a Prophetic Hadith (Hamoosh 1992). Therefore, Arabic calligraphy and floral ornaments have been widely used in Islamic architecture instead of pictures and statues .

3.4.5 The Day of Judgement

A Muslim believes in the Day of Judgement. This world will come to an end and the dead will rise to stand for their final and fair trial. One who believes in life after death is not expected to behave against the Will of God (*Allah*). People with good records will be generously rewarded, while people with bad records will be fairly punished and cast into Hell. Traditional Islam has developed, to a remarkable degree, rituals associated with death. Rules for burial are elaborate and strict, and the architecture of tombs and mausoleums includes many masterpieces of Islamic architecture (Islamic Art Encyclopedia 1999).

3.4.6 Faith in Fate (*Qadaa & Qadar*)

A Muslim believes in *Qadaa* and *Qadar*, which is related to the ultimate power of God (*Allah*). He is Wise, Just and Loving and whatever He does must have a good motive, although we may fail sometimes to understand it fully. Muslims should have strong faith in God (*Allah*), and accept whatever He does.

3.5 ISLAM IS A CODE OF LIFE

In his collection "Islam, an Introduction", Elmasry (undated) introduced Islam as a code of life, he explained:

3.5.1 The Purpose of Life

A Muslim believes that the purpose of life is to worship God (*Allah*), and to live life according to His commands, not to run away from it. To worship God (*Allah*) is to know Him, to love Him, to obey His commands, to enforce His laws in every aspect of life, which means that every aspect in Muslim's (including architecture) should follow God's commands and His Islamic teachings.

3.5.2 Status of Human Being

A Muslim believes that human being enjoys an especially high ranking status in the hierarchy of all known creatures. Man occupies this distinguished position because he alone is gifted with rational faculties and spiritual aspirations as well as powers of action. Man is not a condemned race from birth to death, but a dignified being potentially capable of good and noble achievements. A Muslim also believes that every person is born "*free from sin*".

3.5.3 Salvation

A Muslim believes that man must work out his salvation through the guidance of God (*Allah*). No one can act on behalf of another or intercedes between him and God (*Allah*). In order to obtain salvation, a person must combine faith and action, belief and practice. This ideology has created a balance between spiritual and physical activities in the Muslim community, which is translated into harmony in Islamic architecture and urbanism, as a balance between religious and public buildings.

3.5.4 Acceptance of Faith

A Muslim believes that faith is not complete when it is followed blindly or accepted unquestioningly. Man must build his faith on well-grounded convictions beyond any reasonable doubt and above uncertainty. Islam insures freedom to believe and forbids compulsion in religion; as mentioned before, one of the oldest synagogues and one of the oldest churches in the world are in Muslim countries.

3.6 ISLAMIC LEGISLATION AND THE IMPORTANCE OF *SHARI'AH* LAW TO ARCHITECTURE

3.6.1 *Shari'ah* Law

Muslims believe that *Shari'ah* is the code of behaviour and law revealed by God (*Allah*). They believe that *Shari'ah* guides men and women to live in the way that will fulfil God (*Allah*)'s purpose in creating them. It establishes what is right and good for human beings in accordance with God (*Allah*)'s will. Doing what is right will bring peace and justice in this world and God (*Allah*)'s reward, and doing what is wrong will

bring harm and injustice in this world and God (*Allah*)'s punishment (Nadwi 1997).

3.6.2 The basis of the *Shari'ah*

The *Shari'ah* is based on the injunctions and laws laid down by God (*Allah*) in the Qur'an, as explained and demonstrated by the Prophet in his lifetime and recorded in the *Hadith* (Prophet Muhammad's sayings). These are God (*Allah*)'s basic and eternal laws for mankind.

Muslims have two distinct guides to help them in the practice of Islam as their way of life; they are, as Saheeh int. 1995, the Holy Quran and the Noble Sunnah.

3.6.2.1 The Holy Quran

The sacred Scripture, which Muslims believe that it was revealed to Prophet Muhammad in the seventh century, still remains authentic in the original Arabic text. This language is used and understood by millions of people in the world today. The Quran contains God's guidance in teachings and commandments, which are valid for all times and places and encompass all spheres of human life.

3.6.2.2 The Noble Sunnah

The example of Prophet Muhammad lives on as well. There is a complete and authentic record showing how he exemplified the teachings and commandments of God and elaborated the principles laid down in the Quran, all in order, to provide a sure guidance for their interpretation and application for all later times and societies (Saheeh Int. 1995). The Sunnah of the Prophet Muhammad (p.b.u.h.) is documented in the body of knowledge known as Al-hadith (Rasdi 1998: p. 109). Rauf (1986) defines Al-Hadith as the total records of the words and deeds of the Prophet Muhammad (p.b.u.h.) as well as his silent approvals and the description of his person.

The Holy Quran has affirmed the integrated and perfect personality of Prophet Muhammad in verse 68: 4 (Khan & Al- Hilali 1996): *And verily, you (Muhammad) are on an exalted (standard of) character.* It has also confirmed the obligation upon every Muslim to obey and follow the teachings of Prophet Muhammad, the Quran, verse 4: 59 (Khan & Al- Hilali 1996), said: *O you who believe! Obey God (Allah) and obey the Messenger (Muhammad), and those of you (Muslims) who are in authority. (And) if you*

differ in any thing amongst yourselves, refer it to God (Allah) and His Messenger, ... ".

3.6.3 Can the *Shari'ah* be changed?

The basic laws of the *Shari'ah* found in the Quran cannot be changed, since the nature of man and his basic needs do not change. However, with the passage of time new circumstances may arise, and the Muslim Community, under the guidance of its learned scholars, is expected to interpret the *Shari'ah* that it will continue to uphold justice and right behaviour in the circumstances of every age and place (Nadwi 1997).

3.6.4 Muslim's duty to follow the *Shari'ah*

Since the *Shari'ah* is God (*Allah*)'s way and law, as revealed in the Quran and demonstrated by the Prophet (p.b.u.h.), it is the duty of every Muslim to follow the *Shari'ah* in his/her own behaviour, dealings and relationships with other people (King Khalid I.C., undated). This point is made clear in the Quran, verse 5: 48 (Khan & Al-Hilali 1996) *"And We have sent down to you (O Muhammad) the Book (the Quran) in truth, confirming the Scripture that came before it and Mohayminan (trustworthy in highness and a witness) over it (old Scriptures). So judge among them by what God (Allah) has revealed and follow not their vain desires, diverging away from the truth that has come to you. To each among you, We have prescribed a law and a clear way".*

3.6.5 The importance of *Shari'ah* law to architecture

Building legislation is part of a law that had been developed since the advent of the religion of Islam. The main reference books, as mentioned before, are The Holy Quran and the Noble Sunnah (Prophet's sayings, acts and acceptances). During the first century of Hijra (Hijra occurred at approximately 640 AD) several Muslim scholars collected the Sunnah from the Prophets' companions and followers who were spread all over the Muslim world. There were several approved written books of Sunnah, containing several thousands Prophetic traditions related to Muslim life, law, and advice including some general rules on planning and building. The development of Islamic law continued after the Prophet and his followers, and because Islam has spread over an immense geographical area and interacted with several existing civilisations, there was a great demand for new rules dealing with all outs and inns of day life affairs.

These rules were documented in several books of *Fiqh* (jurisprudence) known to almost every Muslim, which includ every single matter relating to Muslim life. These books of *Fiqh* include building and planning legislation and the responsibilities of individuals and the authority in this law. Some of these matters arose from the conflict that sometimes occurred among individuals themselves and between individuals and the authorities. The legislators had to develop Islamic law to include new materials within the framework of Islam. Whilst building legislation is a part of the books of *Fiqh* (the explanation of the Sunnah), it is surprising that there are several books for building legislation only; some of them are still in a manuscript form, others have recently been investigated and rewritten by researchers (Hammad 1997).

3.7 MUSLIM'S RITE

Muslims believe that the life on Earth is just a short journey, and the eternal and happy life will be in the Hereafter. Therefore, Muslims should not spend all their efforts and time only to enjoy themselves in this life. Contrarily, they are asked to spend all efforts and time to obey God, and seek His pleasure by following His law (*Shari'ah*), to deserve His mercy and Paradise that He has promised His believers (King Khalid I. C., undated). To achieve these aims, every Muslim male and female must follow a specific rite or code of life, which covers all domains and every area in a Muslim's life. According to Elmasry (undated), they are:

3.7.1 Spiritual Life

Prayer (Salah), fasting, charity giving (Zakah), pilgrimage (Hajj), love for God (*Allah*) and His Messenger, love for truth and humanity for the sake of God (*Allah*), hope and trust in God (*Allah*) at all times and doing good for the sake of God (*Allah*). Section 3.3 has explained the effect of this factor on architecture.

3.7.2 Intellectual Life

True knowledge based on clear proof and indisputable evidence is acquired by experience or experiment or by both. The Quran points to the rich sources of knowledge in the whole universe. Islam demands faith in God (*Allah*) on the basis of knowledge and research and leaves wide open all fields of thought before the intellect to penetrate

as far it can reach. This factor has urged the Muslims of the Middle Ages to excel in all domains of science and knowledge (including architecture). Professor Richard Bulliet proclaims " *For the irony is, it was precisely during our so called 'Dark Ages' that the Great Islamic Civilisation of the Middle Eastern reached its peak! In fact they were the people who bridged the gap, who wrote the missing chapter in our History! If it had not been for the Muslims, we might never have had a renaissance at all*" (Bulliet 1990: TV program).

3.7.3 Personal Life

Purity and cleanliness, a healthy diets, proper clothing, proper behavior, and good healthy sexual relations within marriage; this factor has directly affected the Islamic social life, considering the family as the nucleus of the Muslim community and producing spacious houses, large enough to accommodate two or more nuclear units within an extended family (Hillier & Al-Khudairi 1993). Also, this factor has affected Islamic urbanism.

3.7.4 Family Life

A family is a human social group whose members are bound together by the bond of blood ties and/or marital relationship and nothing else (adoption, mutual alliance, common law, trial marriage etc.). Marriage is a religious duty on all that are capable of meeting its responsibilities. Each member of the family has rights and obligations. This factor has directly affected the design of Muslim's house, which is explained in chapter 4, section 4.5.

3.7.5 Social Life

Man is ordained by God (*Allah*) to extend his utmost help and kindness to other family members, relations, servants and neighbors. No one is superior for his/ her class, color, origin, or wealth. Humanity represents one family springing from the one and the same father and mother. This factor has reflected on Islamic architecture and urbanism producing harmony in the Muslim community.

3.7.6 Economical Life

Earning one's living through decent labor is not only a duty, but a great virtue as well.

Earning is man's private possession. The individual is responsible for the prosperity of the state and the state is responsible for the security of the individual. The Islamic economic system is not based on arithmetical calculation alone, but also on moral and principle. This factor has translated into many kinds of commercial buildings such as Markets (*Suq*), *Qaysariyya*, and caravansary (*Wakalah*); sections 4.7.2 and 4.7.3 explain this type of buildings.

3.7.7 Political Life

The sovereignty in the Islamic State belongs to God (*Allah*), and the people exercise it by trust from Him to enforce His laws. The ruler is only an acting executive chosen by the people to serve them according to God (*Allah*)'s law. The State is to administer justice and provide security for all citizens. If an administration betrays the trust of God (*Allah*) and the people, it has to be replaced. Non-Muslims can administer their personal life of marriage: divorce, foods and inheritance, they are entitled to full protection and security of the state including freedom of religion.

The political factor has entailed the erection of some luxurious palaces, fortification and military buildings such as gates, walls, watching towers, and citadels. This type of architecture appeared in historical Islamic architecture, some of those buildings still exist, and they are conserved as architectural heritage.

3.7.8 International Life

Man has a common origin, human status, and aim, which has translated to co-operation between Muslims and non-Muslims in the Western countries. Islamic Centres have been founded in most cities to offer support to the growing Muslim community in the West, and to introduce Islam to the Western community.

3.8 SUMMARY

As this dissertation concerns Islamic architecture, it is useful to know what Islam means. This chapter aimed to introduce Islam and gives an idea about the major principles of Islamic faith, and the basics of Islamic practices that may affect Muslims' architecture. This chapter briefly explained the meaning of Islam, analyzed the Five Pillars of Islam (application of faith), recognized Articles of Faith, introduced Islam as a

Code of Life and reviewed the resources of the Islamic legislation (*Shari'ah* law), and Muslim's rite.

All the previous factors have directly and indirectly affected Muslims' architecture and produced the Arabian Islamic architecture; every subject belongs to the Islamic Faith could indirectly affect architecture, simply because these subjects touch the spiritual areas of Muslim's life.

Many subjects of the Holy Quran and Noble Sunnah have directly affected architecture, many verses from the Quran, and many Ahadeeth of Prophet Muhammad (p.b.u.h.) address construction. This issue will be discussed in details later in this research. Chapters 4 and 5 will explain Islamic teachings that could directly or indirectly affect Muslims' buildings, and how that could affect their architectural and urban design.

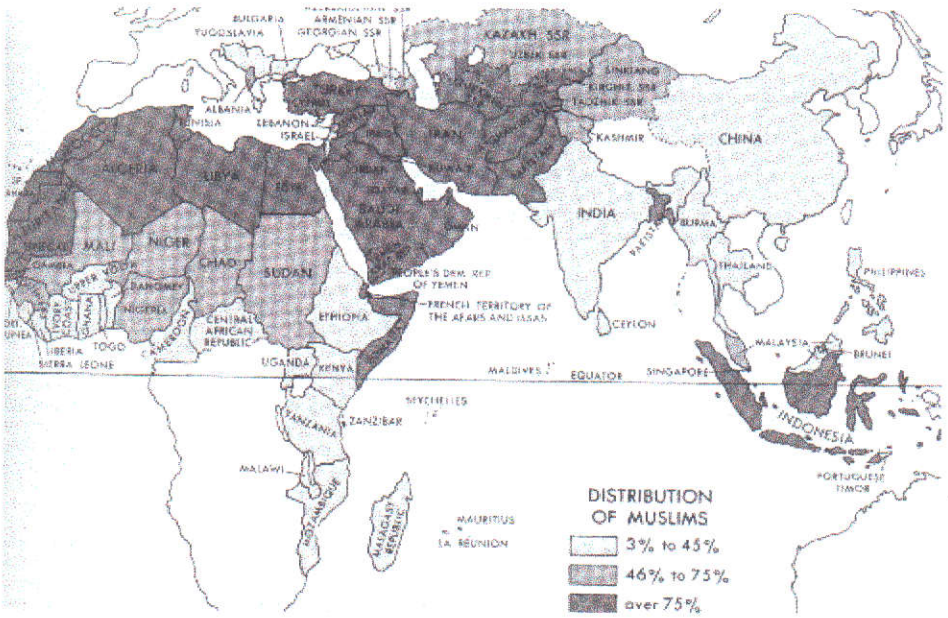


Figure 3.1 – The Muslim countries (after Encyclopedia Americana, 1992)

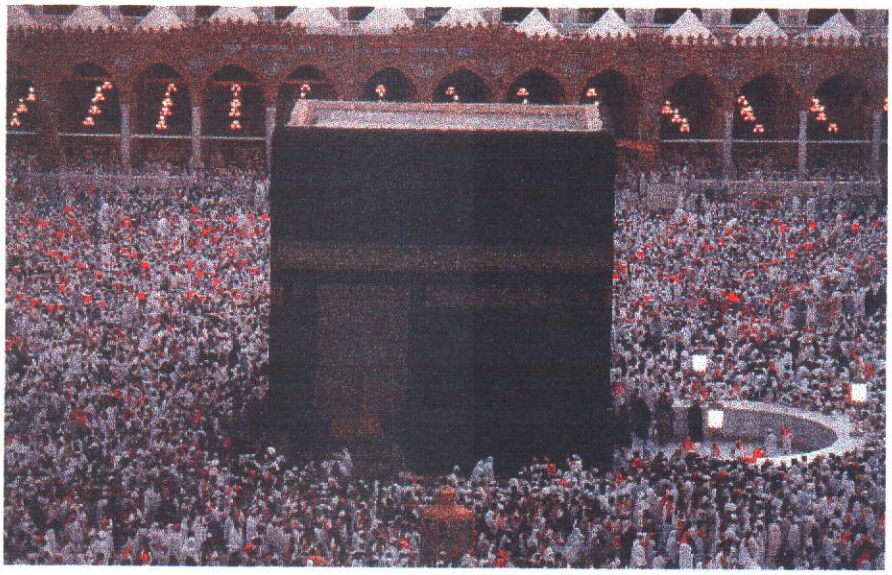


Figure 3.2 - The Kabah, the place that every mosque in the world should face (after Husain, 1996)

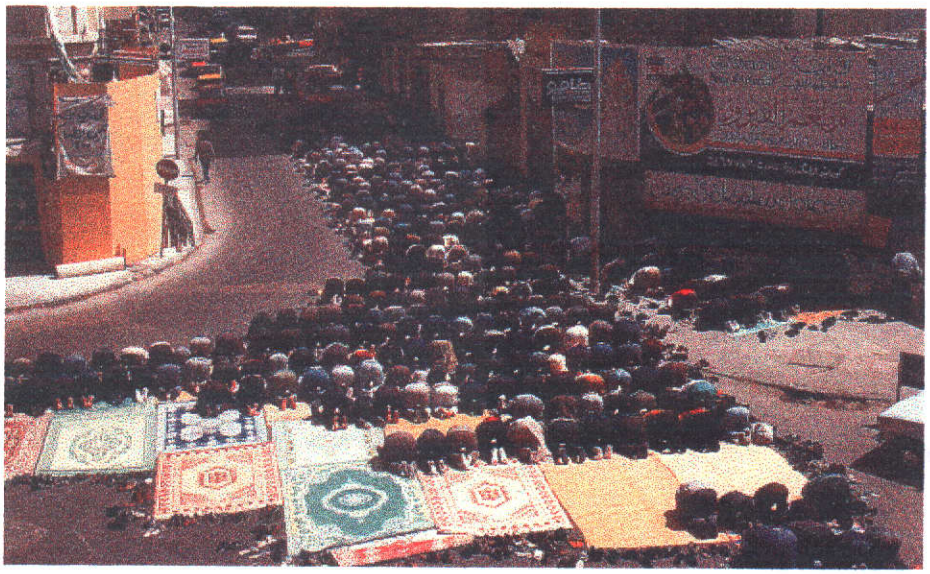


Figure 3.3 - Muslims can pray at any pure place on earth (after Husain, 1996)

Figure 3.4 - Mosque is not only for praying, it is also for many other activities such as studying (after Husain, 1996)

Figure 3.5 - Squatters along railway lines, the miserable condition of poor Muslims because many rich Muslims do not pay their charity- *Zakah* (after Powell 1983)

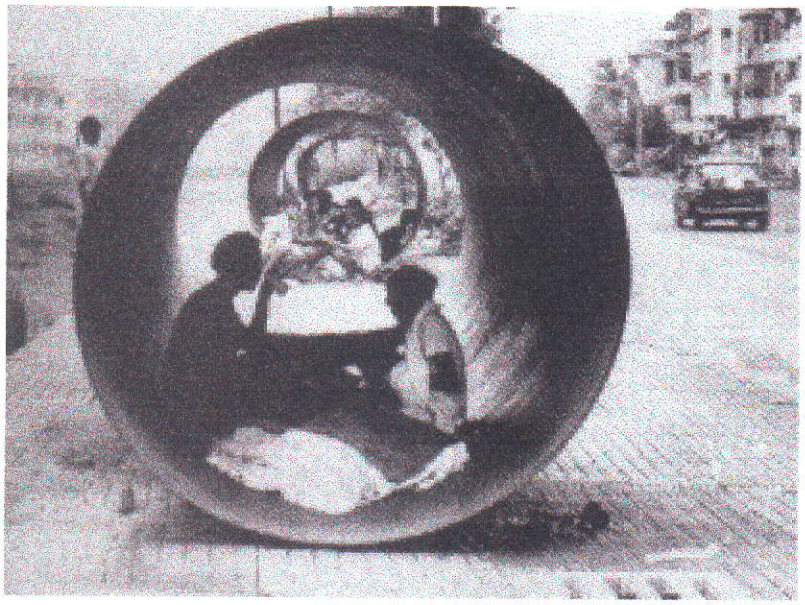


Figure 3.6 - A social occasion, squatters on the outskirts living in pipes left behind by the municipal workers (after Powell 1983)

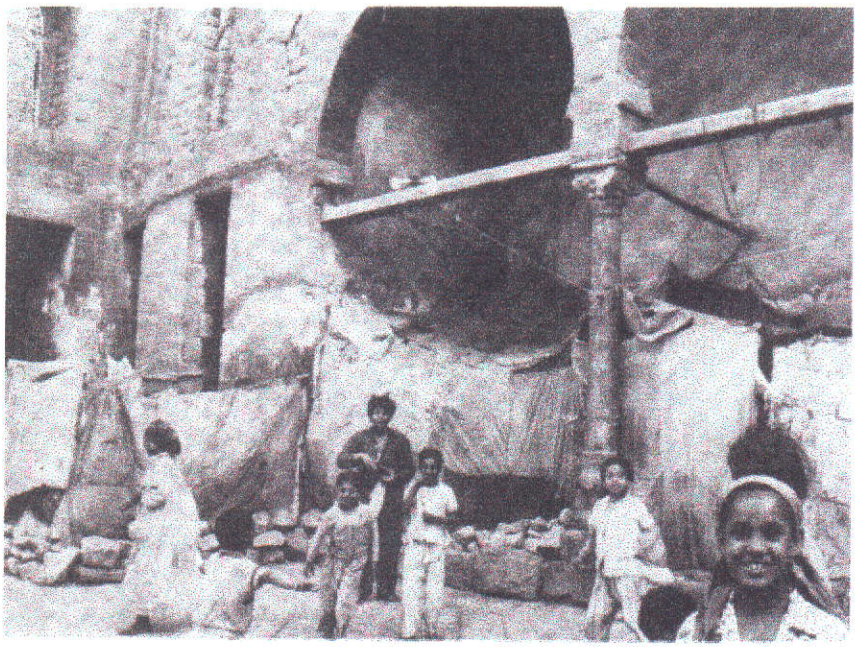


Figure 3.7 - Interior of a traditional mosque now inhabited due to city's housing shortage in Cairo (after Holod 1978)

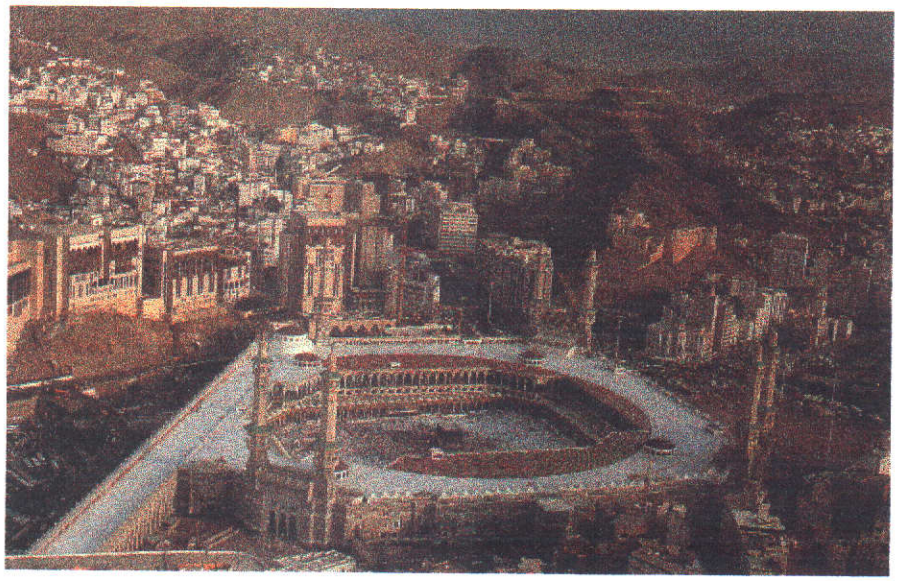


Figure 3.8 - The Sacred Mosque in Mecca, and the Kabah in the center (after Husain, 1996)

Figure 3.9 - Muslims during Hajj, the fifth Pillar of Islam (after Husain, 1996)

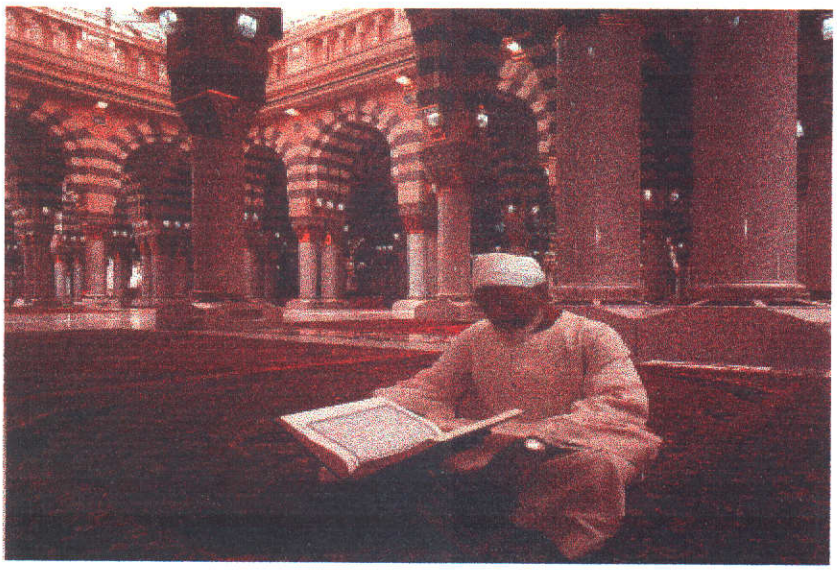


Figure 3.10 - The Quran, Muslims' Holy book (after Husain, 1996)

CHAPTER 4: ARABIAN ISLAMIC ARCHITECTURE

CHAPTER 4. ARABIAN ISLAMIC ARCHITECTURE

4.1 INTRODUCTION

Contemporary architecture of the Muslim world in general, and the Arab world in particular, has been exposed to several outside influences that have eventually caused it to be alienated from its particular sense of identity and, thus, to lose its character. It is believed that such matter requires immediate attention towards attempting a "revival process" by uncovering the bases and principles of Islamic architecture, as manifested throughout Islamic history. These principles could be integrated and molded into the contemporary architecture of the Arab world, which reflects a rather complicated and, sometimes, contradicting set of values (OICC, Ibrahim & Mustafa 1992).

To understand the background of Arabian Islamic architecture, the previous two chapters introduced Arabs and Islam in general. Chapter 2 introduced Arabs, their origin, history, and environment (geography, geology and climate), as the main variable factors that have directly, and indirectly, affected Arabian architecture. Chapter 3 introduced Islam as a stable factor that has affected Arabian architecture and given it the Islamic character, as stable factors through history and location.

The aims of this chapter are to introduce the fundamentals of Islamic architectural heritage from physical, historical and ideological perspectives, which basically reflect the Islamic character. Also it aims to present a brief analytical study for determining the theories and principles of architectural and urban design of Arab society throughout its Islamic history. The chapter also studies the development of Arabian Islamic architecture to recognize its main characteristics.

To achieve these aims, this chapter briefly reviews the history of Islamic architecture on chronological and geographical basis; demonstrates architectural elements of Islamic buildings, development of religious, residential, and public buildings and recognizes its main characteristics. Models of different types of buildings, during different historical periods, have therefore been selected to examine their architectural and urban design bases which emanated from the Islamic faith and Shari'a (Islamic law) and the

environmental impacts and modes of Muslim's life.

The Organization of Islamic Capitals and Cities' book (OICC, Ibrahim & Mustafa 1992), *Principles of Architectural design and Urban Planning during different Islamic eras - Analytical study for Cairo city*", comprises one of the principal references for this part of research.

4.2 BRIEF HISTORICAL REVIEW ON CHRONOLOGICAL BASIS

This section endeavours to briefly review Islamic history on a chronological basis, which advances an understanding of the historical development of Arabian architecture during different Islamic eras, which will be explained in section 4.5.

The birth of Muhammad was a momentous event in history. In 610 AD, Muhammad experienced his first revelation and began his role as a prophet spreading the message of the one, all-powerful God (Nassar 1993).

The sequence of the development of Islamic architecture in the Arab region, from the 7th to the 20th century, may be classified in three main periods (figure 4.1) as follos.

4.2.1 The Early Islamic period (622-661 AD)

The turning point came in 622 AD when Muhammad and his followers migrated (the migration - *Hijrah* is officially considered the beginning of the Muslim era) to Medina, where a community of believers was established. As a religious demand, Prophet Muhammad chose the location of his house and mosque; he laid the foundation, built, and supervised the construction affairs by himself, in association with his companions (Kholoussy 1998). The mosque of the Prophet was an enclosed oblong courtyard with huts (the rooms of Prophet's wives) along one sidewall and a rough portico (the *zulla*, originally for shade) at one end, for the poor Muslims (*suffah)*. Almost all mosques, therefore, repeat the plan of Prophet Muhammad's mosque, being composed essentially of an enclosed courtyard (*sahn*), a building at one end for prayer, and arcades (*riwaqs*) on the sides (Fletcher 1961).

In its early stages, Islam concentrated on rebuilding man's character, a relation between

man and God, man and people, and the behavior of followers. Constructing great buildings and temples was not a target in early Islamic period. On the contrary, the buildings in the beginning of Islam were characterized by simplicity and humbleness. As Islam spread, its architecture forms developed, modified by the different climatic conditions and available materials in the lands of Islamic conquest, absorbing and adapting indigenous art styles and motifs. Soon, Islamic architecture became universal in the vast Islamic world (Nassar 1993).

The Arabs were so discreet in their demands; therefore, changes were introduced very gradually. The Arabs were not interested in setting up new methods. Their skill lay in giving the native populations full responsibility for everyday affairs. With flexibility the conquerors respected local customs. Islamic architecture thus developed from many sources. Roman, Early Christian, and Byzantine styles were adopted in early Islamic architecture; the influence of Sassanian architecture was also of paramount significance (Wiet 1974).

4.2.2 The Umayyad (661-750 AD) and the Abbasid caliphs (750-1258 AD)

The Umayyad State was established in 661 AD and took Damascus as a political capital. The formative period of Islamic architecture was roughly coexistent with the rule of the early leaders of Islam, the Umayyad caliphs (661-750 AD), who extended Islam from Damascus, in Syria, to Spain.

The middle period spans the time of the Abbasid caliphs (750-1258 AD), who ruled Islam from Baghdad, in Iraq, until the time of the Mongol conquest. This caliphate, famed for its promotion of learning and culture, was the most illustrious in Islamic history. It was in this middle period that the influence of Iranian art form became significant. The period from the Mongol conquest to the 18th century may be termed the late period of Islamic art.

Earlier in Egypt and Syria, as Classified by Mustafa, Lamei (1984), distinctive styles were associated with the following:

a. Tulunid period (868- 904 AD)

During the Abbasid State, Egypt and Syria became independent, and ruled by the Tulunid (868 – 904 AD); the ruler Ahmad Ibn-Tulun built the city Al- Qatai'e in Egypt, and built a palace for himself, a mosque known as Ibn-Tulun mosque, a Statehouse, a hospital, and an aqueduct. This period is famous for its geometric and floral plaster ornaments, and some architectural and ornamental impressions from Iraq, as it was the birthplace of Ibn-Tulun.

b. The Fatimid (969-1171 AD)

The Fatimid came from North Africa. They founded their State in Egypt from 969 to 1171 AD, then their the political moved from Tunisia to Egypt and built new city which is Cairo.

The Fatimid rulers built enceinte and defense towers to protect Cairo from foreign attack. Also many mosques were built such as Al-Azhar, Al-Hakem, Al-Giyushy, Al-Aqmar, As-Salih Tala'i. This period is famous for its plaster ornaments, wooden graphics, and building by stone in addition to brick. The most noted buildings in this period are the eastern and the western palaces in between them a huge courtyard known as Byn-al-Qasreen.

c. Ayyubid (1171- 1250 AD)

The Ayyubid State founded by Salahud-Din Al- Ayyubi (Saladin) in Egypt. This period is famous for its military buildings, such as the mount citadel, Ar-Rawda citadel. Also, many *madrasa* were founded to oppose the *Shi'ate* shrine that remained from the previous Fatimid State. The plan of the religious buildings, the dome and minaret were remarkably developed.

d. The Mamelukes Bahari and Burgi (1250- 1517 AD)

The Mamelukes Bahari was founded by Turkish slaves between 1250-1382 AD in Egypt, They were used by the Ayyubid and lived in Ar-Rawda citadel on the Nile coast. Islamic architecture flourished in this period; the plan of *madrassa* (religious school)

with four *iwans* has appeared, and also new architectural elements have appeared in facades, ceilings, and openings. Some Syrian, Persian, Moorish architectural impressions have been found in this period. The use of stone in building has increased. Also, the number of public buildings has increased as well; such as the public bathrooms (*Hammamat)*, shops (*khans)*, and markets (*wakalat).*

The Mamelukes Burgi founded by Sultan Barquq in 1382 AD in Egypt, They were used by Sultan Qalawoon and lived in the towers of the mount citadel. This period is considered as the golden era of architecture, where the identity of the Arabian Islamic architecture was confirmed and developed its significant style. Moreover the industry of wooden ceilings with *muqarnas* was developed, the minarets became more beautiful and shapely, and the exterior surface of decorated with geometric and floral ornaments. After the fall of the Mamelukes Burgi State in 1517 AD, Egypt and Syria came under the Ottman Empire.

4.2.3 The Ottoman Turks (1299-1922 AD)

Architecture also flourished under the Ottoman Turks, rulers of Turkey from 1299 to 1922, who extended their empire to Egypt and Syria in the 16th century.

Under the Ottomans, mosques were built reflecting the Byzantine heritage of Turkey. Thus, the magnificent Selimiye Mosque (1568-74) at Edirne Turkey, built by the great Turkish architect Sinan, has a colossal dome ringed with smaller ones and with half domes. This is the same arrangement of Hagia Sophia in Istanbul, Turkey- a Byzantine church later converted to a mosque. Also similar to Hagia Sophia in breadth, the Edirne mosque has many windows, providing much more light. This form, which Sinan also employed in two famous Istanbul mosques, influenced the design of mosques throughout Turkey, Syria, Egypt, Arabia, and North Africa. Later in Istanbul, the Ottman Turks in 1454 began the *Topkapi Surayi*, now the *Topkapi* Palace Museum.

4.3 BRIEF HISTORICAL REVIEW ON GEOGRAPHICAL BASIS

This section endeavours to briefly review Islamic history on geographical basis, which advance an understanding of the influences of the geographical factor of the different Arabian regions on Islamic architecture, which have reflected on the method of construction and the use of variable building materials, and will be explained in section 4.9.11.

As introduced on chapter 2, there are four regions of the Arab world (figure 4.2):

1. Arabia - the Arabian Peninsula includes Saudi Arabia, Gulf states, Yemen..
2. The "Fertile Crescent" includes
   2. 1 Ash-sham (Syria, Jordan, Palestine, Lebanon)
   2.2 Iraq (Mesopotamia)
3. The Nile Valley includes Egypt, Sudan.
4. North Africa - Al-Maghreb Al-Arabi (Arab West), which includes today: Libya, Tunisia, Algeria, Morocco, and Mauritania.

The following section reviews briefly the history of each region:

4.3.1 Arabia

Arabia was the cradle of Islam, The Kabah at Mecca, the holiest spot in the Muslim world, was its focus and was an object of veneration long before Islam. It is simply a small plain rectangular structure. The imposing mosque, which now surrounds it, is mainly a building of the sixteenth century. When Prophet Muhammad migrated from Mecca in 622 AD to Medina, 240 miles away, he planned his house and mosque, which became the prototype of all succeeding mosques (Fletcher 1961).

The message of Islam has extended east and west, north and south, during the different historic periods to come, and under different rulers. The most important architectural events in Arabia were limited to the extensions done in the Haram in Makkah and Medina (Nassar 1993).

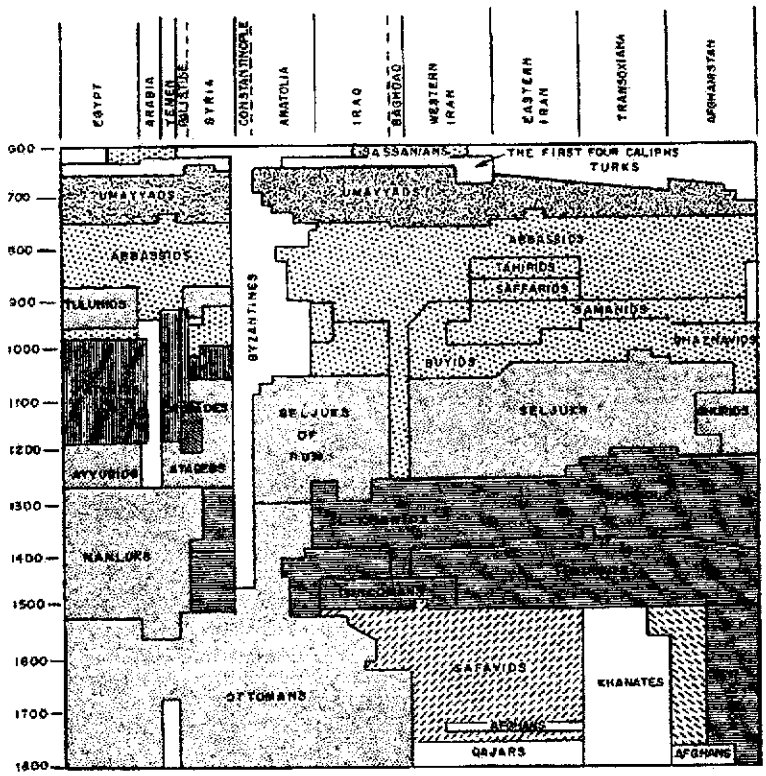


Figure 4.1 - Islamic Architecture during Islamic eras in the Muslim world (after Hillenbrand, 1994)

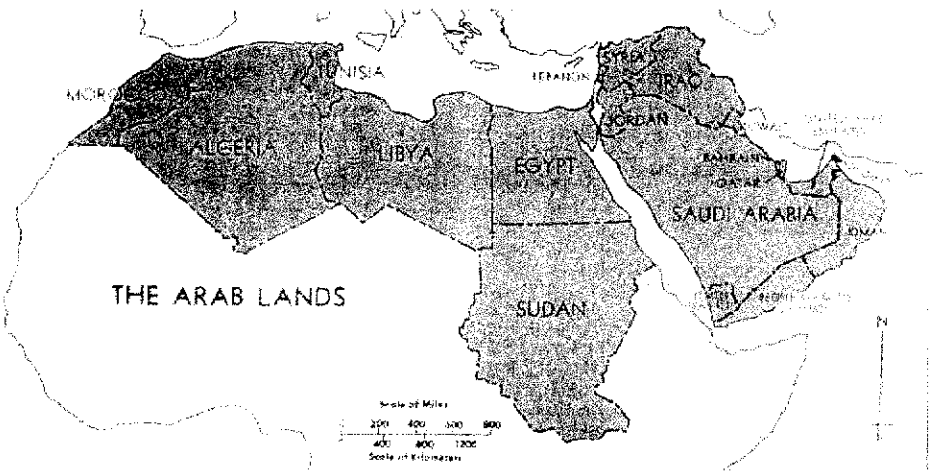


Figure 4.2 - Arab world regions (after Encyclopaedia Americana, vol.2)

4.3.2 The "Fertile Crescent" includes Ash- Shamm and Iraq

4.3.2.1 Ash- Shamm (Syria and Palestine)

Islam entered Ash-Sham in 636 AD - nothing remained of the first mosque that was built in Jerusalem in 639 AD. It stood in the temple enclosure, near the Sacred Rock, and apparently on the site of the Mosque of al-Aqsa, which has since been rebuilt several times. From the Sacred Rock, the tradition of Prophet Muhammad (p.b.u.h) states that he ascended to Heaven in 652 AD (Mi'raj); and it was over the Rock that the Caliph Umar built the magnificent Dome of the Rock. The Umayyed period started in 661 AD, which was a rich one known for its progress in the different sciences and the erection of many buildings. The first Great Mosque in Damascus built by the Caliph al-Walid, (706-715 AD). Its composition and design reflect the strength and richness of the Islamic Empire in Ash-Sham.

The caliphate was then transferred to Baghdad during the Abbassid period. Ash-Sham was ruled afterwards by the Mamluks (1260-1516 AD), who were centered in Cairo, During this period, the region was invaded twice by the Mongols in 1300 AD and 1403 AD. The Mamluki period was historically considered the golden age of architecture in Ash-Sham. From year 1516 to year 1918 AD, Ash-Sham was ruled by the Ottoman. By the end of the First World War, Ash-Sham was under the European influence, and was occupied by the French from 1918 to 1943 AD (Nassar 1993).

4.3.2.2 Iraq (Mesopotamia)

After Islam prevailed, Iraq was subjected to a number of functional and visual changes in all building types (637 AD). During the period of calipha Umar, cities of Basra, Kufa, and Fustat were built. Later during the Abbassid period, the circular city of Al-Salam was built (672 AD) by Al-Mansour. Calipha Al-Mostanser (1226-1242 AD) was interested in architecture, arts and crafts. His period was characterized by building action and prosperity, he built the school of Al-Mostansyria, a number of mosques, guest houses, and palaces.

The Mongols captured Baghdad (1258 AD) and destroyed Islamic civilization and architecture. Then followed the Ottman rule, which rebuilt every thing destroyed by the

Mongols. They continued to rule Iraq until it was invaded by the British in 1917 AD (Nassar 1993).

4.3.3 Egypt

The Arab General Amr ibn al-'Ass conquest Egypt in 639 AD and built the first Muslim city al-Fustat (near Cairo), and two years later the mosque of Amr was built.

Under the Ummayad (661-750 AD), Egyptian architecture was influenced by Syrian architecture of that time (Golvin 1976).

After that, Egypt was governed by Ibn Tulun (868- 904 AD), who was educated in Samara, in Iraq, and borrowed many features from it, including the spiral minaret, brick pointed arches and arcades. He introduced these features in his mosque in Cairo, which forms one of the great landmarks of Muslim architecture.

The Mosque of AI-Azhar, Cairo (979 AD onwards) is the first notable building of the Fatimid Dynasty, which ruled Egypt from 969-1171 AD and was so called after Prophet Muhammad's daughter Fatimah. It is a very large building for the worship of great congregations, but has served for centuries as the Religious University of Cairo, and still accommodates thousands of students.

The Mosque of Al-Hakem (1012 AD) and the small one of AI-Aqmar are other important Fatimid monuments in Cairo. To the same period belong three fine gateways in the city walls. The magnificent Citadel of Cairo, commenced 1171 AD, is due to Salahud-Din, who founded the Ayyubid Dynasty, which ruled Egypt and Palestine from 1171-1250 AD. There are a large number of buildings in excellent preservation from the period of the Mamluki rulers who governed Egypt from 1250 AD until the Turkish conquest in 1517 AD.

After the Ottoman conquest of Egypt in 1516, architecture took its cue from Constantinople, and was of lesser quality, because the Ottoman government shifted all excellent artisans from Egypt to work in Constantinople (Mustafa, Lamei 1984). From the seventeenth century onwards, European influence made itself apparent (Fletcher 1961).

4.3.4 North Africa

After the Muslim conquest of North Africa, in the seventh to the eighth century, mosque building proceeded rapidly. As in Egypt, extensive use was made of antique marble and stone columns. In Egypt, Persia and India, Domes usually indicate a tomb-mosque or mausoleum [which contradicts the Islamic teachings]. Domes were seldom used in these "Moorish" countries and were generally small. However, like another parts of the mosque, Domes were lavishly decorated internally. The Great Mosque of Qayrawan, near Tunis, was probably founded in 670 AD and it contains the earliest known example of a minaret (747 AD) during the caliphate of Hisham, (724-43 AD). The Mosque of Zaytunah (732 AD) in Tunis is also of the congregational type, with stilted arches supported on antique columns. Other notable examples in North Africa are the Great Mosques of Algiers 1018 AD (Fletcher 1961).

DEVELOPMENT OF ISLAMIC BUILDINGS

To get better understanding of the real meaning of "Islamic architecture", it is important to review the development of Islamic architecture through studying different types of buildings during different Islamic periods.

Also, in order to help architects to build better architecture for Muslims, it is useful to reinterpret, research and teach the architectural history of the Muslim world and understand its architectural vocabulary.

To achieve these aims, the following sections review the development of Islamic architecture during different Islamic periods. Egypt is chosen as a vivid example of Arabian architecture witnessed by most different Islamic eras. In other words, throughout Islamic history, many Arabian architectural prototypes reached Egypt by the Muslim conquerors. Some of these prototypes were either driven from their local Arab Islamic environment or bumped into during their conquests (Ibrahim A. & Ibrahim H. 1987, p. 29).

4.4 DEVELOPMENT OF RELIGIOUS BUILDINGS

Much care and consideration were given to religious buildings and mosques, as God said in the Holy Quran verse 51: 56 (Khan & al- Hilali 1996): *"And I (Allah) created not the jinn and mankind except that they should worship Me (alone)".*

Religious building types could be classified as: the mosque & *madrassa* (religious school), the *khanqah* (*tekiyyah*), the *Sabil* (drink rooms), the Tomb, the *Kuttab* (orphans' school).

Mustafa (1984) studies and analyzes the principles and the development of religious buildings during different Islamic eras, which could be summarized as the following:

4.4.1 THE MOSQUE AND MADRASSA

4.4.1.1 Caliphate - Early Islamic period (622 – 661 AD)

The mosque was just a simple rectangular covered area including no ornaments, the ceiling was low, and the mosque included no *mihrab* or minaret. The mosque had several doors in its different walls except for the *qibla* wall, which was blank. The design prototype was the Prophet's mosque, at that time (figure 4.3).

4.4.1.2 Caliphate– Umayyad and Abbasid periods (661 – 750 AD) & (750 – 1258 AD)

The mosque area increased, as we can see in 'Amr ibn al-'As Mosque, the area of which increased four times. The mosque height also increased and it is composed of a court surrounded by four covered areas. The court became the core of the mosque design. The mosque was also provided with a *mihrab* (a niche in the main wall of the mosque to used indicate the direction of prayer, *Quiblah*), and a *minbar (*a wooden platform used by the prophet to deliver his speech – Rasdi 1998), together with a minaret (tower) in each corner. The number of doors increased, however they weren't specially treated. The building was decorated and its column crowns gilded, it was also provided with a special enclosure (space) in front of the *mihrab*. The design prototype was the Prophet's Mosque after the Caliphates additions (figures 4.4a, 4.4b).

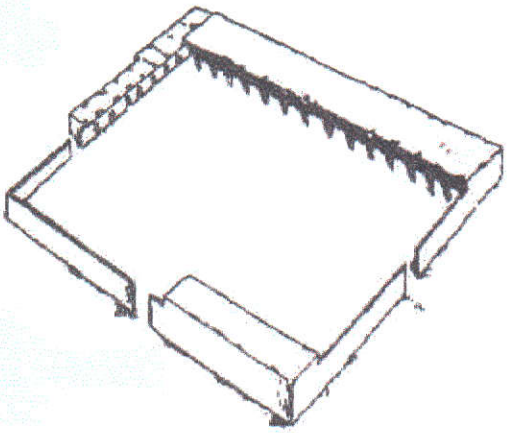


Figure 4.3a – Visual description of Prophet Muhammad's House in Medina with the shaded prayer court of palm fronds – 622 AD (after Rasdi, 1998).

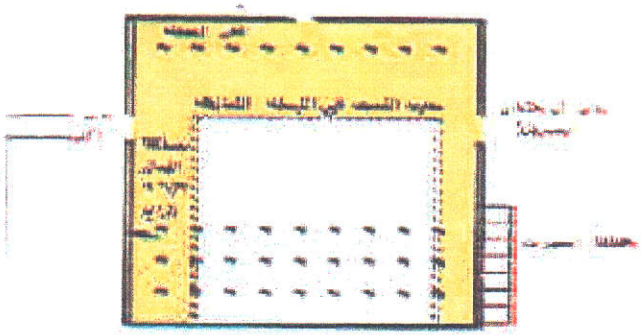


Figure 4.3b – Second expansion of Prophet Muhammad's mosque - 629 AD (after Kholoussy, 1998)

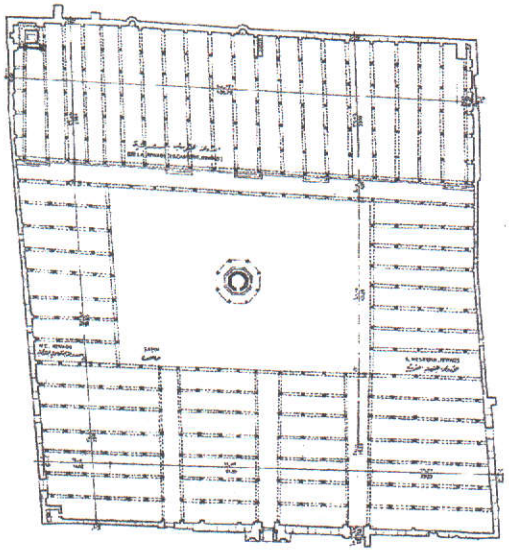


Figure 4.4a, 4.4b – Amr mosque plan and minaret (after OICC, Ibrahim & Mustafa 1992)

4.4.1.3 Tulunid period (868 - 904 AD)

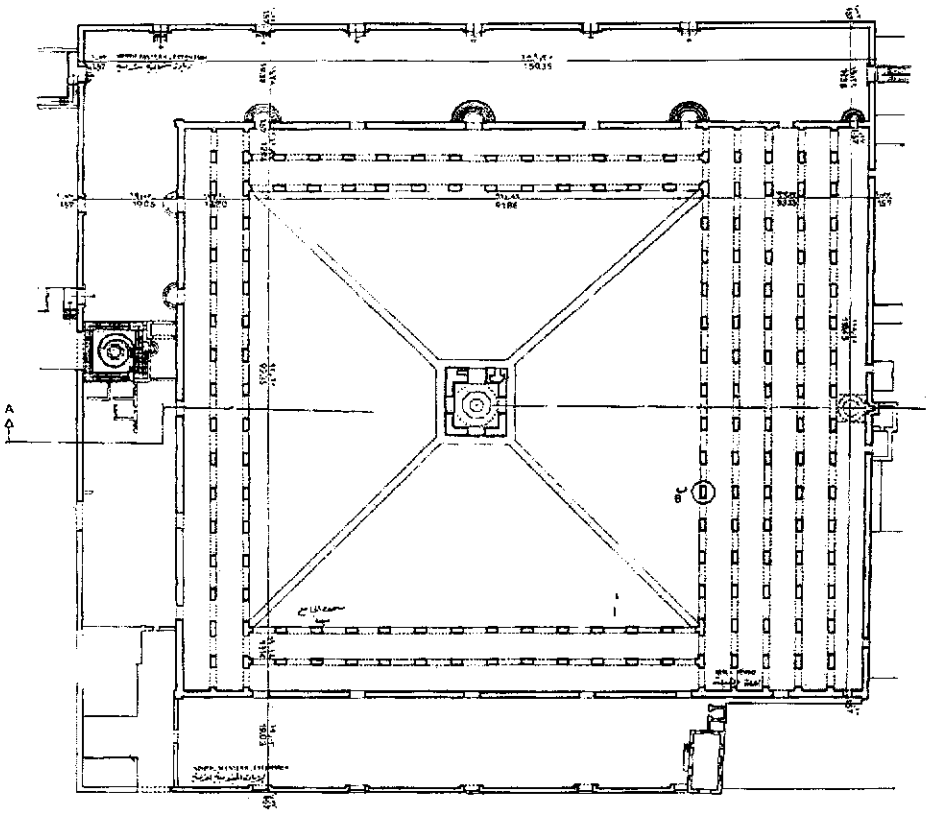
The area of the mosque increased, and it was surrounded with additional corridors (*ziyada*). The influence of Samarra architecture, the governmental capital city of the Islamic Empire at that time, on the design was quite evident. The mosque plan was composed of a rectangle that became a square after adding the side corridors. The mosque plan includes a court, with a central fountain, and surrounded by four covered areas (figures 4.5a, 4.5b). The mosque also included a *mihrab*, a *minbar*, and a spiral minaret in the northern addition (*ziyada*) besides the ablutary. The mosque doors increased significantly in number - until it reached 42 doors; also doors appeared for the first time in the *qibla* wall for the use of the prince and his attendants. The mosque walls ended with large cresting - about the size of a human being.

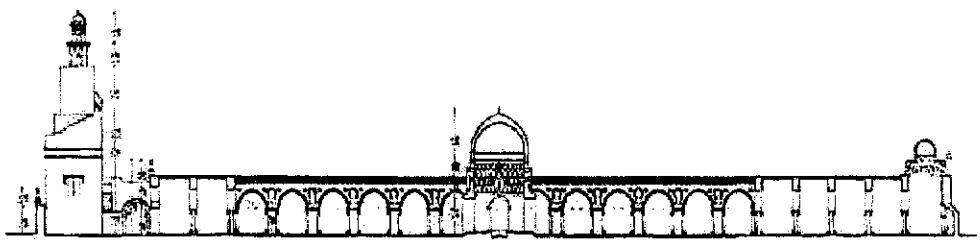
4.4.1.4 Fatimid period (969 - 1171 AD)

Two types of mosques were found in this period; the grand mosque and the small mosque (Mustafa 1984).

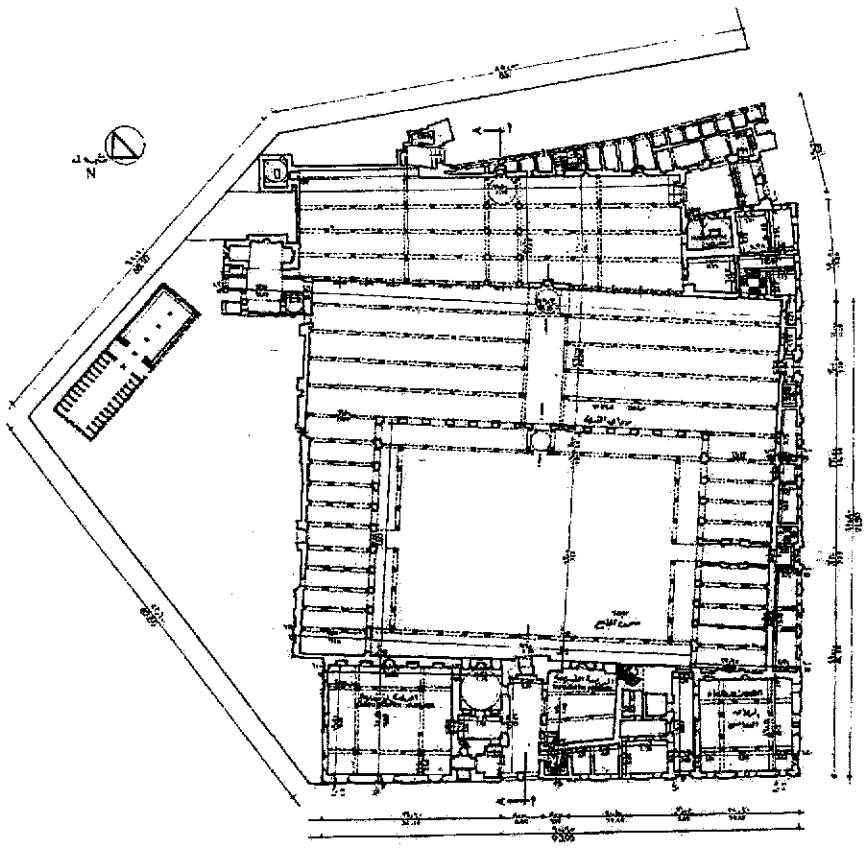
First type: Grand mosque - It included a central court surrounded by four covered areas the largest of which was the *qibla* space which incorporated the *mihrab* and *minbar*. The closest aisle to the *qibla* wall was covered with three domes, the middle one was located above the *mihrab*. An intersecting aisle lies in the middle of the *qibla* space facing the main entrance leading to the *mihrab*. The Fatimids transferred the idea of the intersecting aisle from their homeland mosque architecture, in North Africa.

The intersecting aisle first appeared in the Prophet's Mosque in Caliph al-Walid ibn 'Abd ul-Malik expansion (707-710 AD). It was later transferred to Syria and then to North Africa. The mosque included three entrances distinguished by a projecting profile from the wall alignment. The main portal lies on the *mihrab* axis while the secondary entrances lie on the court axis. The internal ornamentation depends on floral stucco patterns, floral Kufic inscription, and stucco windows. Mosques were crowned with stepped cresting (figure 4.6a, 4.6b).





Figures 4.5a, 4.5b – Ibn Tulun mosque plan and section (after OICC, Ibrahim & Mustafa 1992)



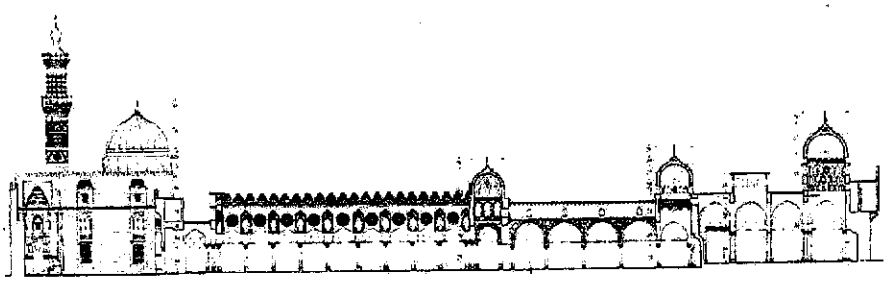


Figure 4.6a, 4.6b – Al-Azhar mosque plan and section (after OICC, Ibrahim & Mustafa 1992)

Second type: Small mosque - The mosque was composed of a central court surrounded by four spaces the largest of which is the *qibla* space including a *mihrab* and *minbar*. The *qibla* space included several aisles (*riwaq*) the largest of which is the *qibla* aisle. The plan was externally adjusted to the line of the street, while the interior was oriented towards the *qibla*, which lead to the variety in wall thickness. The mosque had three entrances, the two secondary doors projected from the wall alignment, while the main portal took the form of a deep niche - an inviting entrance - above which lies the minaret. Facades started in this period, together with suspended mosques. Wind catchers (*malqaf*) were used as a climatic adaptation. Floral patterns, floral Kufic inscriptions and stucco windows were also used in internal decoration (figures 4.7a, 7b, 7c).

4.4.1.5 Ayyubid period (1171 - 1250 AD)

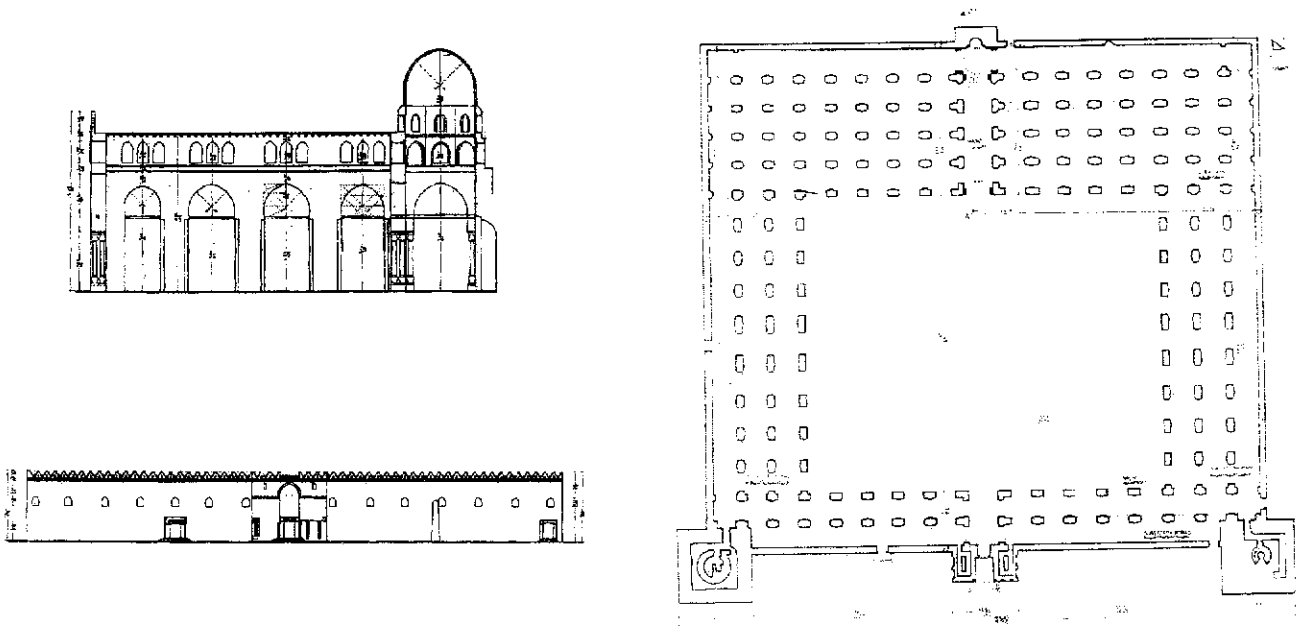
As Mustafa (1984), the *madrasa* mosque first appeared during this period. *Madrasas* (schools) appeared earlier in Syria - built by the Atabeks - and were transferred to Egypt by Salahud-Din al-Ayyubi. *Iwans* (arched openings) were used instead of aisles in the *madrasa*, and facades were adjusted to the line of the street. The plan includes a central court onto which opens the *qibla iwan* and the *iwan* facing it, together with the students and rectors (*Shaikhs*) cells. Cranked entrances appeared and vestibules were widely used in the religious building. The number of entrances decreased, and the entrance became related to the minaret as in the Fatimid period; facades were studied and ornamented. One or more *mihrabs* were built in the *qibla iwan* (figures 4.8a, 8b).

4.4.1.6 Mamluks period

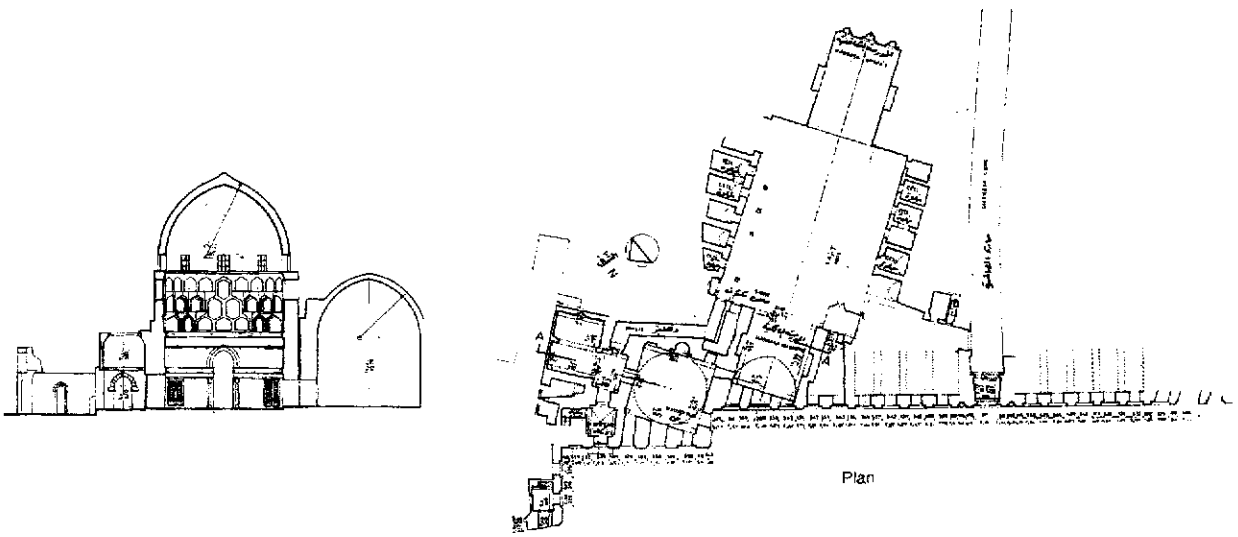
a. Baharite Mamluks period (1250- 1382 AD)

There were two types of mosque plans during that period:

First type: open court and four covered areas - The mosque is composed of a court onto which open four covered areas, the largest of which is the *qibla* area which includes a recessed *mihrab* and *minbar*. The area in front of the *mihrab* is surmounted by a big dome. The mosque has three entrances related to the axes of the court and not



Figures 4.7a, 7b, 7c – Al-Hakim mosque plan, elevation, and section (after OICC, Ibrahim & Mustafa 1992)



Figures 4.8a, 8b – Al-Salih Najm al-Din's madrasa plan and section (after OICC, Ibrahim & Mustafa 1992)

to the mosque mass. The entrances lead directly to the mosque, and the minaret lies above the main portal. The entrances project from the facade alignment as in the Fatimid mosques. The internal configuration depends on horseshoe arches bearing on granite or marble posts, together with decorative patterns and stucco windows. The facades are simple and truly express the building materials.

Second type: Collegiate mosque *madrasa* with four *iwans* - This type started with four *iwans*, in the earliest known example (the *madrasa* of al-Zahir Baybars). The plan developed as in al-Salih Nejmud-Din' *madrasa*, which integrated the two masses in one; the plan includes an open court surrounded by four *iwans*. The *madrasa*/mosque was, mostly, annexed to the tomb of its establisher and his family (although this contradicts the Islamic teachings). Cranked entrances were used in that type of mosques, and the minaret was placed above or close to the main portal to distinguish it. The ablutary (place for ablution) was placed so as to receive direct sunshine and such that would not disturb the prayers and students. The external and internal facades were carefully studied; a *mihrab* and *minbar* were placed in the forepart of the *qibla iwan* (figures 4.9a, 9b).

b. Burgi Mamluks period (1382 - 1517 AD)

The mosques of this period included three types of plans:

First Type: Small mosque - The small mosque (*madrasa*) includes a covered area - *durqa'a* – in front of the *qibla iwan* which incorporates a recessed *mihrab* in its forepart. Inscribed friezes, stucco windows, and *coloured* glass are commonly used in the internal decoration. The external configuration depends on vertical niches in red and white, or black and white alternative courses. The mosque incorporates a drink room and *kuttab*, and has no minarets. A cranked entrance commonly leads to the mosque.

Second Type: mosque with four *iwans* - The design concept of this type is similar to that of the Baharite Mamluks period, composed of a central court onto which opens four *iwans*. Apartments for the residence of rectors (*Shaikhs*) and students were added to the plan, as well as, one or two drink rooms, and a *Kuttab* for teaching young orphans (figures 4.10a, 10b).

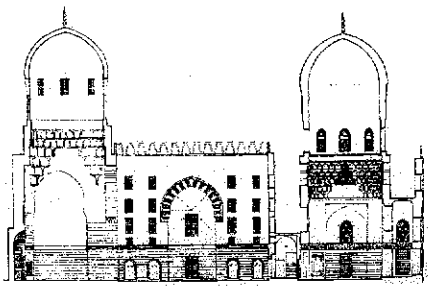
Third type: two *iwans*, two smaller *iwans*, and a *durqa'a* - The design concept of this type is similar to that of the second type; however, the court is replaced by the *durqa'a* - like the first type - covered with a wooden lantern. The *durqa'a* is surrounded by two *iwans*, the *qibla iwan* and the opposite one, while the two other *iwans* were replaced with smaller ones (saddles). The *qibla iwan* incorporates a decorated recessed *mihrab* and a *minbar*. The layout commonly includes a drink room, a *kuttab*, and tomb, while the ablutary was placed outside the building mass. Vertical niches, inscribed bands, leaf-shaped cresting, stucco windows, and alternatively coloured courses were used in the external configuration, while the internal configuration depended on floral and geometric patterns, inscribed friezes, and stripped courses (figures 4.11a, 11b).

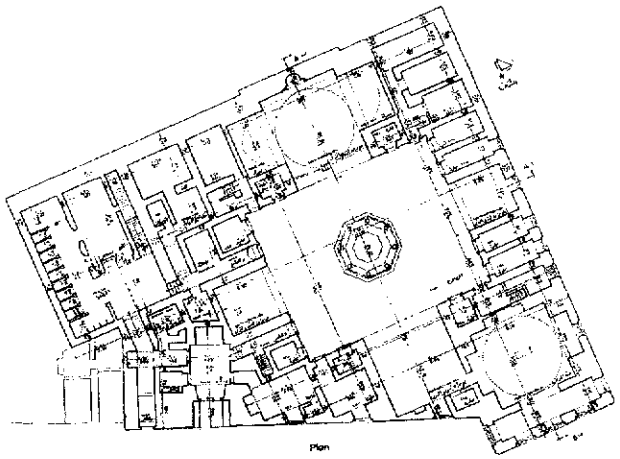
4.4.1.7 Ottoman period (1517 - 1805 AD)

The Ottoman mosque included three types of plans, which were characterized by the concentricity of the main prayer area (bait al-Salah), together with symmetry and balance in design and internal configuration, and the presence of an aisle behind the main prayer area in the first and third types and around it in the second type. Domes and semi-domes were widely used, together with floral patterns. The design principles of the three types are as follows:

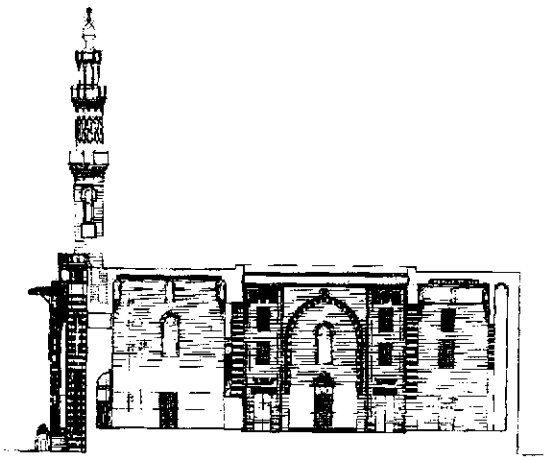
First type - The mosque is composed of a main prayer area preceded by a *haram*, which includes a square court surrounded by an aisle between two arcades covered by small shallow domes. A large dome covers the main prayer area, which incorporates the *minbar* and *miharb*. The cranked entrances were not used, as the mosque portal leads directly to the inside. The mosque has one minaret.

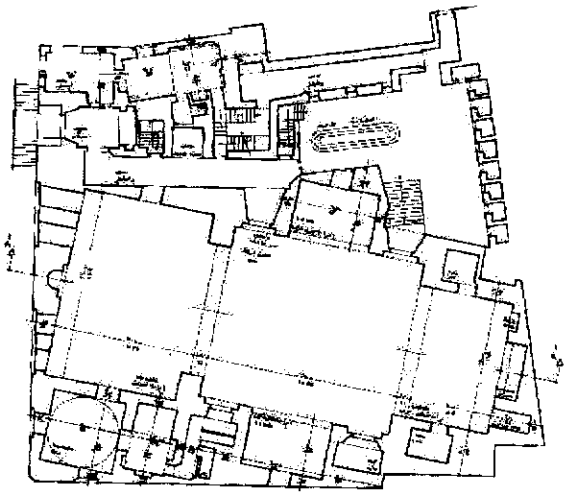
Second type: main prayer area surrounded by an aisle - The mosque is composed of a square main prayer area surrounded by an aisle in three directions, except for the *qibla* wall, and incorporates the *minbar* and *mihrab*. A large dome covers the main prayer area, while the aisles were covered by small shallow semi-domes. The mosque has three entrances, confronted by three doors in the aisles leading directly to the inside. The ablutary was separated from the building mass to maintain the purity of the mosque



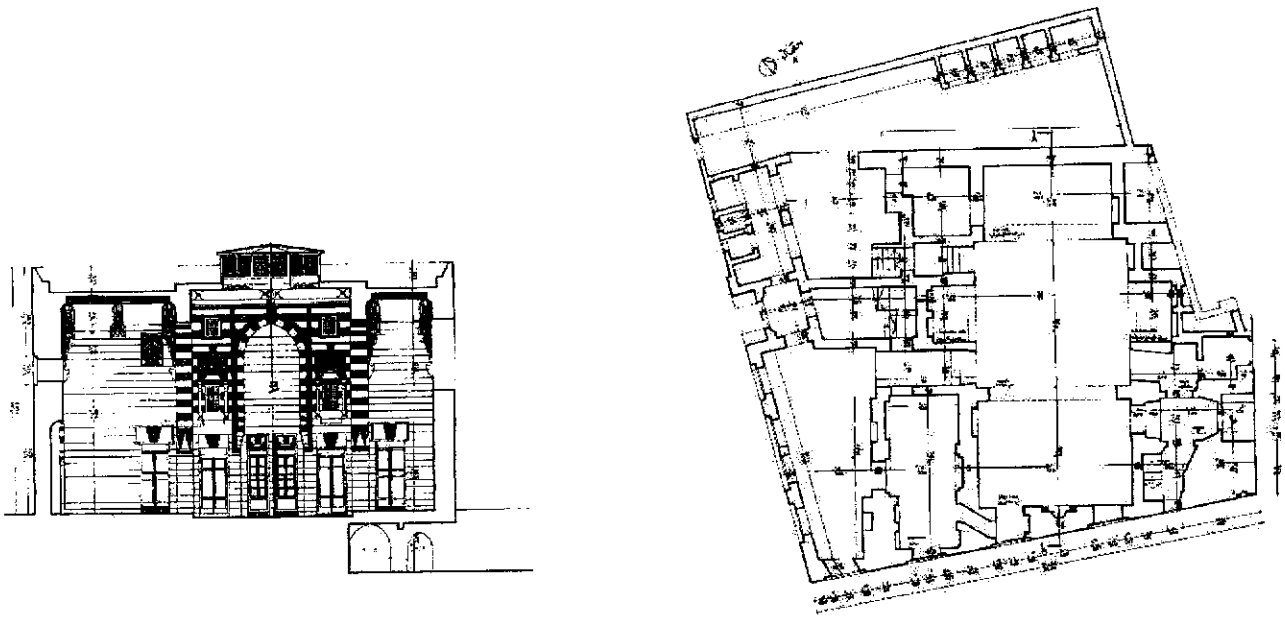


Figures 4.9a, 9b – Al-Amir Sarghatmish's madrasa plan and section (after OICC, Ibrahim & Mustafa 1992)

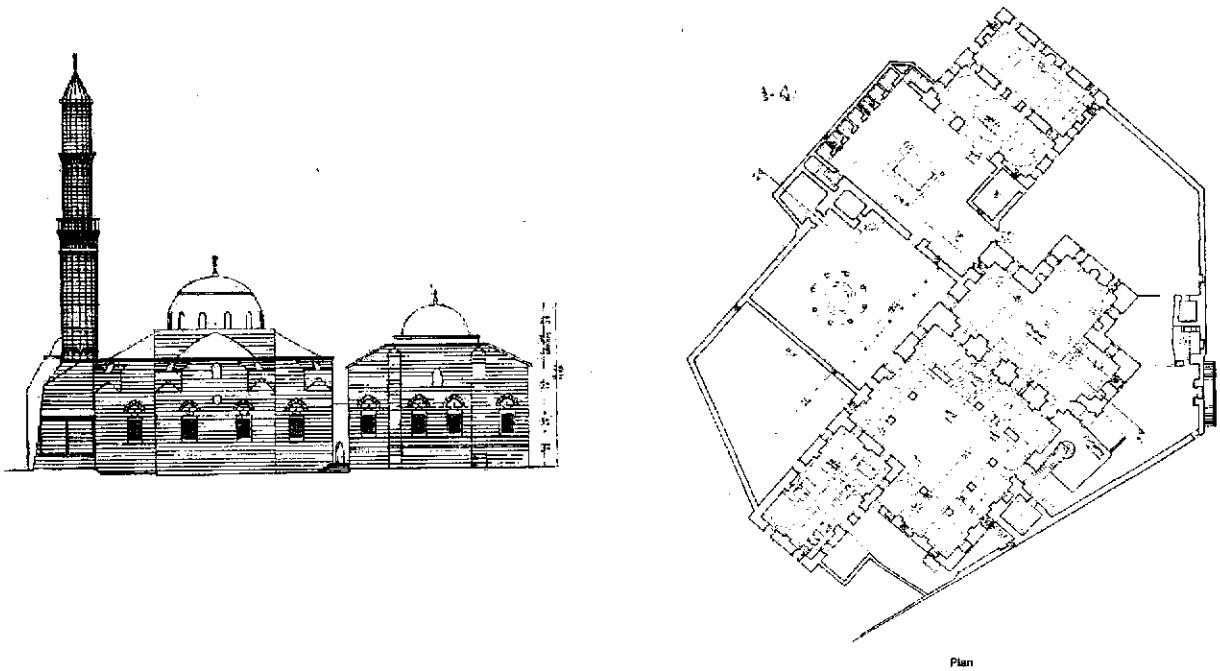




Figures 4.10a, 10b – Al-Ashraf Barsbay's madrasa plan and section (after OICC, Ibrahim & Mustafa 1992)



Figures 4.11a, 11b – Al-Qadi Zain al-din's madrasa plan and section (after OICC, Ibrahim & Mustafa 1992)



Figures 4.12a, 12b – Sulaiman's mosque plan and elevation (after OICC, Ibrahim & Mustafa 1992)

(figures 4.12a, 12b).

Third type - The mosque became a part of the *madrasa*. The plan of the *madrasa* is composed of a central court surrounded by four covered areas. Each area is composed of an aisle onto which opens a number of rooms. The northeast covered area includes a central small mosque covered by a dome or wooden roof. The mosque includes a simple *mihrab*, with no *minbar*. It includes only little ornamentation, an inscribed band and floral patterns in the *mihrab* spandrels. The main portal lies opposite to the mosque. The *madrasa* was designed as a suspended mosque incorporating stores in the lower level (Mustafa 1984).

4.4.2 The Khanqah (Tekiyya)

Khanqah (monastery) is a Persian word that means a place for worship and repentance. It was specialized as the residence for the Sufis (poor Muslims). While the term *tekiyya* is a Turkish synonym for '*khanqah*' and was specified for dervishes (Turkish Sufis). Sufism, in its essence, is the eagerness to establish a strong bond between humanbeings and their Creator by means of devotion, renunciation, and abandonment of the worldly pleasures in order to free man' s soul. Sufism later developed special theories and systems; however, extravagancy in seeking the hereafter and forgetting this life is discouraged in Islam. The Quran says in verse 28: 77 (Khan & al- Hilali 1996): *"But seek, with that (wealth) which Allah has bestowed on you, the home of the Hereafter, and forget not your portion of lawful enjoyment in this world...."*.

The plan of the Egyptian *khanqah* was similar to that of the *madrasa*, consisting of a cranked entrance with a corridor leading to a court onto which opens four *iwans*. The court included a central fountain for ablution, and the cells of the Sufis replace the residences of the students. The *khanqah* also included residences for the *Shaikhs* consisting of a hall (*qa'a*), a sleeping area and a water closet, a drink room (*sa*bil) and a *kuttab* in the corner of the building, and the tomb of the establisher. Also, services and facilities such as bathrooms opened onto a small court with an *ablutary*, kitchen, storerooms, water wells, and halls (qa'as) for the *Shaikhs* were included and placed close to the secondary door (figures 4.13a, 13b).

4.4.3 The Sabils (Drink Rooms)

The word (*sabil*) in Arabic means a path or road; architecturally it means public places for giving water, free of any charge, to passers-by or animals. It is used in the Quran in its verbal and figurative meanings. The Prophet urged the Muslim to give water to his fellow men and animals, as a feature of charity that has a great reward in the hereafter, which is a fulfillment of one of Gods' commands to his creations. The early *sabils* were merely a well and a tank; the first *sabil* to be erected during the Mamluks period was Sabil of al-Nasir Muhammad (1326). The Mamluks Sultans built *sabils* and gave them much care and attention. The early sabils erected during the Mamluks period were annexed to mosques, *madrasas*, or *khanqahs*, as in al-Nasir Farag ibn-Barquq's *khanqah* (1399-1411 AD). Few Mamluks sabils stood independently.

During the Ottoman period, the Sabil was commonly erected free standing, separated from the mass of the mosque. Others included *mihrabs*, as we can see in Sabil of 'Abd al-Rahman Katkhuda (1744 AD) (figures 4.14a, 14b, 14c). In some cases an ablutary was annexed to the sabil in which the five prayers were performed as in Sabil of Mustafa Sinan (1630 AD), which included a prayer hall, and *sabil* of Sultan Muhammad (1750 AD), which was used as a school for teaching the Holy Quran.

4.4.4 The Tomb

The earliest known tomb in Islam was built for the Abbasid Caliph al-Muntasir (died 862 AD) by his Armenian mother in Samarra, known as Qubbat al-Sulaybiyya. The building consists of an outer octagon surrounding the square tomb chamber covered with a pointed dome. The space surrounding the tomb chamber was covered with vaults. Pointed arched entrances with no doors were organized in the four main axes of the building in order to create a sense of continuity with the macrocosm. The erection of such buildings on tombs contradicts Prophet Muhammad's commands and Islamic teachings, it reflects the Byzantine influence on Islamic architecture.

During the Fatimid period, many tombs were built outside Cairo. Tombs in the Falimid period were distinguished by *mihrabs* in the *qibla* wall facing the main entrance, as in

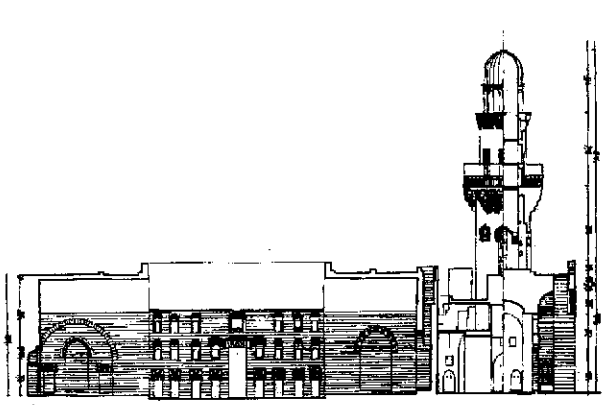
Shaikh Yunus tomb (1094 AD). The eastern part of the shrine building consisted of three spaces, the middle one included the tomb and was covered by a dome. Each of the two side spaces was covered by a vault or a flat roof. The shrine commonly included a small court-yard surrounded by a group of rooms, as seen in the shrine of al- Guyushi mosque (1085 AD), and al-Sayyida Ruqayya shrine (1133 AD).

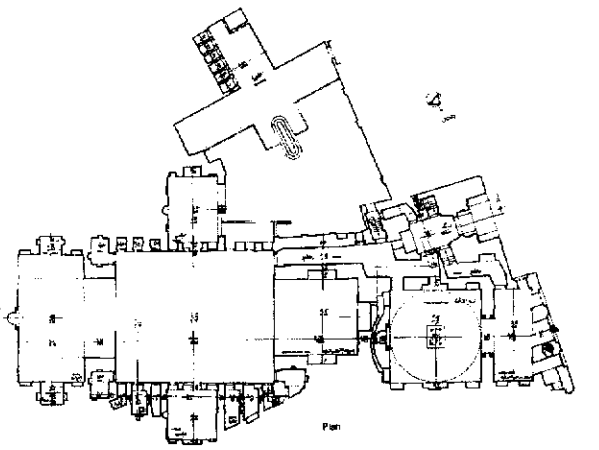
During the Ayyubid and Mamluks period, the shrine had an entrance, facing the *mihrab*, provided with a wooden door, which was also found as an independent building, as in al-Imam al-Shafi's Dome (1211 AD), the Abbasids Caliphs Dome (1242 AD). The shrine was later transferred inside the city, and annexed to the school or grouped with the *khanqah* as in the *Khanqah* of al-Bunduqdar (1284 AD). It was noticed that the shrine started to occupy a fundamental corner in the building, although it contradicted Prophet Muhammad's commands and Islamic teachings as mentioned before, looking over the main street and was linked to the *qibla iwan*, as in the *madrasa* and *khanqah* of Sultan Barquq (1384-1386 AD). In some cases, the shrine occupied the whole facade, as in Baybars al-kashankir Khanqah (1306-1310 AD) (figures 4.13a, 13b). The shrine started to develop a distinguished character among the elements of the architectural group. This was quite evident in Sultan Hasan's *madrasa* (1356-1362 AD), where the shrine occupied a distinguished location on the main axis of the building facing the *qibla iwan*. Some rulers preferred to build the shrine as a separate building covered by a dome (figures 4.15a, 15b).

The notion that a Muslim may receive blessing from the tomb of a saint or a Prophet is contradictory to the teachings of Islam. As for the use of tombs for the purposes of intercession, this idea presents a grave offense in the eyes of Islam. The cemetery is important to a Muslim as the place for reminding the Muslims of their inevitable end in this world (Rasdi 1998, p. 202).

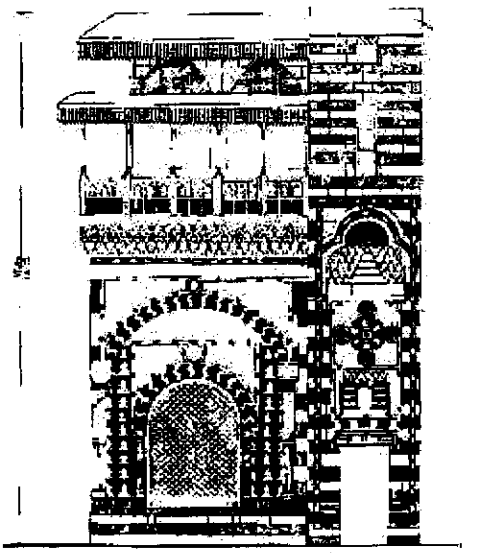
4.4.5 Educational facilities: Al-Kuttab (Orphans' school)

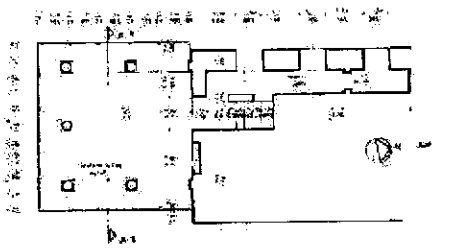
Islam did not only stress the importance of education, but also, it called for caring for orphans. This was mentioned in a number of Quranic verses as in verse 2: 215 (Ali 1993): *"They ask thee what they should spend (in charity). Say, whatever ye spend that*

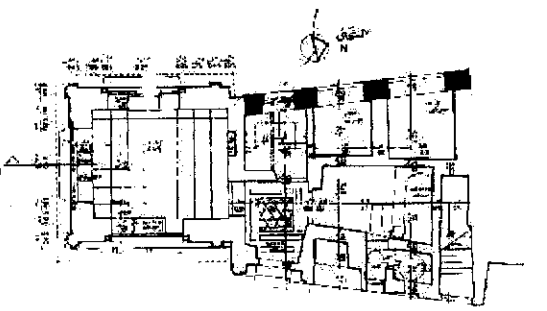




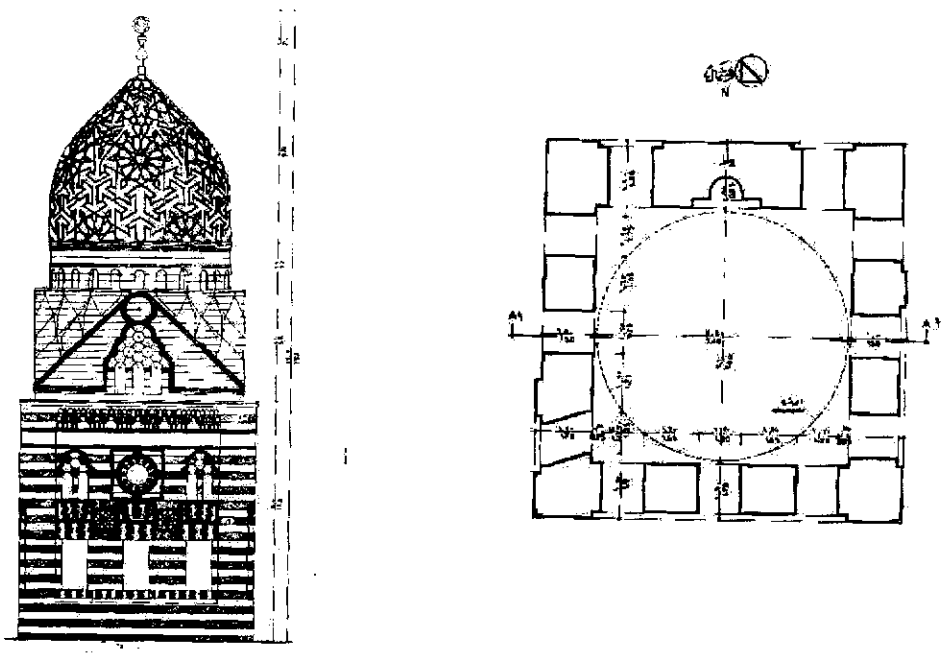
Figures 4.13a, 13b – Baybars' khanqah plan and section (after OICC, Ibrahim & Mustafa 1992)



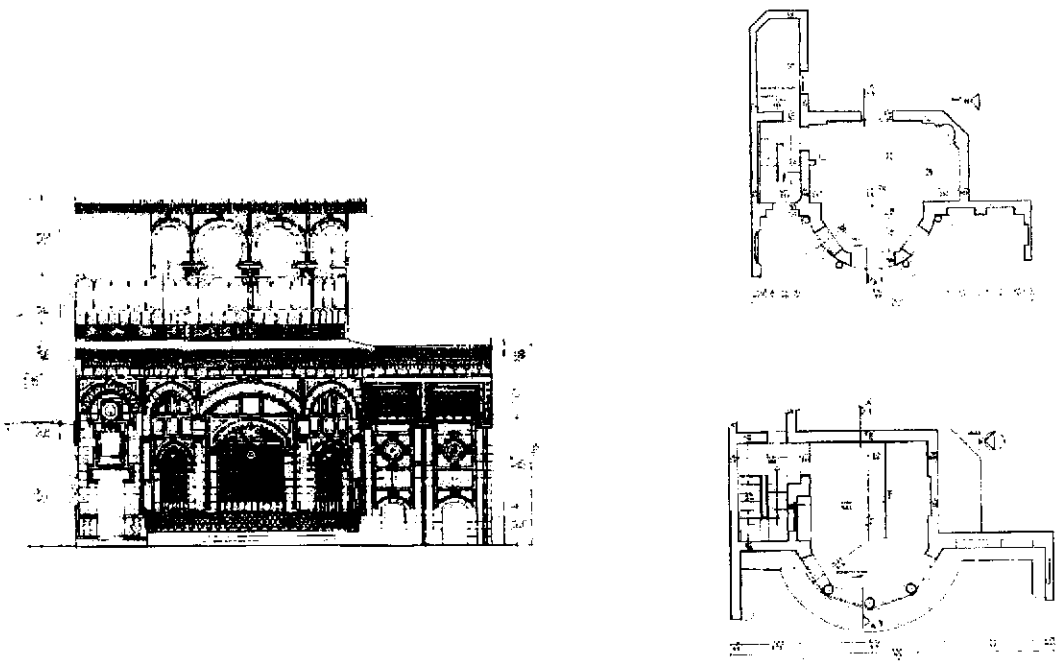




Figures 4.14a, 14b, 14c – Abd al-Rahman Katkhuda's sabil plans and elevation (after OICC, Ibrahim & Mustafa 1992)



Figures 4.15a, 15b – Sultan Abu Said's dome plan and elevation (after OICC, Ibrahim & Mustafa 1992)



Figures 4.16a, 16b, 16c – Ruqayya Dudu's sabil and kuttab plans and elevation (after OICC, Ibrahim & Mustafa 1992)

is good, is for parents and kindred and orphans and those in want and for wayfarers. And whatever, Ye do that is good, - God knoweth it well". Also, in verse 2: 220 (Ali 1993): *"They ask thee concerning orphans. Say; the best thing to do is what is for their good...."*.

The *kuttab* was usually found on top of the *sabil*, forming an architectural unit. It was an educational unit, for teaching orphans the Qur'an, reading, and writing, it consisted of a large arcaded space (*riwaq*) which includes a niche with a wooden balustrade covered by a wooden projecting roof. Some *kuttabs* do not include a niche, thus the wooden balustrade is placed align with the facade. The *riwaq* opens onto the outside through arches that provide suitable amount of lighting in the interior space. The walls of the *kuttab* include built-in cabinets, for keeping books, closed by wooden leafs inlayed with nacre. The wooden roofs were decorated and painted (figures 4.16a, 16b, 16c). In some cases the roof of the *kuttab* included a wooden lantern decorated with small pieces of stained glass, as in the *kuttab* annexed to Farag ibn-Barquq Mosque (Zawiyat al-Duhaisha) (1409 AD).

Finally, from the above section 4.4, we conclude that the mosque played different functions during the Caliphate, Tulunid, and Fatmid periods, whereby among its functions was education. Scientists, professors of religion and jurisprudence conducted teaching circles inside the mosque, as there were no special school buildings. However, it was mentioned that there were two schools built at the end of the Fatmid period.

During the Ayyubid period, the *madrasa* appeared within the boundaries of the mosque. Architects started to use the vaulted *iwan* instead of the aisle covered with a wooden roof. *Madrasa*s were dedicated for teaching the four Sunni *Mazhabs* (sects), each had its own *iwan*, or teaching the prophetic Hadith-related sciences.

In Baherite Mamluk period the two masses of al-Salih Najm al-Din Ayyub were diffused into one mass included *iwan*s opening into an open court. Cells and rooms were placed on both sides of the court and came on two levels. This type was further more developed during the bahrite Mamluk period in the earliest known example – al-Zahir Baybars *madrasa*. It was hereby used in all *madrasa*s teaching the four mazhabas

or one or two only.

During Circassian Mamluk period, the *madrasa* with *iwan* prototype prevailed. Its plan was composed of a central court onto which opens four *iwan*s, divided into aisles, or smaller *iwan*s, vaulted or covered with wooden roofs. The plan also included a room for the residence of the establisher's family on special occasions, and the apartment for the residence of teacher and students. The more developed type of *madrasa*s included a central *durqa'a* crowned by a wooden latern, instead of the open court. Two *iwan*s surrounded the duqa'a – the *qibla iwan* and the opposite one together with two smaller *iwan*s called (sadlas).

The Ottoman *madrasa* developed a lot, as the mosque became one of its components after it had been the opposite. The plan of the Ottoman *madrasa* included a central open court (with the fountain in the middle) surrounded by four covered areas, each including several rooms opening into an aisle. Also, other types of religious buildings were recognized such as Khanqa (tekiyya), Sabil (drink room), tomb, and Kuttab (orphan school).

4.5 DEVELOPMENT OF RESIDENTIAL BUILDINGS

This section studies and analyzes the principles and development of residential buildings during different Islamic eras. According to OICC, Ibrahim & Mustafa (1992), these principles and development could be summarized as the following:

4.5.1 Caliphate- Umayyad and Abbasid periods (661 – 750 AD) & (750 – 1258 AD)

The early houses were very simple in design, and most of them were spacious and were composed of one level; only a few houses were built on several levels, from mud and burnt bricks, the thickness of its walls was about 49 cm, and 54 cm. In the Abbasid period, the wall thickness was about 108 cm. Bathrooms were not available in all houses; therefore, people depended on public bathrooms. Some houses included a praying area (*musala*) or halls (*qa'as*), and were surrounded by fences. Each house included several suites or apartments belonging to one family. It is also believed that the Iraqi influence in residential architecture started during that period and continued

during the Tulunid period.

4.5.2 Tulunid period (868 - 904 AD)

Iraqi influence in residential buildings was quite evident during that period. The house plan had two basic types, each including a central court, rectangular or square in shape, although the general layout was irregular. The common element between the two plans was the use of the traditional suite composed of a central *iwan* surrounded by two rooms and preceded by a shed.

The plan of the first type was composed of two typical suites located on the short sides of the court, while the rest of the rooms and elements of the house were located on the longer sides. The second type was composed of one typical suite on one of the courtsides, and on the other sides, there were distributed deep or shallow *iwans* and rooms.

The house included a cranked entrance to preserve its privacy. The ground floor was specified for daily domestic activities, while the upper floors were for sleeping and family living areas. Burnt bricks were the basic building materials, together with timber that was used in roofs, and stucco which was used in painting and ornamentation.

4.5.3 Fatimid period (969 - 1171 AD)

The Fatimid house remained influenced by the Tulunid design during the first hundred years of the Fatimid period. The house plan developed during that period to take its particular configuration during the second period of the Fatimid era, which may be due to decreasing house area. The house plan included a hall (*qa'a*) composed of central *durqa'a* surmounted by a wooden octagonal lantern or dome, and *iwans* covered by wooden roofs or vaults open onto the *durqa'a*, also cranked entrances were still used, as in the Tulunid house. Stone was used in building the lower parts of the walls, and burnt bricks were used in vaults. Marble was used in floors and skirting, and stucco in painting walls.

4.5.4 Ayyubid period (1171 - 1250 AD)

In general, the design of the *qa'a* in the Ayyubid period was a development stage between the Fatimid *qa'a* and Mamluki *qa'a*. It was composed of *iwan*s opening on a square area surmounted by a dome.

4.5.5 Baharite and Burgi Mamluks periods (1250 - 1382 AD) & (1382 - 1517 AD)

The plan design provided privacy for the house residences; it opened into the inside and incorporated the cranked entrance. The ground floor included the main reception hall (*manzara*), services, storerooms, servants rooms and cranked entrance. The reception hall was composed of a *durqa'a* and two *iwans*; upper floors included halls (*qa'as*), sleeping cabinets and facilities. The design separated between women and men quarters, and took into consideration climatic conditions as reflected in orientation and using *mashrabiyyas*.

Limestone was used in building walls and vaults in ground floors and external walls, while burnt bricks were used in upper floors. Wood was used in roofs, marble in flooring and wall cladding, and stucco in painting.

The external facades' configuration expressed the functions behind it through the use of vertical niches, *mashrabiyyas* and vertical windows.

4.5.6 Ottman period (1517 - 1805 AD)

The design concept was based on the inside enclosure of the elements of the house, opening onto an internal court to provide privacy for the inhabitants, together with cranked entrances. The ground floor plan commonly included a reception hall (manzara), sitting area for common people (*takhtabaush*), cranked entrance, storerooms, and services. Upper floors included living rooms, sleeping cabinets, and services, while the first floor usually included an open *qa'a* onto the court. The design considered the separation between men and women quarters on the vertical and horizontal levels by providing a separate suite for the family (*harmalik*) and a suite for men and visitors (*salamlik*). The design also considered the climatic conditions in orientation of openings, rooms, and *qa'as*. It also used special climatic control devices

like wind towers (*malqaf*) and *mashrabiyyas*.

The architect was very much concerned about the configuration and ornamentation of internal facades, while considering simplicity in the configuration of external facades. Stone was used in building the ground floor and its vaults and external walls, while burnt bricks were used in upper floors, internal walls and wet areas. Double walls were also used in some locations. Also wood was used in roofs, *mashrabiyyas* and wind towers, while marble was used in floorings, skirting and ornamental shelves, and stucco in painting walls (figures 4.17a, 17b, 17c, 17d).

4.6 ARCHITECTURAL ELEMENTS OF RESIDENTIAL BUILDINGS

Through studying the previous section, it is found that much care and consideration were given to the distribution of the elements and internal spaces of the house during the Islamic eras, which passed through many stages of development. This section reviews and analyses the main architectural elements of historical residential buildings.

The basic elements influencing the house design were providing privacy for the inhabitants, climatic treatment, and every day activities and practice in the framework of Islamic instructions. Various architectural solutions were used to accomplish these objectives: the cranked entrance, interior court, and *mashrabiyyah*, etc. Some of those elements were used in both small and big houses, while others were used in big houses only. Studying Islamic residential buildings and carefully analyzing them, OICC (Ibrahim & Mustafa 1992) classified elements of Islamic residential buildings as follows:

4.6.1 Cranked Entrances

The idea of using cranked entrances is to provide privacy for the house residences during their movement from the public street into their private house, without allowing the passers-by to see the inside of the house. The cranked entrance also protects the house from wind, dust, and noise coming from the street. It does not lead directly from the street to the inside, but bends left or right (perpendicular to the street). Most houses had more than one entrance. The main entrance was for visitors and men on the main

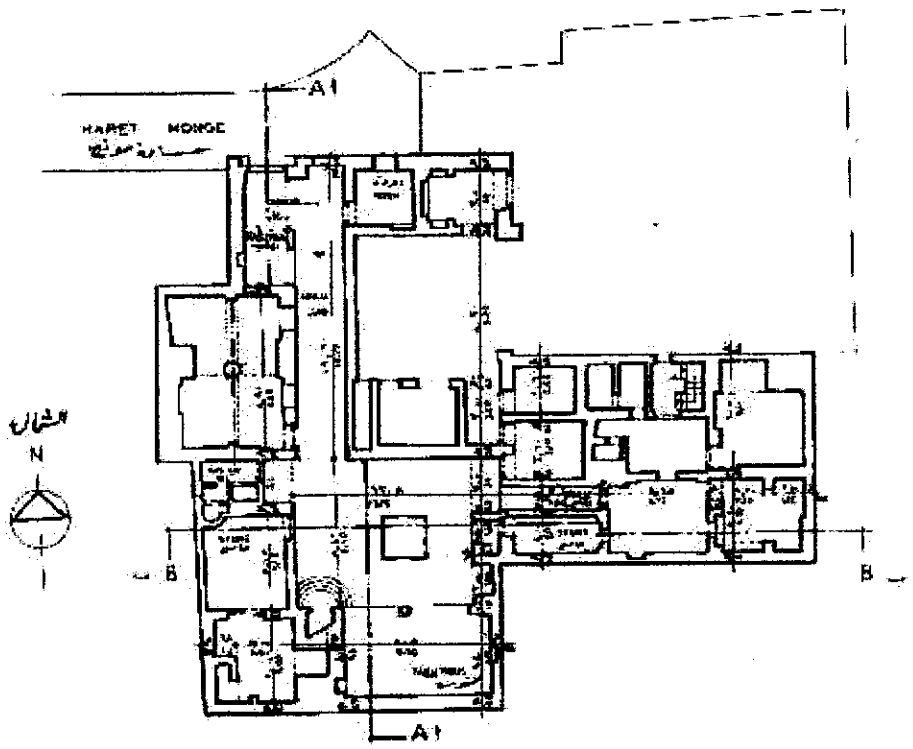


Figure 4.17a – Al-Sinnary house, ground floor plan (after OICC, Ibrahim & Mustafa 1992)

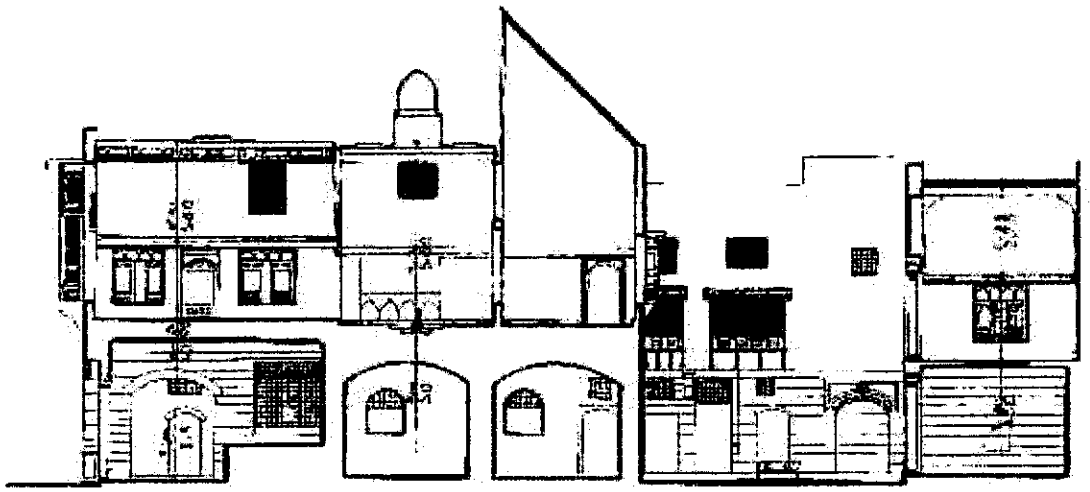


Figure 4.17b – Al-Sinnary house, section A - A (after OICC, Ibrahim & Mustafa 1992)

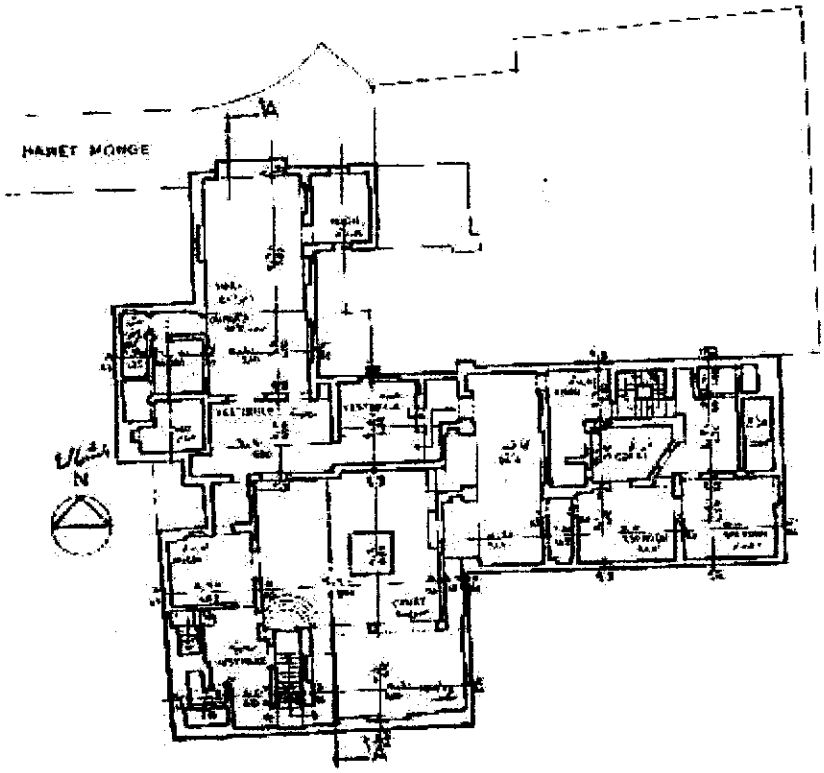
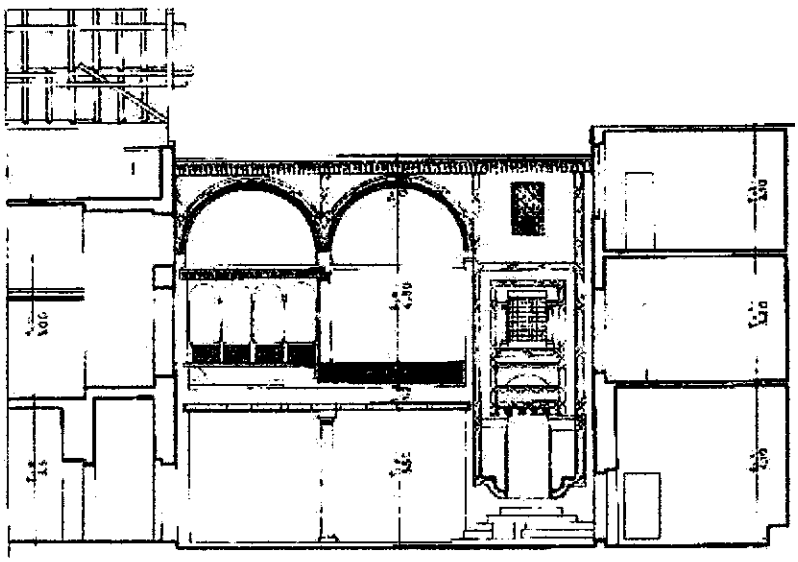


Figure 4.17c – Al-Sinnary house, first floor plan (after OICC, Ibrahim & Mustafa 1992)



Figures 4.17d – Al-Sinnary house, section in the court (after OICC, Ibrahim & Mustafa 1992)

street, a secondary entrance was for women, and services, overlooking a back or side street, together with a cranked entrance leading from the court to the suite of the master room. Cranked entrances were used both in small and big houses.

4.6.2 Interior Court

The court is a square or rectangular open space in the center of the house, surrounded by the house elements. A fountain, most often, lies in the middle, while the interior court performs an important function in the house as a climate modifier. It cools the house in summer, provides continuous ventilation and also provides natural lighting. The various daily activities are commonly practiced in the court, especially in small houses. Sometimes the house includes more than one court, such that the important elements open onto the big court and services open on the smaller one.

4.6.3 *Takhtabaush* (Sitting area for common people)

the *takhtaaush* is a rectangular or square covered area which lies in the ground floor and opens with its full facade onto the court. In some cases, its fore part is a wooden screen opening onto the backcourt.

4.6.4 *Maq'ad* (Loggia)

It is a square or rectangular covered area opening with its full facade onto the court, benefiting of the north breeze. It commonly lies in the first floor and is directly accessible from the interior court through a staircase and corridor. The loggia is directly connected to a reception hall and sleeping cabinet, and it is used as a sitting area for the family's master, his children and his close friends.

4.6.5 *Qa'ah*

Qa'a is the main reception hall of the house. It is composed of a *Durqa'ah* surrounded by two facing *iwan*s, one larger than the other. The floor level of the two *iwan*s is higher than that of the *Durqa'ah* and in the middle of the *Durqa'ah* is a fountain. The *Durqa'ah* is surmounted by wooden dome or lantern, which overtops the roof of the *Iwan*s. In the fore part of the *Durqa'ah* wall, exists a marble ledge. The *Durqa'ah* is

sometimes surrounded by three T- shaped *iwans*. Large houses usually included more than one *qa'a*, the most important of which, is the main reception hall which was oriented to benefit of the east north breeze. The *Qa'ah* sometimes have Mashrabiyyah opening onto the street together with those opening onto the interior court. Some houses include special reception halls for women, connected to the family's master suite, and having a private entrance and staircase. The women reception hall (*qa'a*) might incorporate *mashrabiyyas* overlooking men's main reception hall together with those overlooking onto the court.

4.6.6 Family Suite (Haramlik)

This suite is confined to the family, no men are allowed in except for the family master and close relatives (*mahraim*).

According to the instructions of the Holy Quran, verse 24: 31(Ali 1993): "*And say to the believing women that they should lower their gaze and guard their modesty, that they should not display their beauty and ornaments except what (must ordinarily) appear thereof; that they should draw their veils over their bosoms and not display their beauty except to their husbands, their fathers, their husbands' fathers, their sons, their husbands' sons, their brothers or their brothers' sons, their sisters' sons, ...*".

The Holy Quran also has confirmed the privacy of the parents in the master bedroom, and obligated the children or the servants to knock the door and ask permission before entering as in verses 24: 58-61(Ali 1993): " *O Ye who believe, Let those whom your right hands possess, and the (children) among you who have not come of age, ask your permission (before they come to your presence), on three occasions; before morning prayer; the while ye doff your clothes for the noonday heat; and after the late-night prayer...* ".

4.6.7 Malqaf (Wind Catcher)

This is a square structure built above the house; its inclined roof is built of timber and its walls built of bricks, wood, or glass. The side facing the prevailing wind breeze is completely opened, in order to catch the wind breeze and deflect it into the house

interior to keep it cool. The malqaf is found on the roof of reception halls (qa'as) or in lobbies in front of them, in both small and large houses.

4.6.8 Mashrabiyyah

It is a screen made of turned wood in geometric patterns. The Mashrabiyyah allows for natural lighting and airflow through it; moreover, it provides privacy for women and allows them looking over the street without being seen. Drinking pots used to be placed behind those screens to be cooled by the airflow.

4.6.9 House Facilities or Services

These include water closets, and baths covered with domes ornamented by stained glass, it is corn-posed of a bathroom, a corridor to adjust the body temperature, and another room. Services also include storerooms, servant rooms, stables, animal drinking basin, and kitchen.

4.7 DEVELOPMENT OF PUBLIC BUILDINGS

Architecture of the Islamic periods included various architectural types. Some of those buildings used to have special nominations that do not longer exist in contemporary architecture, as a result of social transformation in the community.

4.7.1 HEALTH FACILITIES

4.7.1.1 Bimaristan (Hospital):

Bimaristan is a Persian word denoting the place where sick people are treated. The first *bimaristan,* or hospital in the Islamic periods, was erected during the reign of aI-Walid ibn Abdul-Malik (705-715 AD), and was probably built to isolate the leprous. The earliest comprehensive hospital was built during the reign of Haroun Ar-Rashid (786-809 AD) in Baghdad, for which he brought over doctors from the Sasanian hospital in Khauzistan. lbn Tulun established the first comprehensive *bimaristan* in Egypt in (872-874 AD). Also Salahud-Din al-Ayyubi built al-Nasiri Bimaristan, but none of those foundations still exists.

The *bimaristan* erected by Qalawoon (1284-1285 AD) annexed to his *madrasa* and mausoleum gives us a clear idea about the design of hospital foundations at that period. A special hall (*qa'a*) was dedicated to each branch of medicine, as it included qa'as for surgery, ophthalmic diseases, internal diseases, and mental diseases; the latter included small cells for isolating dangerous cases. The *bimaristan* also included a special section for women, an outpatient clinic, and a medical school incorporating a lecture hall opening onto the court, and a scientific library. The external clinics distributed medicine and food for the patients.

The second example is the *Bimaristan* of Sultan Mu'ayyad Shaikh (1418-1420 AD) at the Citadel (figures 4.18a, 18b). It included two sections, one for men and the other for women, each section included departments for surgery, ophthalmology, internal medicine and a pharmacy.

4.7.2 LODGING FACILITIES

4.7.2.1 The Khan (on transportation routes)

The word *Khan* is a Persian term denoting the rest house or residence on transportation routes between cities. It was also used to denote commercial buildings and hotels. Such buildings also provided facilities for merchants to sell their merchandise and were called (*manasat*) in the old Arabic documents. The word (*Khan*) appeared for the first time in the establishment documents of al-Aqaba *Khan* (1213 AD). The *Khan* was basically founded to provide a safe place for the lodging of traveler and merchants well protected from thieves and on roads where water was not available. They were also centers for exchanging ideas and propagating convictions. The earliest *Khan* was merely a fenced rectangular area including water well (OICC, Ibrahim & Mustafa 1992). It passed through many stages of development until it took its final characteristic form. *Khans* were built on trade routes at about 30 kilometres intervals (one-day trip), depending on the topology of the route.

There were many types of *khans* in the Islamic world. At the beginning of the spread of Islam, there were two types of *khans* in the Middle East. The first type was composed of

a number of rectangular spaces opening onto an interior court, which was widely used in Iran and its plan quickly developed to include *iwan*s on the axes and a main portal. The second type had a square plan with a court in its middle surrounded by a corridor. This type was found in the Mediterranean area for a long period of time (figures 4.19a, 19b).

Trade in the Arab East flourished during the Burgi Mamluks period, as the route between Aleppo and Cairo became one of the most important trade routes. World-wide, the khan, during that period, had an introvert rectangular plan opening onto an interior court, including a water well, and surrounded by an aisle onto which open the vaulted rooms. The khan also included a mosque and *hammam*, and had a grand portal projecting from the facade alignment. Aiyash *khan* in North Damascus and Al-Ahmar *khan* in Palestine are examples of this type of *khans*, which continued until the 17th century.

The *khan* had a cubical form, the exterior comprised two levels, with the corner towers and wall piers giving it the appearance of a citadel. It had a grand portal leading to a deep entrance hall on the sides of which were guard rooms, and some-times, shops for selling some essential goods. The building included a large square court incorporating a water well and surrounded by store rooms, stables - in some cases, there was blacksmith to serve the animals - and lodging rooms for travelers, and an internal staircase leading to the upper floor, if applicable. *Khans* without interior courts were found in cold areas, and consisted of a hypostyle hall comprising several aisles, and sleeping decks around the internal circumference of the walls. Building materials differed according to the coal materials found in the region. Mud bricks, burnt bricks, limestone and basalt were also used.

4.7.2.2 Urban Khins

Hotel buildings were called *"Khins"* during the Mamluks and Ottoman period. In the 11th century, lodging facilities for travelers in Iraq and Syria were called *"Dar"*. The word *"Dar al-Wakalah"* was also used as a synonym for the caravansary in urban buildings. By the end of the 13th century, the word *khan* was used to denote urban

lodging facilities, and in the 16th century it was used instead of hotel *(funduq)*. By the 17th century it completely replaced *Dar al-Wakalah*, *funduq*, or *qaysariyya* (OICC, Ibrahim & Mustafa 1992).

The earliest known *khan* in Cairo is Prince Qausun *khan* (1340 AD), while the most famous *Khans* are *Khan* Jarkas al-Khaliff (end of the 14th century) it currently performs the functions of the *qaysariyyas*, and *khin* al-Zarakisha (end of the 15th Century). The word *wakala* was later more commonly used.

4.7.2.3 Al-Funduq (Hotel)

The word *funduq* was derived from the Greek language; it was widely used in North Africa to denote a place for lodging men and animals, the same function of the *khan* in the Islamic East. The word *funduq* appeared for the first time during the reign of Salahud-Din al-Ayyubi in (1181 AD) near al-Qutaina village on the caravan route between Damascus and Horns. The building had a grand portal, and it was composed of a court surrounded by buildings from all sides. The ground floor was used for lodging animals, trading, and storing merchandize, while upper floors, commonly one, are composed of several small rooms opening onto a gallery surrounding the court. In big cities, some *funduqs* were specialized for foreigners, such as the French *funduq* in Tunis and the Phoenicians *funduq* in Cairo. Similar *fundqus* were also found in Morocco (OICC, Ibrahim & Mustafa 1992).

In some cases, the *funduq* was rented to a group of craftsmen, as in the Merchants' *funduq* in Fez. The revenues of such *fundqus* were commonly used to maintain religious buildings. The craftsmen *funduqs* were usually found within commercial or industrial areas, while lodging *funduqs* were found near the city gates.

4.7.2.4 Al-Wakalah (caravansary)

"Al-wakil" means the representative or the judge; al-*wakala* was found in cities near commercial areas, and was dedicated for lodging merchants and travelers coming from close countries, especially Syria and Iraq. They used to reside in upper floors and store their merchandise in storerooms on the ground floor. Some *wakalas* were provided with

stables for animals, as *wakalat* al-Ghuri (1504-1595 AD.). The *wakala* building is composed of three or four stories opening onto an inner court. The first floor includes shops opening on the street and vaulted storage rooms opening onto arcades aisle surrounding the court. A small mosque and sometimes a *sabil*, are annexed to the building, and a grand portal leads into the court. The upper floors consist of separate rooms or apartments composed of several levels in most Burgi Mamluks *wakalas*. In the *wakala* of al-Ghuri (1504-1505 AD), the apartment is a triplex, linked by an inner staircase, shifted in each floor. The *mashrabiyya* windows of the apartments overtook the court. The apartments, reached by a separate side entrance and staircase, were dedicated for travelers, merchants, and pilgrims. They were also used as permanent residence for families (figures 4.20a, 20b).

Sultan Qaytbay had two *wakalas*: one on al-Mu'izzu-Lidinillah Street, the greatest commercial street in Cairo at that time, near al-Nasr gate (11480-1481 AD), and another one behind al-Azhar mosque (1477AD); its only remains are the ground floor and *sabil*.

Trade was well organized during the Mamluks period, where each *wakala* was specialized in a certain trade.

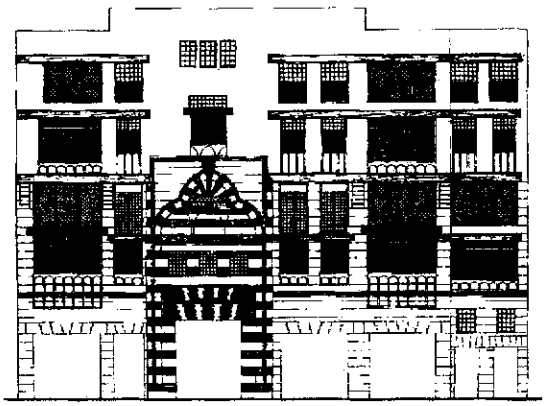
During the Ottoman period, there were many *wakala* and khans quite similar in their architectural form and elements. It is also well known that - during the Fatimid period - *wakala* house was established for lodging merchants, especially from Syria and Iraq.

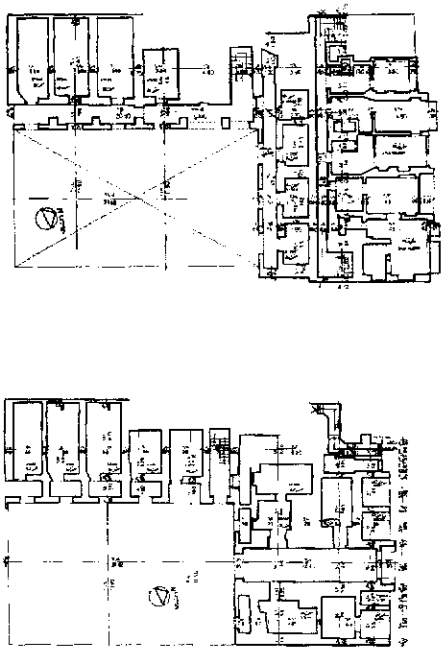
Khans and *wakalas* in Egypt are quite different from those in Syria, the later consist of only two levels: the first (ground) level include arched storage rooms while the upper level consists of rooms, not apartments as in Egypt, and those rooms open onto a corridor that overlooks the court.

4.7.3 COMMERCIAL FACILITIES

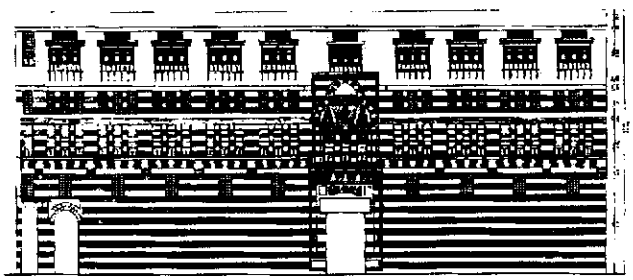
4.7.3.1 The Market (Suq)

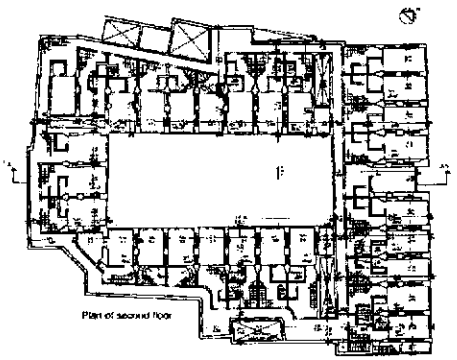
The word "*suq*" is the synonym of the Persian word '*Bazaar*', where each alley within





Figures 4.19a, 19b – Khan Al-Zarakisha plans and elevation (after OICC, Ibrahim & Mustafa 1992)





Figures 4.20a, 20b – Wakalat Al-Ghuri plan and elevation (after OICC, Ibrahim & Mustafa 1992)

the *suq* was given a name according to the kind of goods in its shops. *Qasabat* al-*Qahira* (Cairo spine) included about 12,000 shops during the 15th Century. Along the road from *Bab al-Futuh* in the North down to *Bab Zuwayla* in the South, several markets were organized, such as the weapons market, the glass market, the sweets market and the metal turners market. Most of those markets were covered by wooden roofs to protect the passers from sun' s heat, which was provided with lanterns for ventilation and natural lighting.

The width of the shop was 2-3 meters, these shops still exist below some mosques like Gamalud-Din As-Selehdar's *madrasa*, (1408 AD). The shops had shutters, sitting decks, wall cabinets, and shelves for showing goods.

The external facade was totally plain, without any windows as in Bashtak's bath (before 1341 AD). The bath was covered by spherical domes pierced by small stained glass openings. Walls were built with limestone and had marble skirting from the inside, and were very rich in decorations as seen in the ruins of Al-Muayyad's bath (1420 AD).

4.7.3.2 Qaysariyvah:

The *qaysariyya* is a commercial building, derived from the Greek word that means Cesearian or Cesear's market. The *qaysariyya* was influenced by the architecture of the Greek Agora and its surrounding shops. However, the Islamic *qaysariyya*, primarily used as stores and residences as a private entity.

The word *qaysflriyya* was first used to denote commercial buildings in areas under the Byzantine rule, in Syria, Palestine and North Africa. It was then transferred to Spain and Portugal. The word *qaysariyya* has different denotations in the different countries. The Moroccan *qaysariyya* is the central *suq*, which has doors locked at night; it was specialized in selling clothes, carpets and handicrafts. The building consists of a court surrounded by shops, while in Syria and Lebanon it is a group of shops. In Iraq, the same word denotes the public square, and in Saudi Arabia it is the area where shops are located. In Algeria, the word *qaysariyya* denotes the soldiers quarters.

The word *qaysariyya* appeared for the first time in a historical inscription dated (1198

AD). The *qaysariyya* is different from the *suq* or bazaar in size. It consists of a number of covered corridors surrounding a big court comprising several entrances in addition to shops, stores and workshops. Most of *qaysariyyas* included residential rooms in upper floors commonly occupied by the owners of the shops.

4.7.4 PUBLIC FACILITIES

4.7.4.1 Public Hammams

Islamic instructions call for cleanliness and purity, and consider them as an essential part of the qualities of the Muslim. The Prophet said, *"Cleanliness is part of the Muslim's faith"*.

God says in the Holy Quran verse 2: 222 (Ali 1993): *"....God loves those who turn to Him constantly (in repentance), and He loves those who keep themselves pure and clean*". And in verse 9:108 (Ali 1993): "*... There is a mosque whose foundation was laid from the first day on piety: it is more worthy of thy standing forth (for prayer) therein. In it are men who love to be purified; and God loves those who make themselves pure*".

For this reason, together with the hot climate and unavailability of baths inside houses - except in palaces and large private houses, it was necessary to erect public baths. Special baths were specified for men and others for women, or in other cases special days were specified for women. Public baths were founded in early Islamic period, like 'Amr Bath in *Fustat*. Baths were also were founded in Umayyad Palaces like Oussair 'Amri (712-715 AD), and Qassr al-Fujayr al Gharbi (728-729 AD).

The heating method used in Islamic bath was quite similar to that of the Roman bath. The vapor rising from the boiling process was used in heating; however, Cairo baths did not include floors heating, as it enjoyed a moderate weather in winter.

The bath plan consisted of three basic elements. The doorway lead through a corridor to the first element (the unrobing hall) covered by a dome with stained glass openings. It consisted of several *iwans* opening onto an unheated *Durqa'ah* (room), which included a central fountain, and stone or marble decks, where the bathers rested, had a drink, or

smoke before and after taking a bath. Related to the unrobing hall is the manager's room, then another room, slightly heated, separated from the first room by a corridor, including some benches for the bathers to sit and get used to the temperature and humidity of the bath, especially before leaving. The third element was the hot room; its central part was covered by a lantern above a marble basin filled with hot water. The floor of the hall covered by marble or mosaic, surrounded by cells for massage including private basins. The fire room consisted of lead containers full of water over a furnace. The hot water and steam were derived to the rooms through lead pipes, while the smoke resulting from the burning process was expelled outside. Baths were supplied with water from a near by well (figures 4.21a, 21b).

4.8 ARCHITECTURAL ELEMENTS OF PUBLIC BUILDINGS

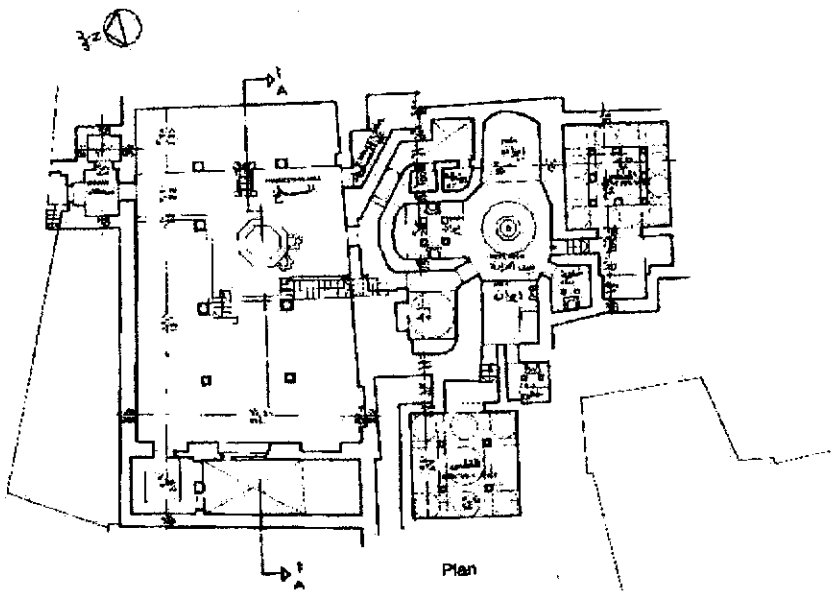
Public buildings passed through many stages of development during the different Islamic eras. Their architectural elements and internal spaces were carefully designed and distributed. After studying the previous section, some common elements could be deduced and classified. This section briefly reviews the common architectural elements of Islamic buildings as analyzed in *'Mohammedan Architecture'* (1954, Sec. 86, pp. 42,46,48) as follows:

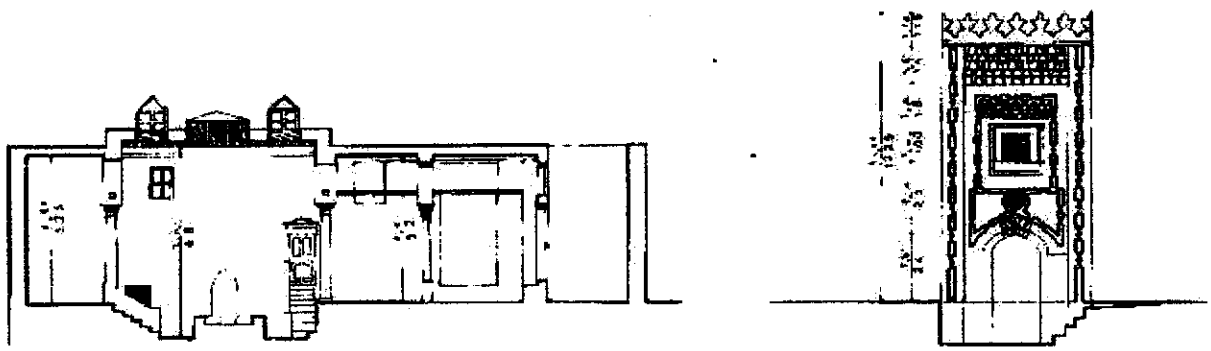
4.8.1 Plans

Arab buildings of early period were usually planned to open into a large internal court, which thus became a characteristic feature of Islamic architecture.

4.8.2 Walls

The brick or stonewalls of Muslim buildings were usually ornamented both externally and internally. Outer walls were often relieved with alternate stripes or bands of white and colored stone or by arranging the material used for the external facing in a decorative manner by the formation of numerous arched or other shaped panels, diapers, etc. The internal surfaces of the walls of Muslim buildings of all Arab countries were lavishly decorated in colour with ornamentation of geometrical pattern worked in





Figures 4.21a, 21b, 21c – Al-Tanbali's hamam plan, entrance and elevation (after OICC, Ibrahim & Mustafa 1992)

marble, enameled bricks, tiles, or stucco.

4.8.3 Roofs

The flat roofs were constructed either of timber, brick, or tiles. Except where Byzantine influence prevailed, in which case the domes were hemispherical, the latter were either bulbous or conical in form and of brick or stone construction. Domes were sometimes finished with brilliantly colored glazed tiles or otherwise decorated, externally, with interlaced geometrical enrichments.

4.8.4 Columns

Sometimes, the Arabs used columns taken from ancient Classic buildings, but eventually columns were evolved the capitals of which often-showed traces of Persian or Byzantine influence. A common type of column is that in which the lower corners of the cube-shaped capital are rounded. Capitals of this description have often a superimposed cushion.

4.8.5 Openings

The window openings, usually small and unimportant, had arched heads of various shapes. Many of these openings were filled in with beautiful examples of geometrically patterned wood or marble grilles. Arches of various forms were used in Islamic architecture, including the round and pointed, the horseshoe, the foliated, or lobed, the waved, or keel-shaped, the triangular, and the interwoven, which consisted of various arches placed one above the other.

4.8.6 Ornamentation

Imitation of natural objects is forbidden in Islam; the ornamentation of Muslim buildings is based almost exclusively on geometrical forms which the Arabs converted into an immense variety of decorative motives. Inscriptions from the Quran, in sinuous gold writing on a black ground, were also used for decoration. Wall surfaces, covered with costly marbles, enamels, or blue and white tiles, combined brilliancy of colour with the intricacy of design, developed from interlaced star and polygon patterns.

Doorways were ornamented with stalactite. Bands of ornament or small moldings were continued round the upper portion of the arches of the doors and windows, and the heads were often brought to a square form by two or three small cornice moldings receding one within the other. The lotus plant, roses, pinks, and pomegranates often formed the basis of the design in floral patterns, while geometrical decorations were usually made up by the intersections of stars and polygons.

4.9 CONCLUSION AND SUMMARY

During successive Islamic periods, architecture has always been the reflection of the environmental and cultural elements of the society, whether from the social and cultural aspects, or the natural and climatic conditions. All these factors, which have been introduced in details in chapter 2 and 3 as variable and stable factors, associated with this chapter, have affected Arabian architecture, and produced some unique features that have given it its Islamic identity and values. These architectural values could be applied on contemporary architecture of the Arab world.

In his research, Antoniou (1998) summarizes some features of Islamic architecture. He points out that mosques, *khans* and *madrasas* often have wonderful courtyards, and there are some open markets, but the climate tended to encourage the creation of enclosed bazaars. The principle of *al-Finaa* (internal court) meant that the streets themselves were colonized by private commerce. Domestic buildings turned in on their courts and gardens, and allowed few glimpses of internal delights from the street. Houses, public buildings like hospitals and *khans*, commerce and religion were all intimately mixed in a highly sophisticated and tight spatial matrix, which worked extraordinarily well when spans were determined by the width of a masonry arch, the length of a timber beam or, exceptionally, the span of a dome. Integrated, delicate and coherent hierarchies of form and space, monumentality and the quotidian resulted.

Ibrahim (1983) identifies some major features of Islamic Architecture and classifies them as follow:

The general form of the Islamic architecture organically reflects the different functions

of its components without any previous specific formal or architectural considerations. Therefore, Islamic architectural form expresses the function, the natural environment, cultural and social life (figures 4.22a, 4.22b).

A contrast between void and solid surfaces arose because of construction methods, which were depended on local materials such as stones and bricks that gave most openings the vertical direction and created arches to cover large spans. Contrast between void and solid surfaces is confirmed by the architectural elements as significant subjects in harmony and integral forms (figure 4.23).

The architectural expression of structural elements was very characteristic in Islamic architecture, especially in residential buildings. The lintels and cantilevers were exposed for the structural piers and roofing. Also, no external finishing material was used to cover stone or brick walls. Woodwork was also used with its natural colour, indicating a purity of expression. When the building material was left unexposed, it was covered by another natural material like plain or decorated ceramics.

Harmony in architectural form was one of the main features of the architectural expression in the elevations of Islamic architecture. Harmony was more evident in elevations of public buildings where it was accomplished through an irregular rhythm. Homogeneous harmony appears in the elevations of residential buildings, which reflect a continuous movement between a group of horizontal levels constituting its various elements. Harmony and architectural rhythm also appears in the triangular slots in the historical buildings of the Arabian peninsula, where mud was used as the main building material. They constituted a continuous rhythm with the skyline. Other examples are found in Egyptian oases and Nigerian architecture.

The integration of spaces is considered as one of the basic design principles of Islamic architecture and urban design (figure 4.24), and also in residential buildings. This design technique was evident in the spatial relationship between the *qa'a* and the space in front of its *iwan* (*durqa'a*). It was also evident in the integration between rooms in upper and lower floors and in the contrast derived through the sudden transfer from the compact space of the cranked entrance to the larger space of the internal courtyard. It

activated air suction and cross ventilation inside the house.

The introvert design, or concentration on the interior, in the Islamic house expresses the nature of the social life and climatic conditions. The internal courtyard replaces the external environment and includes various activities of the occupants (figures 4.25, 4.26). Thus, Islamic houses appear coherent in a continuous fabric without any separating spaces. In some cases, where the introvert plan is not used, the openings of the ground floors are high and the windows are covered with screens (*mashrabiyyas*) to preserve the privacy of the occupants. The proportions of the internal courtyards vary, ranging from 1:1, 1:2 and 3:4 in plan, and 1:2 in section. In the case of high halls or *qa'as*, which were considered closed courtyards inside the house, domes or lanterns were used to relate the internal space to the outside.

A building's gradual cross-section is another important feature of the Islamic architecture, especially in residential buildings (figures 4.27, 4.28). The cross-section line defines the two opposite sides of the street. It is characterized by the gradual increase in the protrusion of cantilevers from lower to upper floors. This helps in shading the facades of the buildings and increasing the utilization of space.

Past architecture of the Islamic periods is also characterized by the use of various architectural elements to control environmental conditions. Beside the courtyard houses, wind towers (*malaqf*) are considered as one of the most characteristic environmental control devices (figures 4.29, 4.30). In Egypt, the wind-tower catches the cool prevailing northwestern breeze and deflects it into the house solving, any difficulty in orienting all buildings. The *mashrabiyya* (or window screen) is another architectural element that serves both a climatic and social function. The width of its openings is related to the human level of vision; it is narrow at the level of vision and widens as going up. The *mashrabiyya* allowed the occupants (especially women) to view the outside world without being seen by the passers-by, it is also used in cooling water urns.

Using geometric patterns was one of the unique features of Islamic architecture, which appeared in the sophisticated architectural details constituting the larger architectural elements. It is composed of geometric intermixed shapes used in void elements like

window openings, or in solid elements like doors and interior finishing. They were also used in wall decorations and are executed from colored marble or ceramic (figure 4.31).

Landscaping played a key role in the design of internal courtyards that was given special concern not, only because it was the everyday living area of the family but also as it helped in cooling the domestic micro-climate. There were many examples of beautiful landscape used in historical Arab cities and buildings, such as, the suspended gardens in Baghdad, where different levels were used in the design. Another example was al-Hambra Palace in Granada; water channels and fountains were beautifully utilized inside and outside the buildings (figure 4.32).

Methods of construction differed in the architecture of the Islamic periods, according to the environmental factors in each region, which introduced distinctive varieties in the architectural expression in each region of the Islamic world, in the framework of a cultural unity represented in the social and cultural behaviour. The building materials differed from burnt bricks (agar) in Iran, Iraq, the Arabia, and Maghreb (Arab west), or stone as in Egypt, Syria, and Yemen. Clay was used in the desert areas of the Arab Peninsula (figures 4.33, 4.34, 4,35).

This chapter aimed to introduce the fundamentals of Islamic architectural heritage from physical, historical and ideological perspectives, which basically reflected Islamic character. It also aimed to present a brief analytical study for determining the theories and principles of architectural and urban design of Arab society throughout its Islamic history. This chapter briefly reviewed history of Islamic architecture on chronological and geographical basis, and demonstrated architectural elements of Islamic buildings, development of religious, residential, public buildings, and main characteristics of Arabian Islamic architecture have been recognized. Models of different types of buildings, during different historical periods, were selected. Their architectural and urban design bases which emanated, from the Islamic faith and Shari'a (Islamic law), and the environmental impacts and modes of Muslim's life, were concluded.

Chapter 5 will determine the theories and principles of architectural and urban design of Arab society throughout its Islamic history from the above study.

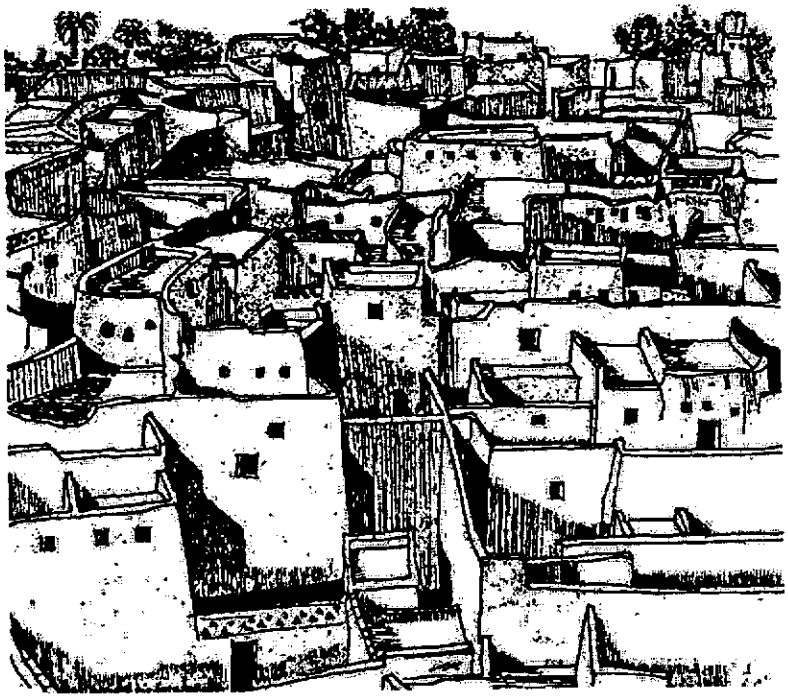


Figure 4.22a - Organic expression– Residential buildings in Libya (after El- Kholy, 1977)

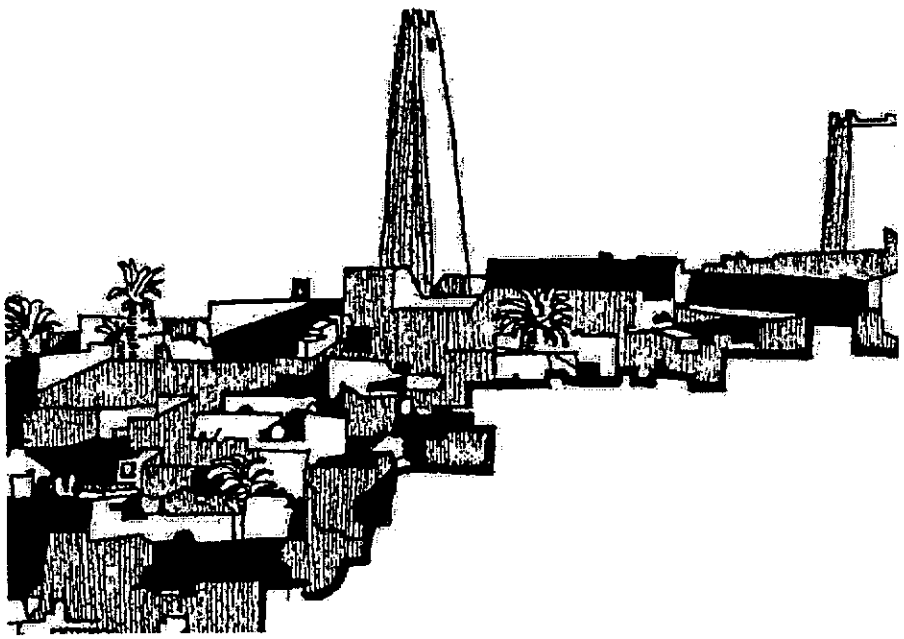


Figure 4.22b - Organic expression– Residential buildings in Algeria (after El-Kholy, 1977)

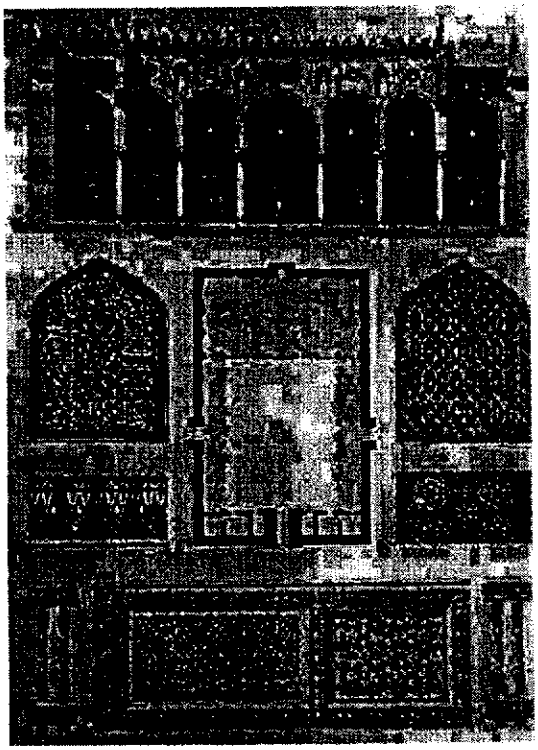


Figure 4.23 - Contrast between opened and closed surfaces (after Ibrahim, 1983)

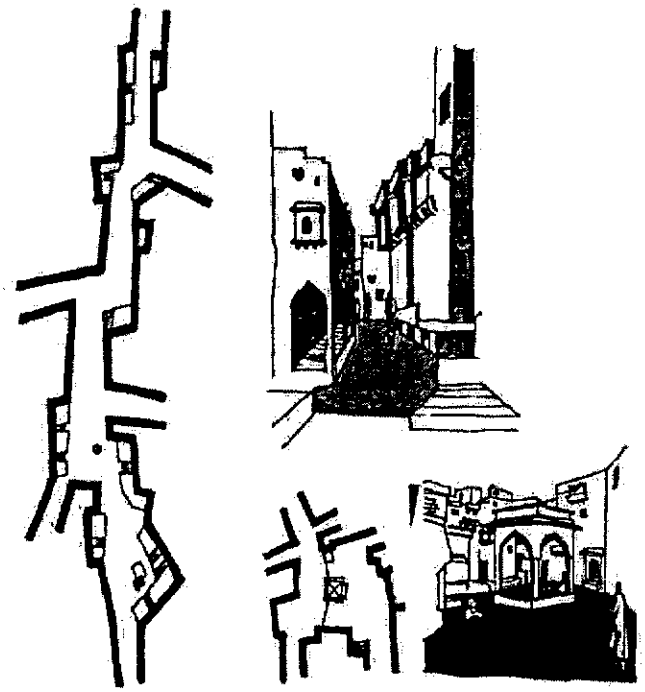


Figure 4. 24 - Integration of Spaces in Islamic City (after Ibrahim, 1983)

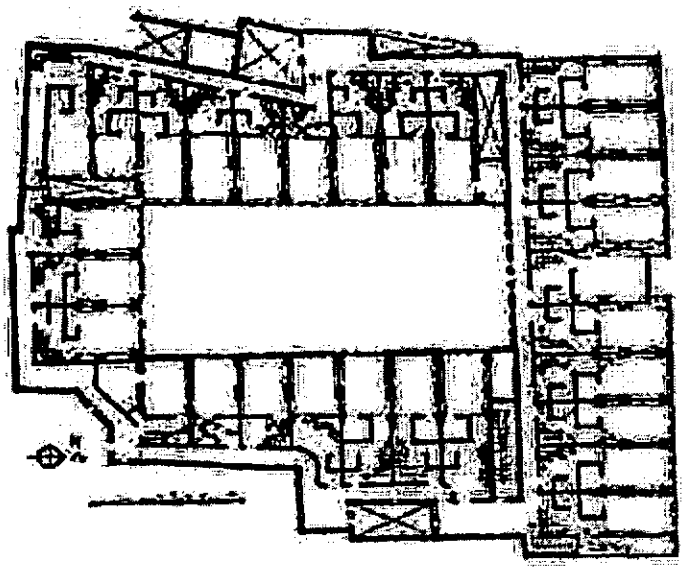


Figure 4.25 - Orienting towards indoors by using Patio (Ibrahim, 1983)

Figure 4.26 - Orienting towards indoors by using Patio (after Ibrahim, 1983)

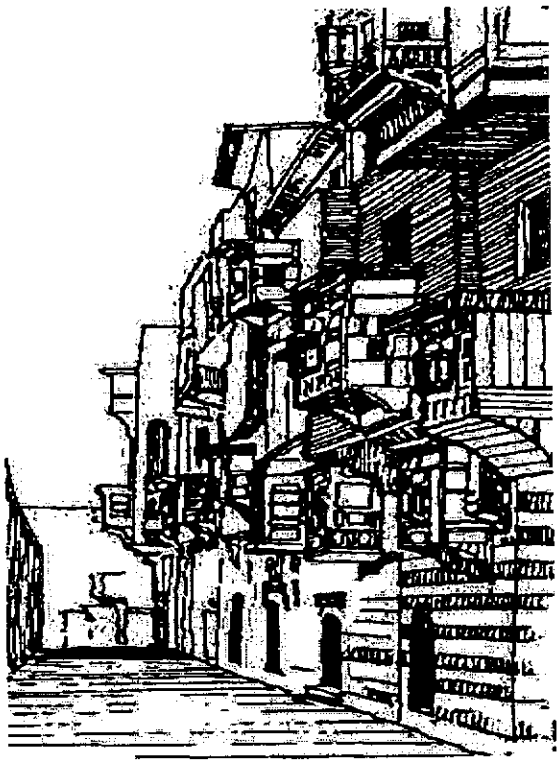


Figure 4.27 - The external cross Section– Street in Old Cairo (after El- Kholy, 1977)

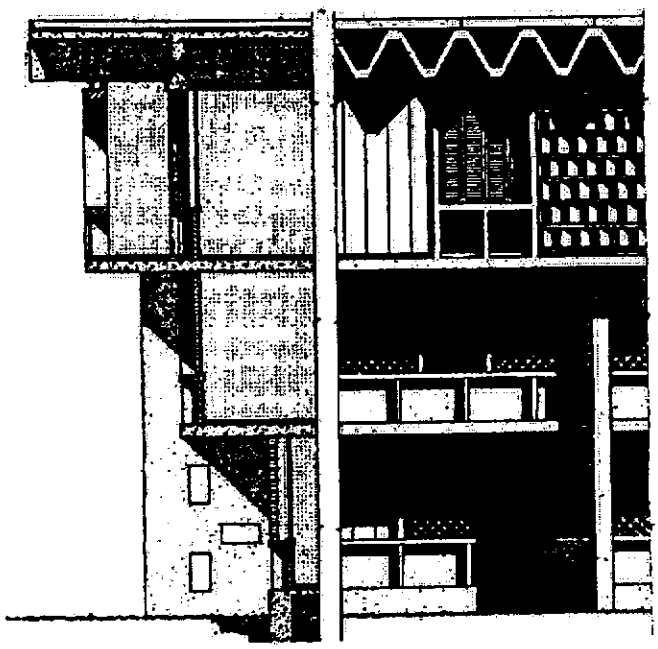


Figure 4.28 - Cross Section– American embassy in Baghdad (after El- Kholy, 1977)

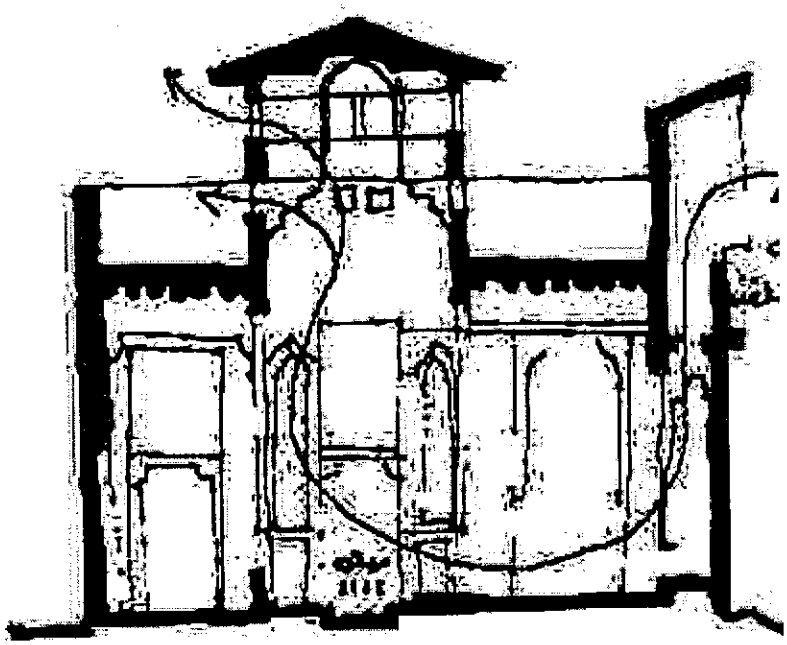


Figure 4.29 - Cross Section shows Environmental Control (after El- Kholy, 1977)

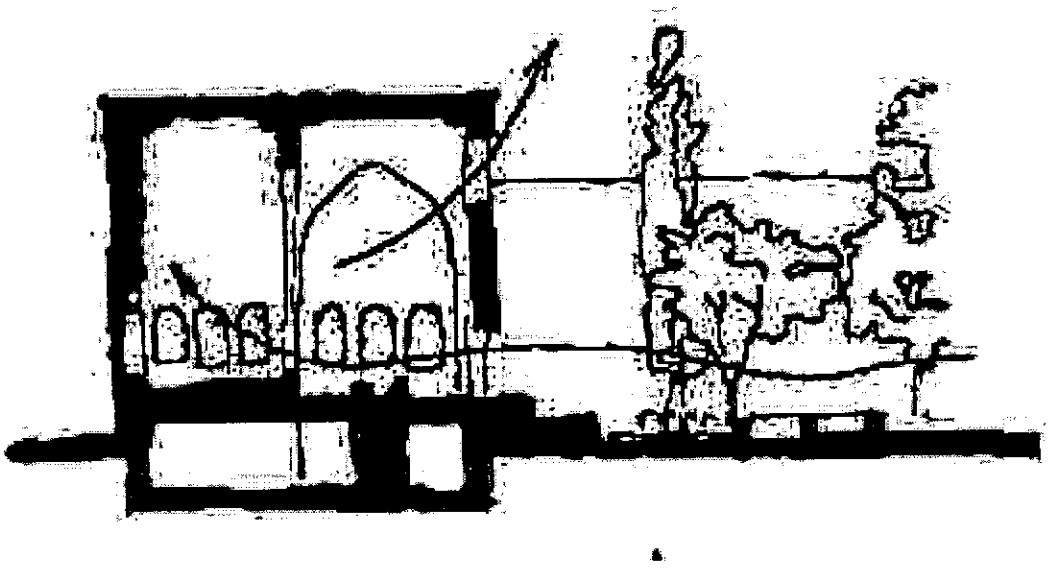


Figure 4.30 - Using Patio for Environmental Control (after El- Kholy, 1977)

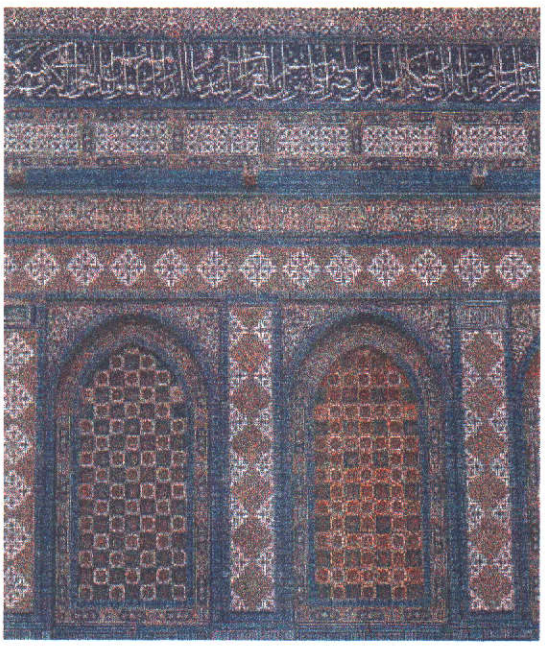


Figure 4.31 - Using Geometric Motifs in Facades (after Husain, 1996)

Figure 4.32 - Landscape- Patio of an Islamic Palace (after Husain, 1996)

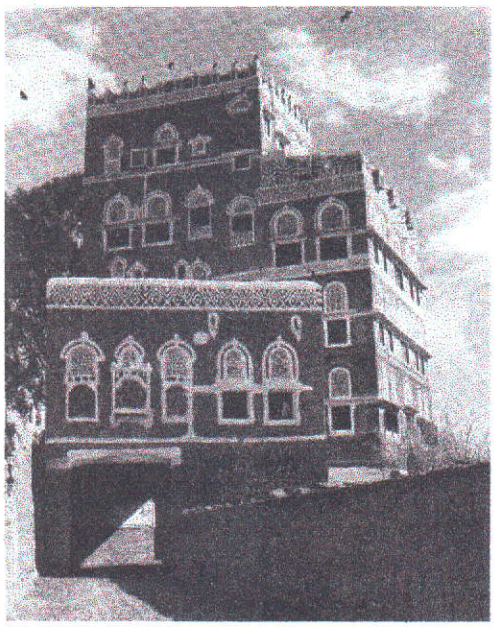


Figure 4.33 - Building by adobe, traditional Architecture in Yemen
(after Holod, 1978)

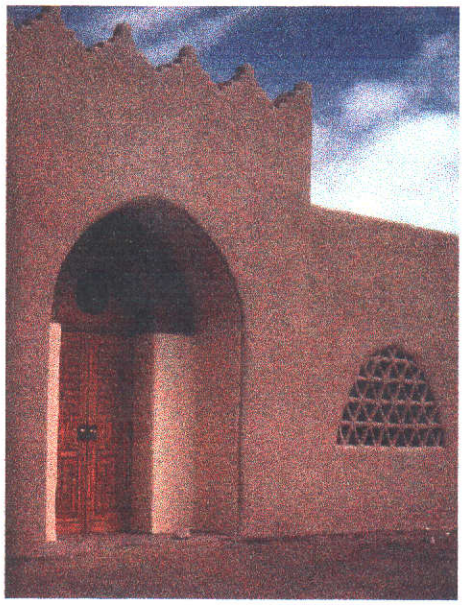


Fig. 4.34 - Building by clay, Hassan Fathy
(after Steel, 1997)

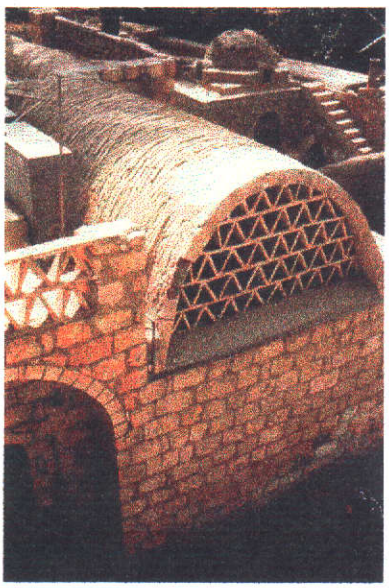


Fig. 4..35 - Building by stone, Hassan Fathy
(after Steel, 1997)

PART III. EXAMINING ISLAMIC ARCHITECTURE

CHAPTER 5:

REVIEW OF ISLAMIC ARCHITECTURAL LITERATURE

PART III. EXAMINING ISLAMIC ARCHITECTURE

CHAPTER 5. REVIEW OF ISLAMIC ARCHITECTURAL LITERATURE

5.1 INTRODUCTION

In the past, researchers in the field of art and architecture have studied the architecture of the Islamic world, its history and social meaning.

Western architects, and therefore, Arab architects, have been consistently referring to the architecture adopted during the Islamic periods as "Islamic Architecture", disregarding the ideological aspect behind it, while focusing only on the exterior form, which sometimes contradicts Islamic beliefs. Recently a few Muslim architects have argued this issue in their writings in opposition to the above misconception of the term and renamed it the "Architecture of the Islamic Era". Believing that, the latter definition is a better term applicable to all types of buildings that are functionally related to the Islamic beliefs as well as to Muslims as a nation (OICC, Ibrahim & Mustafa 1992). Consequently, the need emerges to review the existing literature on Islamic architecture, critique and contribute to this body of knowledge.

The previous chapter briefly reviewed the history of Islamic architecture on a chronological and geographical basis, development of religious, residential and public buildings, That chapter also recognized the main characteristics of Arabian Islamic architecture.

The aims of this chapter are to contribute to the body of knowledge of Islamic architecture, by reviewing and critique existing literature on Islamic architecture and developing an understanding of the influence of culture and environment on the practice of Islamic architecture. This includes an analysis of the role of Islamic concepts on place making and architectural language, identifying the architectural characteristics that flow from both Islamic concepts and the practice of architecture, which attempts to fulfil Islamic faith, ritual and culture.

To achieve these aims, this chapter undertakes the following:

A review of the literature concerning Islamic architecture, criticizing and comparing the Western viewpoint of Islamic architecture with the Muslim viewpoint;

An explanation of Islamic perspective for architecture, discussing Islamic theory in architecture and reviewing Islamic concept of architecture in general and of specific types of buildings in particular, such as mosques, residential and public buildings.

5.2 REVIEWING THE LITERATURE CONCERNS ISLAMIC ARCHITECTURE.

In his book: History of Architecture, Fletcher (1961) explains that this style of architecture is known [in the West] by many names:

Arab or Arabian because it was first evolved by the Arabs.

Muhammadan 'also spelt *Mohammedan* or *Mahometan*', because it was used by the followers of Muhammad 'or *Mohammed* or *Mahomet*', the prophet of Islam.

Muslim (or *Moslem*) because those followers were named Muslims or Moslems

Islamic (for the same reason). *Saracenic*, a name of Greek origin, applied by the Romans and afterwards by the Crusaders to the influence of Islam.

Muslims resent being called Muhammadans, because it implies a personal cult of Muhammad, which is forbidden in Islam. The name Muslim is given in the Quran itself to the followers of Muhammad "Quran, verse 22:78". Muslims also object to the spelling Moslem as a distortion of Muslim.

Fletcher (1961) defines Islamic architecture as the product of a religion rather than of a country. I believe that Fletcher's definition would be right, only if Islamic principles reflect on Muslims' architecture, but surprisingly some of the great buildings of the Islamic period contradict the Islamic doctrine.

Grube (1978) gives a more inclusive explanation about the adjective 'Islamic', the interpretation of Islamic architecture as a whole. Understanding can only be successful and meaningful if seen against the background of Islam as a cultural, religious and political phenomenon and only in the precise relation to the specific circumstances that

led to its creation.

The strangest critique is Grabar's (1973). He believes that "Islamic" does not refer to the art of a particular religion, for a vast proportion of the monuments have little if anything to do with the faith of Islam. Works of art demonstrably made by and for non-Muslims can appropriately studied as works of Islamic art!

It is not understood exactly what he means by the term "Islamic" in his context, if not Islamic religion and teaching.

Grabar argues that there is, for instance, a "*Jewish Islamic art*", since large Jewish communities lived within the predominantly Muslim world and representative examples of this Jewish art have been included in a book on Arab painting. He discovered that there is also a "*Christian Islamic art*", most easily illustrated by metalwork from the Fertile Crescent in the thirteenth centuries but known elsewhere as well, for instance the complex development of Coptic art in Egypt after the seventh century. Even though its problems are far more complex and its pertinent examples much later than the period with which we are concerned, there is an Islamic art of India which was certainly not entirely an art of Muslims. The important point is that "Islamic" in the expression "Islamic art" is not comparable to "Christian" or "Buddhist" in "Christian art" or "Buddhist art", he suggests. An alternate and far more common interpretation of the adjective "Islamic" is that it refers to a culture or civilization, in which the majority population or at least the ruling element professes the faith of Islam.

Grabar's last opinion contradicts with the first one, as in the later idea, he announces that the adjective "*Islamic refers to a culture or civilization*", where the majority of the countries are Muslims. And in the beginning, he declares that "*Islamic does not refer to the art of a particular religion*" which is the religion of Islam. It is not clear why he adds the adjective "Islamic" for something doesn't belong to Islam and produced for non-Muslims. It could be acceptable to describe the work produced by non-Muslims to Muslims as Islamic, only when this work considered the Islamic aspects. Therefore, a work produced for non-Muslims could not be described as Islamic. In other words, it could be said that Islamic art had influences on the other cultures, whether Christian or Jewish, but a thing such as "*Jewish Islamic art*" or "*Christian Islamic art*" could not be

realistic.

Grube (1978) simplifies the complexity of misusing the term "Islamic", he explains that if Islamic architecture is distinctly different from non-Islamic architecture and must be interpreted as one of the many emanations of the spirit of Islam, the adjective "Islamic" is fully justified. He argues that the interpretation of the term "Islamic" can only be successful and meaningful if seen against the background of Islam as a cultural, religious and political phenomenon and only in the precise relation to the specific circumstances that led to its creation. I would assent that this view is clear and forms the basis of a cogent understanding of the term "Islamic.

As this research concerns Islamic culture that has affected Arabian architecture, it will be worth exploring the meaning of Islamic culture.

Dahman (1983) defines Islamic culture as all sciences, arts and concepts that Muslims have achieved. Islamic culture is the aggregate of Islamic sciences and arts including the science of the holy Quran and Sunnah (Prophet Muhammad's traditions), Islamic legislation, Arabic literature and other Medieval sciences which have been considered as the foundations of the Renaissance Era. No doubt, Dahman adds, that the main source of the Islamic culture is the Holy Quran and the first cultural work emerged by Arabs and early Muslims was collecting the verses of the Holy Quran in one book.

The Alim (1996) declares that the cultural and scientific contribution of Arabs to Western civilization during the Middle Ages was highly significant, especially in astronomy, mathematics, medicine and philosophy, as well as in architecture.

Kuban (1983) argues that Islamic culture, by its sheer existence since the Seventh Century and its physical continuity from the Far East to the Atlantic, was the only central culture in direct relationship and contact with these areas. The term 'Muslim Culture' embraces larger aspects of historical phenomena than are usually found within peripheral cultures. Generalizing from the foregoing observations, we may state the following: it is the plurality of forms and styles that characterizes Islamic Culture. It is not a culture, which may be defined by the homogeneity of its material products. If the Western definition of culture and civilization as a coherent process in stylistic aspects

was left aside, it could be replaced with another definition specific to Islam, a civilization that embraces a multitude of cultures and styles. Kuban suggests that researchers should not look for universal Islamic architectural forms. Universality in Islam takes priority over homogeneity. It subsumes all varieties of human experience.

Ibrahim (1980) states that Islamic architecture was always an expression of the latest and advanced technological achievements and the science of construction prevalent at its time. From another angle, the urban structure of the Islamic cities was almost always a reflection of culture, social behaviour and of human relations, which emerged from the teachings of Islam. But some times, the structure of the city was planned to cover the desires of the ruler, not the desires of the society as it is stated in Islam.

Ibrahim affirms that it is difficult to claim that there is an accurate definition of Islamic architecture. For a great number of people, the concept of Islamic architecture denotes tangible characteristics of some architectural features. But where is Islam in all this? Ibrahim asks. He finds that it is a difficult question to answer. He believes that Islam should not only be considered a religion, it is a complete way of life, which covers all social, political, economic, educational, cultural, hygienic and behavioral aspects. However, architecture has always been a reflection of the cultural and natural environment of the society. This same phenomenon applies to architecture at any place in the Islamic world.

Kuban (1983) arrives at a conclusion that the fundamental assumption of a homogeneity and unity in Islamic architecture was faulty. This illusory concept of unity of forms was the creation of Western scholarship, the so-called Orientals tradition. He believes that the assumption that Islamic architecture possesses a stylistic unity is basically in error because it is deficient in methodological insight, it is not a stylistic unity but its consistent unity of architectural conception.

The diversity of styles does not devalue Islamic architecture, on the contrary, it confirms the spirit of Islamic values that considered the different backgrounds of the new Muslims in the early ages of Islam.

Many researchers explain the reasons of this diversity, for example, Wiet (1974) affirms

that during the early Islamic era, the Arabs were not interested in setting up new methods. Their skill lay in giving populations full responsibility for every day affairs. With flexibility the conquerors respected local customs, thus Islamic architecture developed from many sources.

Ibrahim (1987) supports Wiet's opinion, saying that in its early stages, Islam concentrated on the rebuilding of the human character, the relation between man and God, other people and behavior of the followers. Constructing great buildings and temples was not of great importance in Islam, on the contrary, the buildings in the beginning of Islam were characterized by simplicity and humbleness.

OICC, Ibrahim & Mustafa (1992) notice that despite the diversity that characterized Islamic periods throughout history, a distinct sense of unity that is prevalent over the contemporary architecture of Islamic societies is traced, which deeply integrates their cultural heritage and their environmental design and urban character that was developed over the years. Architecture, however, is considered one aspect that ideologically unifies Islamic cultures all over the world, despite their environmental diversities. Hence, the architecture of the Islamic periods could be regarded ideologically as an international architecture, considering that Islam is the religion of all times and places. It is also a regional architecture considering the environmental diversities among the different regions. This diversity may affect the form but not the concept, which is derived from Islamic doctrine.

Nassar (1993) states that when the message of Islam extended east and west, north and south, it was careful not to destroy any civilization, but to teach and explain the new religion.

The above opinions explain the reasons of architectural prototype diversity in the Muslim world. Although that diversity of form from Muslim region to another, Islamic buildings preserve unity of essence and content.

5.3 THE ISLAMIC PERSPECTIVE OF THE ARCHITECTURAL THEORY

Ibrahim (1988) criticizes the Western concept of Islamic architecture, claiming that it benefits only the rich art of Islamic civilization. They analyze its aesthetic values, highlight its shapes to go deeply into the conscience of the Arabian architect and overwhelm his Islamic cultural values as a way of life. He argues that those masterpieces of art and architecture, if evaluated by aesthetic standards, would be the top of aesthetic works. But if evaluated by Islamic standards, they come down to the lowest urban levels, which contradict with Islamic teachings.

A hope for Arabian architectural concepts, after losing their identity and discontinuity of cultural heritage, lies in reviving Islamic cultural values to build human character, as a base of its urban environment, where these values (which were derived from Islamic principles), do not change from time to time.

Muslim researchers try to link architecture of Muslims with their Islamic roots and sources. Linking architecture with Islamic issues such as for example in the Holy Quran, verse 16: 80 (Khan & Al- Hilali 1996):

And Allah has made for you in your homes an abode, and made for you out of the hides of the cattle (tents for) dwelling, which you find so light (and handy) when you travel and when you stay (in your travels); and of their wool, fur, and hair (sheep wool, camel fur, and goat hair), furnishings and articles of convenience (e.g. carpets, blankets), comfort for a while.

The above verse gives us some ideas about Muslim's home, such as being convenient, comfortable with simple natural materials.

Also, in verses 43: 33- 35 (Khan & Al- Hilali 1996):

And were it not that mankind would have become of one community (all disbelievers desiring worldly life only), We would have provided for those who disbelieve in the Most Gracious (Allah), silver roofs for their houses, and elevators whereby they ascend. And for their houses, doors (of silver), and thrones (of silver) on which they could recline. And adornments of gold. Yet all this (i.e. the roofs, doors, stairs, elevators, thrones of their houses) would have been nothing but an enjoyment of this world. And

the Hereafter with your Lord is (only) for the pious and righteous persons who fear Allah much.

The above verses explain that Muslim's home should be simple and away from extravagant luxury, because extravagancy and luxurious life may take Muslim from the degree of believing to non-believing.

Also, Islam considers that man's life on earth is a very short journey (70 to 80 years old in average) compared with the eternal life in the here after. So, man should not spend all his life on earth seeking only temporary excitement, such as luxurious house, car and adding thousands of dollars to his bank account, forgetting his main role on earth, which is obeying God and living in harmony and love with all other creatures.

5.4 THE ISLAMIC CONTENT OF ARCHITECTURE

OICC, Ibrahim & Mustafa (1992) explain that 'content' as a scientific term is more universal and comprehensive than 'function' which is governed by engineering, technical and economic determinates, aiming at achieving the best utilization of space. Function in architectural theories is closer to the mechanical action, while content is an expression that includes the functional, together with the social and human needs.

In Islamic architecture, the content is related to Islamic values and instructions that should be provided in different building types. The content is an expression that combines the functional and conviction aspects, considering the basic approach to the Islamic perspective of architecture, which leads to formal values related to the local environmental cultural and historical background of a place.

The content is thus the constant (universal) aspect of the Islamic perspective of architecture, while the form is the variable (local) aspect. The Islamic content of architecture is directly or comparatively related to the Quranic instructions and the Sunnah of the Prophet (Muhammad p.b.u.h.). Islam aims at building the human character on clear basis, determining his social behaviour as an individual related to a social group on the one hand, and as an individual who has his own privacy on the other hand.

The same comparatively applies to urbanization that should carry a social expression from the outside belonging to the society in which it exists and in the meanwhile, expresses the individuality of its owner from the inside. In other words, Islamic urbanization should express individuality from the inside, in the framework of the social unity from the outside. The social unity here is a reflection of the economic systems and Islamic values of the society.

The Islamic content firstly, determines the forms and spaces comprising the architectural work and organizes the functional relations between them. Secondly, it determines the artistic expression through local building materials and methods, in addition to the technical and cultural inherited values of the society, which do not contradict with the Islamic content.

Architecture of the Islamic society derived its sources, at the early Islamic ages, from the cultural backgrounds of the region in which it existed. So later, it was able to formulate its own image that reflected the newly established Islamic values of the society.

The values which are derived from Quran and Sunnah of the Prophet (Muhammad p.b.u.h.), the basic sources of Shari'ah and conviction. It is through logical comparison that the design content of architecture could be derived from the Quran and Sunnah, since the Glorious Quran includes in its verses all the needs and duties of man in this world and in the hereafter. As God says in verse 18: 54 (Ali 1993): "*We have explained in detail in this Quran, for the benefit of mankind, every kind of Similitude: but man is, in most things contentious*".

The Prophetic Hadith (Prophet Muhammad's sayings) is also obligatory to Muslim's attitudes and manners of behaviour, as the Quran says verse 4: 80 (Khan & al- Hilali 1996): " *He who obeys the Messenger (Muhammad p.b.u.h.), has indeed obeyed Allah,...*".

And in verse 59: 7 (Khan & al- Hilali 1996): "... And whatsoever the Messenger (Muhammad p.b.u.h.) gives you, take it: and whatsoever he forbids you, abstain (from it). And fear Allah: verily Allah is severe in punishment".

In order to be able to deal with the variables of life, man, the successor of the Lord on earth, is permitted to use his intellect, logic and analogy within the limitations of his knowledge of Fiqh and Shari'ah. God says in the Quran verse 2: 30 (Ali 1993): "*Behold, thy Lord said to the angels; ' I will create a vicegerent on earth....*".

Studying Muslims traditions and morals to find principles of action for today, Serageldin (1986) points out that the Quran requires humankind to be 'the stewards of the earth', and suggests that this implies that, though Muslims should not be ashamed of 'cultivating its resources and increasing its bounty'.

Thus, Muslim architects should be obligated to the Quran and the Sunnah of His Prophet Muhammad (p.b.u.h.) since they are the main sources, which determine the fundamental ideas and basic principles of the Islamic society's architecture (OICC, Ibrahim & Mustafa 1992). In general, the architecture of Islamic society is based on the following fundamental principles:

- Preservation of the family and society.
- Preservation of neighbourhood rights.
- Prevention of harm to others.
- Avoiding construction of lofty buildings.
- Avoiding extravagancy in buildings even in mosques.
- Avoiding intermixing of men and women in public places.

The last point obliged the Muslim architect to provide privacy for the family inside the home by providing the following:

Cranked entrances, which provide privacy inside the home by separating the exterior space from the interior space.

- Screen windows, which provide natural lighting and ventilation together with possibility of watching the street without being seen by the passers-by.
- Separation between men and women quarters - a feature that is preferred also in public and service buildings.

Separation of children (of different sexes) in bed, which gives the child privacy and emphasizes his feelings of belonging and individuality.

In order to preserve the family, the basic unit of the society, Islam bans intermixing of non-relatives men and women, whether privately or publicly, according to the Holy Quran verses 24: 30, 31.

Also, to provide privacy for the family inside the home, Muslim architect should consider cranked entrances, screen windows – that provide natural lighting and ventilation together with possibility of watching the street without being seen by the passers-by, and separation between men and women quarters.

Islam also calls for the following:

Separation of children - of different sexes - in bed, according to the Prophet's Hadith: "*.... And separate between them (boys and girls) in beds*"(OICC, Ibrahim & Mustafa 1992: p. 500), which gives the child privacy and emphasizes his feelings of belonging and individuality.

Cleanliness and obligates the Muslim to clean himself five times a day before praying, thus the Muslim architect had to include lavatories and bathrooms in house designs in addition to public baths.

Social solidarity of the community and the preservation of neighbours right. Prophet Muhammad (p.b.u.h.) said: *"Jibril (Gabriel) continued to recommend me about treating the neighbours kindly and politely, so much so that I thought he would order me to make them as my heirs"*. Narrated by ibn 'Amr and 'Aisha (Khan 1994: p. 956-Al-Bukhari, hadith no. 2021). The preservation of neighbours' rights includes, among other things, not to raise your building high blocking his air without permission and not to open windows overlooking his *Maharim* –prohibits, privacy (OICC, Ibrahim & Mustafa 1922: p. 498).

On the other hand, Islam calls for enjoying life in a moderate way. Architecture is one of the matters that God left for us to enjoy without extravagancy or parsimony and without breaking up his laws; the Quran verses (7: 32, 33), (28: 77), (17: 27, 29) and

verse (20: 81). Islam calls for preserving the fundamentals of life, Anas narrated that the Prophet (p.b.u.h.) said: *"If any Muslim plants any plant and any human being or an animal eats of it, he will be rewarded as if he had given that much in charity"* (Khan 1994: p. 955 – Al-Bukhari, hadith no. 2019).

Islam always cared for building the character of human being before building foundations. Thus, Islam puts an urban strategy (course) for building according to the needs, without extravagance and boasting with ornamentation or height, both in houses and mosques. Finally, OICC, Ibrahim & Mustafa (1992) conclude that Islamic architectural issue is not domes or courtyards, ornaments or screens, forms or proportions, it is the socio-economic and cultural case of a Muslim society. Shari'ah law is the standpoint for searching for the design content of the various types of private and public buildings in which the Muslim lives, works, deals, amuses himself and practices all other activities.

5.4.1 The Islamic concept of mosques' design

Traditionally the mosque has played a central role in most Muslim environments as the organizer of space and society. It also defines the identity of the society and provides a point of reference to citizens and passers-by as well as travelers. The powerful symbolism of the mosque's traditional architectural vocabulary is unique to Muslim culture and is uniquely identified with it, to the extent of being almost a shorthand designation for "Muslims" (Serageldin 1990).

Erecting mosques is an order of the Lord almighty, to gather all the Muslims in one place for praying and remembrance, as OICC, Ibrahim & Mustafa (1992) explain the mosque is a place to protect them from weather conditions. The Quran says verse 9: 18 (Ali 1993): " *The mosques of God shall be visited and maintained by such as believe in God and the last day, establish regular prayers, and practise regular charity and fear none (at all) except God. It is they who are expected to be on true guidance*".

And verse 72: 18 (Ali 1993): "*And the places of worship are for God (alone): so invoke not any one along with God*".

The Holy Quran defines the basic functions of the mosque, as in verses 24: 36,37 (Ali

1993): " *Lit in such a light, in houses, which God hath permitted to be raised to honour; for the celebration, in them, of His name: in them He is glorified in the mornings and evenings, (again and again)' By men whom neither traffic nor merchandise can divert from the remembrance of God, nor from regular prayer, nor from the practice of regular charity. Their (only) fear is for the Day when hearts and eyes will be transformed (in a world wholly new)* ".

The Arabic term "*masjid*" is used to denote the praying place, it is derived from the verb (*sajad*) means to prostrate, which is the most graceful act of prayer, when the believer is closest to his Creator (Rasdi 1998). Islam urges Muslims to build and maintain mosques.

The Prophet (p.b.u.h) said: "*He who builds a mosque where the name of the Lord is remembered, God will build for him a house in the Heaven*". And he also said: "*The most beloved (the best places in the..) countries to God are its mosques*" (OICC, Ibrahim & Mustafa 1922: p. 498). Al-Qadi 'Ayad (a Muslim scholar, 1149 AD) explained the meaning of that Hadith, when he said: "*Mosques are houses built for the remembrance of God, and places erected for pious and good deeds*". The five summonses for prayer and the collective prayer of Muslims in mosques are significant and peculiar characters of the Muslim community.

There are certain conviction and functional principles that govern the architectural design of the mosque, which in the first place, is a space where the Muslims line up in rows to perform their daily prayers. In this respect, the Prophet (p.b.u.h.) said: "*Line up in straight rows, the way angels line up in front of their God. Be gentle to your fellowmen and leave no gaps for the devil. He who continues a row, God will bestow upon him, and he who cuts a row will be cut off God's mercy*" (OICC, Ibrahim & Mustafa 1992: p. 489). As regards the merit of the first row, the Prophet (p.b.u.h.) said: "*...If the people knew the reward of the first row, they would draw lots for it.*" (Khan, n.d./ Al-Bukhari, vol. 1, p. 387)

For these reasons, mosque plan is preferred to be in rectangular shape, its longer side facing the *qibla* (prayer direction towards Mecca), in order to provide the chance for the greatest number of prayers to stand in the first rows, which could not be provided by

circular, hexagon or even square plans. The context here determines the suitable plan configuration for mosques, according to Islamic instructions that which make the mosques expand horizontally on the land - and not vertically - in order to hold greater numbers of prayers.

The conviction principles in mosque design come in the first place before the inherited architectural elements, which some architects relate to determining the formal features of their buildings. It is important to fulfil the content before searching for the architectural configuration related to the methods and materials of construction, which are related to the technical and scientific potentialities of the Muslim society. Since Islam urges for continuous prayer rows without any interventions, it is not preferable to have vertical structural elements in the middle of the mosque space, interrupting the prayers' rows and their view of the lecturer. These vertical posts were a structural necessity in previous periods, however they could be completely cancelled or minimized in contemporary systems of construction. Thus, modern technological achievements can solve some architectural problems and fulfils some doctrinal requirements, without any contradiction with Islamic values. The number of rows, in contemporary mosques with minimum number of vertical posts, depends upon the length of the praying space and the number of prayers who stand in ordered rows between each one and the other 1.2 m., giving enough space for the prayer to be easily performed. Longitudinal lines could be drawn on the flooring to determine the rows.

An analytical study of historical mosques should search for the architectural features that link the past with the future, and derive the architectural elements or vocabulary that could communicate with contemporary buildings; it should not look for mere symbolism that hinders architectural intellect and creativity, also it should be suitable for the environmental and socio-economic factors of the Muslim society.

The content in mosque design is to formulate the architectural space that helps the Muslim to feel solemnity and fear between the hands of God (while praying), and not the space that evokes wonder. This aspect is contradicted in many historical mosques, especially those, which were built by Walis or rulers for their own grandeur. Islam calls for building mosques with strong foundations without any boasting, extravagancy or

ornamentation. Umar ibn el-Khattab (the second Caliph - successor), when he started to expand the mosque of the Prophet, he said: "*Shelter the people from heat and cold, and do not colour or decorate to enchant the people*" (OICC, Ibrahim & Mustafa 1922: p. 490). The mosques - homes of God - should be cleared from all trivialities. Muslims will be condemned by the saying of the Prophet; " *If you decorate your mosques and ornament your Books (the Quran), you shall be destroyed*", the Prophet (p.b.u.h.) also said: "*The Hour (of Doomsday) will not come until the people boast (to each other) with (the construction and decorationof) mosques*" narrated by Anas (Al-Asqalani, 1996: p. 93, hadith no. 206). Umar ibn el-Khattab also said: "*The Prophet (p.b.u.h.) forbids us to pray in elevated and distinguished mosques*" (OICC, Ibrahim & Mustafa 1922: p. 490). He meant by that to quit boasting by making distinctive signs on top of the mosque. Thus, Muslims can conclude one of the basic Islamic contents in mosque design: it should not include any paintings or extravagant ornamentation. In this respect, it is remarked that the Sufis adopted the circle and the dome as symbols for pious foundations, while historical references mention that the dome first appeared in Muslims architecture over rulers' shrines. Nevertheless, the dome became a symbol for mosque architecture in the modern age, to such an extent that some architects consider it one of the basic principles of religious architecture.

The *mihrab* is another symbolic element in mosque design to which the contemporary architectural intellect is committed. It is historically evident that the *mihrab* (sanctuary) was transformed from the church to the mosque in the Umayyad period, and was not known before. Also, Musa ibn 'Ubaida (a Muslim scholar) narrated: "*I saw the mosque of 'Abu Zar' (a companion of Prophet Muhammad known as a narrator of the Sunnah), and it had no mihrab*" (OICC, Ibrahim & Mustafa 1922: p. 490).

For those who care for the Sunnah should thus keep the wall of the Qibla straight like all other walls, and build a *minbar* (pulpit) with three steps leading to the chair of the lecturer.

The architectural content, in its true definition, is a return back to the spirit of Islam and its guidance and instructions built on logic and nature. The content of mosque design in this concept, does not mean neglecting the internal and external formal aspects of

design, to the contrary it is the base for searching for the form that will truthfully express the content, then comes the search for the artistic values (Ibrahim 1988).

5.4.1.1 Some spiritual aspects to be considered in mosques' design

Mosques are erected, among other things, to act as a place of prayer *Salat,* not to glorify the people who donated for their erection. They are God's houses for people to pray in, stay in and benefit from all its functions. Mosque signifies the society economical and aesthetic standards rather than an individual one, with no extravagancy or parsimony. They express the ability of the Muslim workers to create and prefect their work as required by Islam, also to visualize Muslims architectural intellect guided by Islamic values and principles.

A mosque in its content is part of the society, coherent with its urban structure and integrated with its facilities, and not an isolated entity. The Mosque is the core of the residential neighbourhood, on its smallest scale and the heart of the Islamic City, on its largest scale (OICC, Ibrahim & Mustafa 1992).

5.4.1.2 Some principles of mosques' urban and architectural design

The mosque is not a monumental building but rather a part of the urban texture fully integrated in it and linked to its other members. As we find in Quran verse 10: 87 (Ali 1993): *"... make your dwellings into places of worship, and establish regular prayers: and give glad tidings to those who believe"*.

Since the mosque is the radiant center in an Islamic society, it then has to be centrally located between the urban units and annexed to facility centers such as educational, health, cultural and social Centres. It could be surrounded by different administrative facilities concerned with security and financial matters: so there will be a spiritual link between the daily life and the guiding values of Islamic conviction.

The mosques should not be built close to each other as Imam Ahmad ibn Hambal (one of the four leaders of Jurisprudence *"Fiqh"*) referred: *"Do not build mosques adjacent to one another unless there is an urgent necessity for that, like if the first is too small or a similar reason"* (OICC, Ibrahim & Mustafa 1922: p. 491). Since this is going to provide tranquility required during prayers time and maintain Muslim unity and

brotherhood (Rasdi 1998).

The design concept, of the mosque defines the location of the ablution area and also the location of the toilets. It should not be positioned in the same direction of the *qibla* it should rather be deflected to its right or left. It has been agreed upon that if the ablution area is walled and roofed then it is not forbidden for it to face the *qibla* any more, and that is the way it is in houses. To conclude, the design context determines the location of the ablutary, which could be completely omitted from the design, or annexed to the mosque in such a way to preserve its purity and cleanliness.

It should be emphasized here that the presence of the ablution space and facility is a matter of functional convenience and totally unrelated to any fundamental sacred prescriptions (Rasdi 1998, p.156).

Also the mosque has to be located nearby houses allowing Muslims to hear the callers for prayers and they can wash at their nearby homes before leaving to pray. The Prophet (p.b.u.h.) said: "*He who cleans up (takes ablution) at home and then goes on his way to one of God's houses (the mosque) to fulfil one of God's commands, every step he steps erases a sin and the other lifts him a rank*" (OICC, Ibrahim & Mustafa 1922: p. 491).

If ablution areas are annexed to the mosque, they should be located by side entrances to ensure the mosque's purity as the Prophet (p.b.u.h.) said: "*Place the ablutaries at the entrances (outside the mosque)*" (OICC, Ibrahim & Mustafa 1922: 489- 491).

5.4.2 The Islamic concept of residential buildings design

The Arabic term '*maskan*' is used to denote the house, it is derived from the verb 'sakan' which implies calmness, tranquility and security. The Holy Quran defined the general function of the home in verse 16: 80 (Ali 1993): "*It is God who made your habitations homes of rest and quiet for you...*".

Islam defines the principles and bases of the relation between the individual and his society, explaining his way of life and his manners of behaviour. This eventually affected the form, characteristics and composition of his home, together with the relationship between its elements. Islam confirms the privacy of the home, which is not just a building, it is rather a shelter where the family lives away from the sight and

hearing of intruders and strangers, those whom the Prophet said about them: *"By Allah, he does not believe! That person whose neighbour does not feel safe from his evil"* (Khan 1994: p. 956- Al-Bukhari, hadith no. 2022).

Islam also forbids entering others' homes without their permission, according to the Quran, verses 24: 27, 28 (Ali 1993): *"0 Ye who believe! Enter not houses other than your own, until ye have asked permission and saluted those in them: that is best for you, in order that ye may heed (what is seemly). If ye find no one in the house, enter not until permission is given to you: if ye are asked to go back, go back: that makes for greater purity for yourselves: and God knows well all that ye do"*.

Also, in verse 24: 30 (Ali 1993): *"Say to the believing men that they should lower their gaze and guard their modesty: that will make for greater purity for them: and God is well acquainted with all that they do"*.

Concerning the rules and manners of visiting homes, God said in verse 2: 189 (Ali 1993): *"It is no virtue if ye enter your houses from the back: it is virtue if ye fear God. Enter houses through the proper doors: and fear God: that ye may prosper"*.

Thus, Islam gives the house more care, to observe the rights and privacy of its inhabitants. For instance it has generated the need of using the cranked entrance, internal court and the introvert plan.

Actually, the internal court appeared in preceeding civilizations for different reasons, but in Islamic architecture, it responds mainly to the Muslims' needs, stemming out of the Islamic Shari'ah. In Muslim's house the whole life runs within the quarters of the house and does not extend to other peoples' houses. The external elevation is the veil that protects the inhabitants of the house from the eyes of strangers. The height of the residential buildings was determined not only within the framework of mutual benefit but also to protect neighbourhood rights. The Prophetic Hadith included several sayings about neighbour's rights: *"Don't block his air by raising your building high without his permission"* (OICC, Ibrahim & Mustafa 1922: p. 498).

The system of life inside the house was also defined in the verses of the Holy Quran and Sunnah. Islam forbids sleeping in areas overlooked by neighbours or passersby. Jabir (a

companion of the Prophet) said that the Prophet (p.b.u.h.) forbids men from sleeping on roofs that are not protected by high parapets. Accordingly, it is necessary, in hot zones where roofs are used for sleeping, to surround them by high parapets. Hence, the context has directly affected the form and adapted it to the environmental conditions.

Commitment to the instructions of the Quran in verse 24: 31 (Ali 1993): "... *and not display their beauty except to their husbands...*" implied the idea of separation between incoming circulation into the house and circulation inside the house, and consequently the separation between the reception area and the living area. The architect should also consider easy circulation and complete integration between the elements of the house, in order to enable the Muslim woman to do her home duties in an easy and comfortable way with full privacy.

When Islam defines Muslim's manners of behaviour, it defines principles of design and founded architectural elements of different functions to suit the needs of the Muslim's house, giving it a variable image in form and configuration. Muslim architect has derived names of some components of the house from the Holy Quran, such as sitting loggia (*Maq'ad*) around the court or separate loggias, in verse 54: 54, 55 (Ali 1993): "*As to the righteous, they will be in the midst of gardens and rivers. In an assembly (maq'ad) of truth, in the presence of a Sovereign Omnipotent*". "Qaytbay's loggia nearby his school (1479 AD)" and "al-Ghuri Loggia nearby his dome (1504 AD)" are good example of the Quranic expression.

The social system described in the Holy Quran is reflected on the area zoning of the house. It produces different residential types, determines rooms' size, components of the house, such as, the *Takhtabaush* or sitting area used by the common people. The location of water closets in the house, as in mosques, should not be oriented towards the *qibla*. It is preferred to orient living rooms towards the *qibla* to facilitate its determination during praying. There are other designs' principles like separation of ablution areas from water closets. According to the Prophetic Sunnah, it is better to sleep on the right side looking towards the *qibla*, this could be taken into consideration in bedrooms design. In high rise buildings, elevators should be designed so as not to give stranger men the opportunity to be alone with women or children without

inspection.

Islam forbids using pictures and statues in decoration. God says in verse 5: 90 (Ali 1993): "*0 ye who believe! Intoxicants and gambling, (dedication of) stones, and (divination by) arrows, are an abomination, of Satan's handiwork: eschew such (abomination), that ye may prosper*".

It is also mentioned in the Prophetic Hadith: "*Angels don't enter the house where there are a dog or a picture (of humans, animals or their statues)*" (OICC, Ibrahim & Mustafa 1922: p. 499).

Architecture in Islamic society is directed by Islamic principles and values that emerge from Islamic content, which determines the bases of the family life at home, relationship between the family members, the neighbours and considering climatic and environmental conditions.

The Prophetic house in Madina was a good example of the Islamic concept in residential building, in the early period and the effect of content on form. It is composed of a number of adjacent residential units related to the mosque in an organic form that emphasizes the universality of Islamic creed. The human scale is the basic design fundamental, it determines the height of the ceiling (2.5 m) and the height of the doorsill. This simple residential form emerges from the Islamic context which aims at modesty, simplicity, sincerity in expression, integration with the environment and the mortality of everything except the Almighty God, the Eternal. This is considered the root and essence of residential architecture (Ibrahim 1988).

5.4.2.1 Some spiritual aspects to be considered in house's design

The house from the Islamic perspective is a social unit where the construction is not separated from the life of the family.

The Islamic content of Muslim family's needs determine the form of the residential space. This necessitates an effective cooperation between the owner, architect and builder during the building process. This phenomenon could be adapted to contemporary needs in housing. The core-house in new settlements and the shell house, which is confined to an open space left to the resident to complete its building according

to his needs and capabilities, are two suitable approaches to community participation in housing.

The manual work needed here is urged by Islam, even if the house owner is wealthy and could hire workers to do this work. The aim is not only to invest manpower in building but also to build the Muslim individually so as not to depend on others to do his duties.

Housing from the Islamic perspective is the housing of the Islamic society at any time or place. Thus, its architectural form differs according to the different natural and cultural environments, but its content does not differ according to place or time, which is the secret of the splendour of Islam as a dynamic civilization.

The Islamic residence does not serve the functional and mechanical side only, but it is a comprehensive expression for everybody needs of the family, guided by Islamic principles and values.

The entrance design should prevent the internal space from being seen and the family members' direction is to the inside while, guests to take the opposite direction as a principle for providing privacy. Both directions lead to a common area that can be easily used by the family members or added to the guest area as required. This spatial separation can occur on the horizontal extension, or it could be vertically by intervention of spaces vertically or horizontally.

The privacy of the residence is not only for the interior but towards the outside too, so Muslim architects have to consider the outer openings or the architectural elements that are exposed to the outside. Most openings in contemporary architecture do not suit the basis of design or the Islamic content.

Islamic content does not extend from the architecture of the Islamic era, it extends from Islamic fundamentals, values and principles.

The inner courtyard as one of the main symbolic architectural elements for houses is an inherited feature that represents a true expression for the social and climatic needs required in private houses in this era.

The design should meet the various demands required in a residential unit during different growth stages of the family members as mentioned in the Hadith, the Prophet

(p.b.u.h.) said: "*Teach your children how to pray by the age of seven and punish them if they don't pray by the age of ten, separate boys bedrooms from those of girls*" (OICC, Ibrahim & Mustafa 1922: p. 500). The house should have enough room in order to allow the separation of boys' bedrooms other than girls' bedrooms, since it does not matter to have them together while they are young but by the age of puberty they ought to be separated. A flexible design in the bedroom area can provide this future separation easily.

5.4.2.2 Some Islamic features for multi-stories residential buildings

In multi story residential stories of the buildings, the Muslim architect has to consider the social behaviour and public manners indicated by Islam. This may be in a family's movement to reach the residential units or by preserving their privacy during this movement. This may be achieved by the following:

Decreasing the number of residential units that will make use of the vertical connections (elevators) and separating them sufficiently easy. However, some aspects should be considered such as bringing down a sick person or a coffin.

Decreasing vertical extension to attain an equivalent balance between the population density and privacy requirements. This will avoid any inconvenience acquired from living in high-rise buildings, where the cross-section areas are small and ruin privacy.

Elevations, openings, directions of windows and locations of outer openings should be planned with regard for privacy.

In general constructional fundamentals has to be implied in order to achieve the required privacy. Islamic content considers the house as a place for rest, so it has to provide this, together with functional requirements for the family. Muslim architects may not apply a model type unless it is required for a certain environment serving the public and its construction benefits Muslim societies, according to the Islamic teachings (OICC, Ibrahim & Mustafa 1992).

5.4.3 The Islamic content of public buildings' design

Islamic content has cared about public buildings as it cared about mosques and residential buildings, because Islam, as a creed, regulates the behaviour of the

individuals and the society everywhere, even at public buildings, which became an important subject today. As long as function controls the architectural design, the Islamic content still plays its role, according to the function and type of the building. Although there has been western influence on design principles of public buildings in the Arab countries, Muslim architects must consider Islamic principles beside modern technology and economic capability, and using appropriate technology that suits the methods of construction and local materials available.

The economic factor is stressed as a bottom line affecting the architectural design since it serves the economy of the Islamic society. The content includes the Islamic society economy that suits its programs for economic and social development, consequently effecting the search for the best methods and local materials for construction. Hence, Islamic content can not be separated from the economic context of the society, to provide good opportunities for Muslims and develop their individual capabilities (Ibrahim 1988).

5.4.3.1 Workplaces

Work in administrative buildings has direct contact with people need closeness, cooperation, direct correspondence between different administrations and different departments working as one unit. The introvert plan surrounding a spatial axis, provides a suitable solution, together with its environmental and acoustic advantages.

Since work is an obligation in Islam, equaling prayer, then the space zoning of working places should urge extra work through providing calmness, tranquility, beauty and order. Perfection of work, is one of the values of the real Muslim, as said in the Holy Quran verse 9: 105.

It is very important to provide a suitable central area at the workplace - whenever possible- for Muslim employees to perform prayers, which radiates the call for praying reminding Muslims of their religious duty. Thus, the form follows the content and integrates with it, and hence the search for the appropriate aesthetic and formal values for the potentialities of the place and its heritage. As well as reviving the inherited architectural vocabulary could enrich contemporary urbanism.

5.4.3.2 Muslim women and workplaces

The Holy Quran gave Muslim women economic and social rights long ago. From the beginning of Islam, women have been legally entitled to inherit and bequeath property, holding their wealth in their own names even after marriage, without obligation to contribute that wealth to their husbands or their families. The important role played by the wives of the Prophet in course of his ministry life would be mentioned. In Islam, the stability of family life and the security of women in the society come as the first priority, after that Muslim woman can join the workforce, for example, the development of Saudi Arabia has brought with it increasing opportunities for women in both education and employment. In terms of employment, women now play an active role in teaching, medicine, social work and broadcasting (Al-Farsy, 1990).

Islam approves working for Muslim woman if there any real need and under some conditions, for example:

- Adhering to the Islamic instructions.
- Wearing suitable Islamic dress.
- Avoiding mixing with men unless necessary.
- Choosing suitable kind of work that doesn't contradict with her soft nature.
- Earning lawful money from lawful work.

The Muslim architect should consider Islamic values in the design of work places for women, such as:

- Avoiding mixing between men and women as much as possible in area zoning.
- Providing suitable area for women's prayers.
- Locating women's toilets far than men's and provide separate entrances.

5.4.3.3 Educational buildings

Islam urges Muslims to study and learn. Since the early years of Islam, mosques played the role of educational Centres. Books and learning were mentioned several times in the Holy Quran. It worth mentioning that the first verses of the Holy Quran revealed to the Prophet were verses 96: 1-5 (Khan & al-Hilali 1995): " *Read! In the name of your Lord*

Who created (all that exists). He has created man from a clot (a piece of thick coagulated blood). Read! And your Lord is the Most Generous. Who has taught (the writing) by the pen. He has taught man that which he knew not".

Prophet Muhammad urged Muslims to learn and spread knowledge, he said: *"Seeking knowledge is an obligatory upon every Muslim male and female"*. And he also said: *"Get knowledge to make use of it and not to show off"* (OICC, Ibrahim & Mustafa 1922: p. 504).

Schools are a type of public buildings, which need much consideration during design process especially when dealing with elementary schools where the intellectual and spiritual formulation of the child begins. The educational curriculum should be directly related to religion, not only for performing duties, but also for amending the behaviour of the child. In the early years of Islam, mosques played the role of schools. Eventually, the schools were founded and started to play part of the mosque's role. The Muslim architect thus adhered to the rectangular plan in the *qibla iwan* (as in the *qibla iwan* in early mosques) before linking the two functions together in one architectural entity (structure). Thus, the school surrounded the praying area has directly linked to the mosque. Later on, in the Ottoman era, the mosque became a component of the school complex, which occupied its forepart.

Hence, the praying area (*musalla*) is a fundamental element of the school, where the young Muslim practices his duties, receives his Islamic lessons, reading Quran, commentary, recitation, Hadith and manners. Also, the educational methodology is linked to the architectural methodology formulating the Islamic content in design, taking into consideration the functional aspects in school design, such as natural lighting, acoustic studies and internal installations. The praying area (*musalla*) is directly related to the library, where young Muslim practices reading and learning about his heritage.

On the other hand, the school could encompass a swimming pool and a horse riding course, as the Caliph Umar ibn el-Khattab (the second successor of Prophet Muhammad) said: " *Teach your sons swimming, archery, and riding horses*" (OICC, Ibrahim & Mustafa 1922: 505). Islamic context in practicing sports should be reflected

in the architectural composition of the Islamic school. Thus, the architectural process is in parallel ideologically, scientifically and physically to enhance the education of Muslim children.

5.4.3.4 Recreational facilities

Recreational facilities are another type of public buildings, which deserve special consideration in design. Islam instructions do not contradict with physical or spiritual entertainment within the framework of Islamic values. As Lady 'Aisha (Prophet Muhammad's wife) said: "*I raced the prophet once and won him, and later on, when I put on more weight, he won me; I said to him one for one*" narrated by al-Bukhari (OICC, Ibrahim & Mustafa 1922: p. 505).

Ibn Umar (a companion of the Prophet) also said: *"The prophet raced his fellows on emaciated horses from al-Haifa'a to Thaniyat al- Wada, and raced on healthy horses from al-Thaniya to bani-Zuraiq Mosque, and I was among those he raced.*

The Prophet said: *"You have an obligation towards your body*" (OICC, Ibrahim & Mustafa 1922: p. 505).

The design of entertainment zones should care for privacy; Islamic perspective of entertainment differs according to age and sex. Teenager boys and girls should be separated in covered structures or open areas, as well as adult males and females. However, the location of the praying area in the structure of the recreational facility should not be neglected. Regular praying does not contradict with entertainment, nevertheless praying is an entertainment for the soul that should be complementary with the entertainment of the body. This is the essence of the Islamic context in the design of recreational facilities. Then, come the complementary architectural elements, such as landscaping. Islam calls for cleanliness, beautification, greening and caring for the environment, according to the Prophetic Hadith mentioned previously (p. 5.11).

5.4.3.5 Touristic villages and buildings

Waziri (1988, pp. 30, 31) recommends that the designer of touristic villages and buildings in Muslim countries, especially in coastal villages, should consider the Islamic values in his design, by providing the following:

Complete privacy, both in urban design and buildings, by separating male youth zones from families' zones.

Privacy on beaches and in recreational zones, and providing indoor swimming pools and/ or allocating some parts of the beach only for women.

Area for prayers on the beach, such as wide sheds, to be used for relaxation and for prayers at prayer time.

Separation of males and females in sports playgrounds.

Privacy in residential areas and chalets, by separating youth' zones from families zones; every chalet should have its private garden.

Providing touristic cultural services for entertainment, instead of gambling casinos and nightclubs, which are strictly forbidden in Islam.

The use of proper architectural elements and expressions, for example the designer should not use Islamic architectural elements in gambling casinos or nightclubs, while their activities contradict with Islamic teachings and give false impression about the place.

Those were the Islamic contents of architecture, which suit all times and places, as God says in verse 9: 109 (Khan & al- Hilali 1995):

" Is it then he who laid the foundation of his building on piety to Allah (God) and His Good Pleasure better, or he who laid the foundation of his building on the brink of an undetermined precipice ready to crumble down, so that it crumbled to pieces with him into the Fire of Hell. And Allah guides not the people who are Zalimun (cruel, violent, proud, polytheist and wrongdoer)".

5.5 SUMMARY

This chapter aimed to review existing literature on Islamic architecture and develop an understanding of the influence of culture and environment on the practice of Islamic architecture, including an analysis of the role of Islamic contents on place making and architectural language.

The chapter endavoured to identify the architectural characteristics that flow from both Islamic concepts and the practice of architecture, which attempts to fulfil Islamic faith, ritual and culture. Also, to review existing literature on Islamic architecture, criticizing and comparing the Western viewpoint of Islamic architecture with the Muslim viewpoint. It explained the Islamic perspective of the architectural theory and discussed Islamic theory in architecture. As well as, reviewing Islamic content of architecture in general and of specific types of buildings in particular, such as mosques, residential and public buildings.

CHAPTER 6:

FULFILLING MUSLIMS ARCHITECTURAL NEEDS

CHAPTER 6. FULFILLING MUSLIMS ARCHITECTURAL NEEDS

6.1 INTRODUCTION

Islamic Legislation in urban and city planning has been an important factor in city planning and development in the Arab Muslim world until recently when it was replaced by foreign Western legislation without sufficient examination of the Western law. The Islamic legislation has been developed and documented by a great number of researchers, builders and engineers throughout the last fourteen centuries. That law preserved the unique style of Arabian and Islamic buildings and cities. There are several special references on the subject written as early as 150 AH (800 AD), while almost all books of Fiqh (Islamic law) contain material related to building legislation. The negligence of that law and the imposition of imported law have resulted in cities without Arabian Islamic identity (Hammad 1997).

Asfour (1998) identifies a key cultural problem in his analysis of the cut and paste mentality, which encourages the wrenching of images and ideas from one cultural context and arbitrarily sticking them into another (figures 6.1, 6.2, 6.3, 6.4).

In the Arab world borrowing architectural ideas, whether foreign western or historical Islamic ideas, is usually problematic as it involves little creative talent, and so much image cloning. For the past half century, this problematic condition became a passive phenomenon in the Arab world. Architectural practice continued to subdue itself to social aspirations through naive imaging of Western architecture, which is a product of different culture, background and experience, this phenomenon has passively affected design quality. This is true in the case of Modernism as well as revival of traditional form of architecture. Both do not engage with Arab intellectualism and can hardly invoke improvement on the percipient crisis of the built environment in an Islamic context. To produce a discourse, Asfour (1998) suggests that Arabian architectural history has to be reinterpreted by architects for architects, to generate design issues relevant to the practice.

Chapter 5 briefly reviewed existing literature on Islamic architecture, and critically compared the Western viewpoint of Islamic architecture with the Muslim viewpoint.

It explained the Islamic perspective of the architectural theory, and discussed Islamic theory in architecture. Also, it reviewed the Islamic concept of architecture in general and of specific types of buildings in particular, such as mosques, residential and public buildings.

The Islamic architectural concept laid down in chapter 5 is now used in this chapter to test to what extent contemporary architecture meets Muslims' needs according to their Islamic teachings, which refer to the main sources of Islamic doctrine. Chapter 6 is, therefore, complementing chapter 5 to develop an understanding of how Islamic doctrinal concepts are manifest in architecture.

To achieve these aims, two substantial questions have to be addressed. Firstly, what is the meaning of Islamic Architecture?, considering both Western and Muslim viewpoints. Secondly, does contemporary architecture fulfil Muslims' needs according to Islamic teachings?. This question will be addressed against the crisis of Arabian contemporary architecture through the existing literature.

6.2 FIRST QUESTION: WHAT IS THE MEANING OF ISLAMIC ARCHITECTURE?

Grube (1978) affirms that the first question that must be asked is whether there is such a thing as "Islamic Architecture". Is it the architecture produced for and by Muslims to serve Islam as a religion, referring, consequently, only to that architecture which did serve a religious function -the mosque, the tomb, and the *madrasa?* Or does it mean all the architecture produced in Muslim lands? And if this should be so, what does "Islamic" mean in this context? If "Islamic" is not an adjective defining a religious quality, should it be understood as a word that identifies a special kind of architecture, that of a civilization reflecting, or determined by, special qualities inherent in Islam as a cultural phenomenon. Does such architecture exist? He adds, is there an architecture that can be recognized as different from other architectures created outside Islam? If the answer to this question is in the affirmative, he says, and there seems little question that it must be, we are faced with the need to define those qualities that set Islamic architecture apart from non-Islamic architecture.

Ibrahim (1980) explains that for a great number of people, the concept of the Islamic

architecture denotes tangible characteristics of some architectural features like *mashrabiya*, arch, dome, or any other architectural pattern, but where is Islam in all this? He concluds that it is very difficult to find a general rule upon which we can define Islamic architecture, because there are certain variable and stable factors which affect Islamic architecture. The stable factors in all places and in all times are the teachings of Islam.

Wiet (1974) defines Islamic art and architecture as ' the whole ensemble of art produced in those countries which were subject to the law of Islam and ruled by Mohammedan (Muslims) princes'. Wiet's opinion could be partially correct, only if we consider that the buildings themselves were subject to the law of Islam, in other words, if the building design followed or applied the teachings of Islam.

Michell (1978) believes that Islamic buildings express the religious beliefs, social and economic structure, political motivation and visual sensibility of a pervasive and unified tradition. Underlying the variations from century to century and from region to region, a cohesive unity of architectural conception testifies to the power and breadth of Islam.

Ibrahim (1996) raises a critical question; "*Is it Islamic Architecture or Architecture in Islam*?". In his argument about naming the Islamic architecture, Ibrahim explains that a number of researchers objected to this nomination. Some tried to call it architecture of the Muslims as an alternative to Islamic architecture.

Western scholars have analyzed, evaluated and presented the monumental architecture of the Islamic periods on the basis of its form, regardless of its content.

Recently, Muslim scholars and few western researchers began to search for the Islamic content in this architecture and found that many of the heritage buildings which are called "*Islamic Architecture*" do not hold the Islamic content for instance tombs. Search was extended to the Islamic theory in architecture, considering that Islam is a religion for all times and places and its architecture achievements should not be limited to a certain time or a specific place. Therefore, Islamic architectural heritage would be analyzed from two scopes, the first one (related to the content) is firm and does not change with place or time, the second one (related to the form) changes with the change

of time and place.

Examples of architectural heritage (which appeared during the Islamic epochs) represent architecture of the elite of Princes and Governors (*Walis*), such as palaces, fortresses, mosques, schools and *sabils*, where all artistic talents of building artisan have flourished. Yet the architecture of this epoch does not honestly reflect a true image of the society and the public. The monumental buildings were the creation of Princes and *Walis* with no contribution from the society itself. For example, the urban design of the Caliph al-Mansour' s historical city "Baghdad" has expressed total separation between the ruler and the public, this expression is not, in a religious context, "Islamic Architecture" and does not represent the Muslim society. Then, the search for another expression becomes insistent, it may be called "*architecture of Muslims*".

Therefor, Ibrahim searches for another expression would closer to the Islamic teachings in architecture. That means the extraction of all Islamic values from the Holy Quran, the Sunnah and books of the virtuous predecessors in identifying all that concerns construction, urban development and architecture, either in text or by analogy. So, if for example, moderation in Islam is the governing factor in all the actions of the Muslim, in his walk, his eating, drinking, speech and dealings, it is therefore the basic principles that govern the work of building, development and architecture. This concept is governed by the principles of urban design of the place with adherence to Islamic content in design, as in designing a mosque or a residence or other buildings. Moderation also governs the method of dealing with the build without extravagance, when choosing the materials or ornaments or the construction method or other factors concerning the building designed on the basis of actual needs.

This would be by adhering to Islamic contents, considering diversity of forms according to each Muslim country, respecting its own heritage, environmental and urban components throughout history; a matter that would combine between heritage and contemporary architecture, expressing the identity of each country under the Islamic umbrella.

Ibrahim (1996) believes that the subject of architecture in Islam is more concerned with content, and more expressive of the Islamic view of architectural theory, also more

definite, worldwide, without being limited to the place. This is a positive criterion that makes the description of Islamic architecture clearer in presenting permanent content, compared to the changing form according to time and place.

A better understanding of the formal values in the architecture of the Islamic periods in a specific time and place comes after understanding the constant Islamic context. The Islamic context determines the forms and spaces composing the architectural work and organizes the functional relations between them, then comes the artistic expression through local building materials and methods, in addition to the technical and cultural inherited values of the society which do not contradict with the Islamic content. In other words, Muslim's architecture is considered as a local architecture based on Islamic values (OICC, Ibrahim & Mustafa 1992).

In his quest for identity, viewed from an Arab/Islamic standpoint, Akkash (1998) identifies two interrelated problems in the western conceptualization of the "Islamic" term - in relation to the question of identity; detachment and fixity. Identifying the "Islamic" necessarily involves detaching the conceiving subject from the conceived object, and, consequently, transforming the detached object into a fixed historical entity. Detachment and fixity are inherent in the question "what is Islamic architecture" or "what is Islamic" about a particular object or group of objects. It is the typical question posed by European art and architecture historians when they come in contact with the alien and unfamiliar products of other cultures. In the opening chapter of *The Formation of Islamic Art,* the distinguished and highly influential Islamic art and architecture historian, Oleg Grabar, introduces the notion of "Islamic art" with a reference to the late George Marcais' proposition in *L'art de l'Islam* that anyone with limited artistic knowledge, who leafs through photographs of major works of art from the world over, would automatically notice a group of works identifiable as "Islamic, Muslim, Moorish, Muhammadan, or Saracenic". In this encounter these works are identified as sharing a number of features which constitute their "personality", a quality by which they were differentiated from masterpieces of other artistic traditions. This exemplifies the way in which the "Islamic category" was born in the imagination of western scholars, beginning with an encounter with the "different" and followed by a self-conscious

process of characterization and identification. Based on an intentional dealing with a reality as a detached object, this conceptualization has naturally led to an awareness of identity through contrast and comparison between West and East, 'us' and 'them'.

This moment of detachment is shared by many western and non-western scholars alike. It has led to a preoccupation with identifying the "Islamic", an attitude from which has emerged almost all Eurocentric discourses on Islamic architecture. In the search for a distinctive identity, Arab/Muslim scholars and architects have posited the same question without being aware of the inherent existent split that comes with it. That an Arab may come up with a different answer to this same question is irrelevant, because the main issue here is not authenticity and modes of representation but attitude and modes of understanding. In the search for the "Islamic" the failure is caused by the very separative and detached ontological condition which is inherent in question itself.

Historical fixity is another problem associated with the western conceptualization of the "Islamic". The ideological construction of "Islamic architecture" as an objective, self-contained historical reality, has led to "Islamic architecture" becoming a fixed historical reality or a given constituted entity of the past awaiting discovery and analysis. Fixity is an important feature the western discourses on Islamic architecture shared with the colonial - orientalists discourse. The orientalist quest for the "Islamic", the consequent identification of the other, and the construction of its otherness, has transformed the object into a complete, rigid and unchanging historical entity with clearly definable characteristics. The expression "Islamic architecture" has since come to designate the pre-modern architecture found in the lands that were part of the old Islamic Empire. Almost all books on the topic take this as a starting point. When an expression such as "contemporary Islamic architecture" is used, it normally refers to a hybrid type of architecture which evokes, in one form or another, traditional Islamic imagery. The western preoccupation with the "Islamic" has rigidly isolated Muslim architecture as something of the past and turned them into objects of "heritage".

The two problems of detachment and fixity overlap and are further compounded when the adjective "Islamic" is understood in the sense of culture rather than religion. For art and architectural historians the adjective "Islamic" presents a methodological difficulty

as there are no apparent, rational and consistent links between forms and faith. To overcome this and to achieve the scientific consistency required for theorizing the field a linguistic twist is introduced. In answering the question: "what does the word 'Islamic' mean when used as an adjective modifying the noun "art" Grabar argues that it is not compatible with "Christian" or "Buddhist" in "Christian or Buddhist art", but rather with "Gothic" or "Baroque" in "Gothic or Baroque art". Thus "Islamic" is interpreted as referring to the "culture or civilization" of Islam, or the agency that transformed the native cultures wherever Islam has come to be the predominant religion. Ernest Grube in "What is Islamic Architecture?" an introductory article to the popular book *Architecture of the Islamic World,* poses the same question and reaches the same conclusion. Robert Hillenbrand, in his recent monumental survey of Islamic architecture, presents brief discussion of the question, concluding that the appropriateness of the term "Islamic" derives from the fact that "it refers as much to a culture (a culture as self-contained as that of Western Europe) than to a faith". For the sake of theoretical and methodological consistency of the historical inquiry the term "Islamic" is primarily conceived by art and architectural historians as "culture" rather than "religion". Thus historians have stretched the meaning of the adjective "Islamic" to the level of ambiguity in order to provide a viable strategy for their historical project, which, although cultural in scope, has remained historical in methodology. This view poses a particular problem in the Arab/Islamic context where the sense of religion takes precedence over the ambiguous and much confused notion of culture. Both in the popular and scholarly usage of the Arabic adjectives *Islami* or *Islamiyya* "Islamic" faith is unequivocally the main reference. In a strict linguistic sense, the terms do not even include cultural connotations. If reference to the Islamic culture is to be made the modern amorphous term *thaqafa* has to be used. The dominant western conceptions of the "Islamic" are also in conflict with the nationalistic conceptions of the "Arab", with both being responsible for intensifying the current undesirable social and political complications (Akkach 1998, pp. 4 – 6).

6.3 SECOND QUESTION: DOES CONTEMPORARY ARCHITECTURE FULFIL MUSLIMS' NEEDS ACCORDING TO THEIR ISLAMIC TEACHINGS?

Davey (1998) embodies the crisis of contemporary architecture in the Arab world by asking this hard question "*Why is so much modern architecture in the Middle East so problematic?*" He argues that many thriving cities in the Arab world are overgrown with a brushwood of luxurious towers seeking attention over undergrowth formed by some of the flashiest and most tawdry malls in the world. Davey (1998) explains that there is a competitive asperity and lack of scale in much of the work rarely found anywhere else. Many features of Islamic architecture have largely been destroyed by the Modern Movement with its reverence for object buildings, functional separation and new forms of structure and construction. Davey (1998) concludes that '*in the West, where public buildings are traditionally often to be found surrounded by urban space, the Movement's obsession with detached structures was bad enough, in the Middle East it was disastrous*'. Finally, Davey (1998) suggests that a Hope for the future of architecture in the Middle East lies as much in reinterpreting traditional culture as with a desperately needed understanding of ecological imperatives. There are signs that at last the tide is turning and that the area may have started to have lessons to teach the rest of the world.

Khaled Asfour (1998) identifies a serious cultural problem in Islamic cities is the cut-and-paste policy, which pulls the images and ideas from one cultural context and randomly sticks them into another. In the Arab world, borrowing architectural ideas (Western or historical) is often problematic as it obstructs creativity and talent, and produces much image cloning. For the past half century, this problematic condition became a phenomenon in the Arab world, where architectural practice continued to subvert itself to social aspirations through naive imaging and almost neglected the discourse, internal to the profession, that usually monitors design quality. This is true in the case of Modernism as well as the revival of traditional architectural styles. To improve the current situation of the built environment of the Arab world, architectural history Islamic building legislation have to be reinterpreted to generate design issues relevant to the practice of modern Islamic architecture. Asfour is quite right, and

answers Davey's question that "*why is so much modern architecture in the Middle East so problematic?*" Simply it is happening because of two major reasons; firstly, many Muslim societies have been affected by western culture and /or deviated from their Islamic teachings, and have not been keen on preserving their Arabian Islamic identity, whether socially or architecturally. Secondly, because of cut-and-paste mentality, contemporary Arabian architecture has been exposed to outside influences that, eventually, caused it to be alienated from its peculiar sense of identity and finally, to lose its character. The solution lies in; firstly, Ibrahim's (1996) call for extraction of all Islamic values from the Holy Quran, the Sunnah and books of the virtuous predecessors in identifying all that concerns construction, urban development and architecture, either in text or by analogy. Secondly, OICC, Ibrahim & Mustafa' s (1992) call for immediate attention towards attempting a "revival process" for accentuating the originality of Arabian Islamic architecture, and

Serageldin (1986) has describes the effect as a process of disassociation 'of ruling elites' from their cultural roots. This has led to the separation of cultural perception, where the historic heritage cultural, religious, spiritual - is identified with the past, backwardness and poverty, while the image of "progress" is borrowed from elsewhere, namely the West. He calls on architects to attempt to 'convince the elites ... to replace their imported image of progress with a more coherent and effective one', if they cannot, there is going to be little chance to reverse that widespread degradation of the urban character and architectural expression that is so prevalent throughout the Muslim world.

Serageldin holds out other forms of hope, for in Islam "*all that is not expressly forbidden is allowed*", in other words, he suggested, public interest can be judged to be "*justification for changing the past forms and coping with an ever-changing present and future*". Serageldin's viewpoint goes deep into Islamic ideology, and it could be not clear people from non-Islamic background. However, he believes that this underlying attitude should lead to the generation of appropriate forms of Middle Eastern architecture as sustainable as were those of tradition. Coupled with the underlying Muslim belief in humanity's overriding duty to act as stewards of the earth - as the Holy

Quran said in verse 2: 30 (Ali 1993). It could produce works of great and appropriate invention, which can draw from the past without copying, as well as using the most sophisticated contemporary technology, which maybe help the Arabian architecture to revert to its Islamic identity. Serageldin looks to tradition and Muslim morality to find principles of action for today (Davey 1998).

Hammad (1997) believes in the importance of law in planning and building and that the whole style of a city could be preserved or destroyed by a single law. Arab cities and even traditional cities have been developed without any consideration of their Arabian style and Islamic function. The end result is that owners may be forced to haphazardly construct outside the legislation framework to fulfill their social needs, The consequence is buildings and cities without Arabian Islamic identity; where even the historical parts of cities changed without any consideration of their unique monumental style. Most of the old fabric in Cairo, Damascus and Aleppo has been completely demolished.

In the Arab world, Asfour (1997) notes that the intellectual environment is different from that of the West. While architectural production is so interactive with society through naive imaging, architectural debate is suffering from internal crisis. It does not have the inquisitive consciousness by which it may screen western ideas. While borrowing can make a big gap between the society and its inherited culture. In the Arab world, this is equally true for both cases: borrowing from local history, and borrowing from foreign western cultures.

6.4 THE QUESTIONS ARE PREVIOUSLY UNANSWERED

In his essay "What is Islamic Architecture?" Grube (1978) finds that it would still take many years of research to satisfactorily "explain" the phenomenon of Islamic architecture. Even to correlate the physical appearance of Islamic architecture in the various parts of the Muslim world with the "spirit" of Islam as it prevailed in any given region and period. Such an interpretation must eventually be attempted if we ever want to go beyond the mere cataloguing and describing of the surviving monuments, although such precise cataloguing must, of course, form its basis. Much groundwork is still to be accomplished before we may safely venture forward, and only a true

collaboration between the political, religious, economic and literary historians on the one hand and the art historians on the other may bring us nearer the desired goal of a more complete and accurate understanding of Islamic architecture.

Ibrahim (1980) affirms that it is very difficult to claim that there is an accepted definition of Islamic planning or Islamic architecture. He believed that Islam is a theology, in addition to its being a style of life, which covers all social, political, economic, educational, cultural, hygienic, and behavioral aspects. On the other hand, architecture has always been a reflection of the cultural and natural environment of the society. This same phenomenon applies to architecture at any place in the Islamic world.

The International Symposium on Islamic Architecture and Urbanism at Dammam was the expression of an extensive search to find an appropriate definition for the concept of Islamic architecture. In his research, Kuban (1983) declares that this search began with an examination of the Islamic monuments themselves and the historical environment in which they were created, seeking a unified architectural expression of time and space in those diverse forms and not finding it.

Clearly there is something wrong with much of the architecture of the Arab world, when taken in the context of Islamic teachings. Asfour (1998) urges architects to re-understand the lessons of tradition without copying historic forms.

6.5 DISCUSSION

Ibrahim (1980) explains that from the evocation point of view, Islamic architecture in its broad sense must respond to the needs (of Muslims). These must in turn conform to the teachings of Islam. Every Muslim designer or planner must be guided by these teachings. Argument may extend, he adds, and opinions may vary on the revival of the cultural values of Islamic architecture in contemporary urban design and planning. Yet revival of these values do not necessarily mean an imitation or simplification of the design of these buildings as some people might imagine, he clarified, but we must begin a new active era of construction, and design. Islamic values in old or contemporary architecture must have had their reflections on the daily-applied teachings of Islam at

home, or at office. In other words we want to know the ideal pattern of buildings or streets of the contemporary Islamic City from the religious point of view. The call for establishing rules for Islamic culture is an inclusive call. The main theme "The revival of Islamic values in contemporary architecture" represents one aspect of its diversified branches.

That is why Hammad (1997) wonders it is strange enough that Islamic legislation was unknown to the majority of planners and architects in Arab countries until recently, and little effort had been exerted to collect this law and present it in an easy way for further examination.

Akkash (1998) finds that the main problems of the historical discourse is that it provides limited scope for alternative readings and understanding of the phenomenon, and that it isolates "Islamic architecture" as a phenomenon of the past to be understood entirely within its own historic, cultural and symbolic contexts. The significance of these problems can be better appreciated when the difference in purpose that drives different individuals or communities to seek meanings in architectural forms is brought into focus. An architectural historian or an anthropologist seeking to understand Arab/Islamic culture and architecture does not necessarily share the same drive and purpose of an Arab/Muslim wanting to engage in his/her own world in a meaningful way. For the former it is a matter of intellectual curiosity and academic pursuit whereas for the latter it is a matter of self-awareness and identity. As the knowledge developed by the former is not necessarily useful or relevant to the concerns of the latter, the conceptual approach to the study of Islamic architecture becomes problematic. It is ironic that although the intellectual curiosity, which drove western scholars to search for the "alien" and which stimulated the alien's historical conciseness, is not shared by the "alien" itself, the "alien" still uses the approach and material of the other to search for its own identity.

6.6 CONCLUSION

Islamic architecture does exist. But, it does not mean only the historical architecture of the golden Islamic eras.

Islamic architecture means the architecture for Muslims that reflects the Islamic values and expresses the spirit of Islam.

Contemporary architecture of the Muslim Arab world has been exposed to several outside influences, which has eventually caused it to lose its character.

This crisis requires immediate attention towards attempting a "revival process" by recognizing the bases and principles of Islamic architecture.

To improve the current situation of architecture in the Arab and Islamic world, Arabian architectural history and Islamic building legislation have to be reinterpreted to generate design issues relevant to the practice of modern architecture.

6.7 SUMMARY

This chapter aimed to examine Islamic architecture and test to what extent contemporary architecture meets Muslims' needs according to their Islamic teachings, referred to the main resources of Islamic doctrine, to develop an understanding of how Islamic doctrinal concepts are manifest in architectural.

The chapter discussed and studied the substantial questions, first one was, what is the meaning of "Islamic Architecture"? Both Western and Muslim view point have been considered.

The second question was, does contemporary architecture fulfil Muslims' needs and demands according to Islamic teachings? This aspect has been examined against crisis of Arabian contemporary architecture through the existent literature.

After examining the literature it is concluded that these questions are previously answered. An explanation of why it is worthwhile to answer these questions has been made.

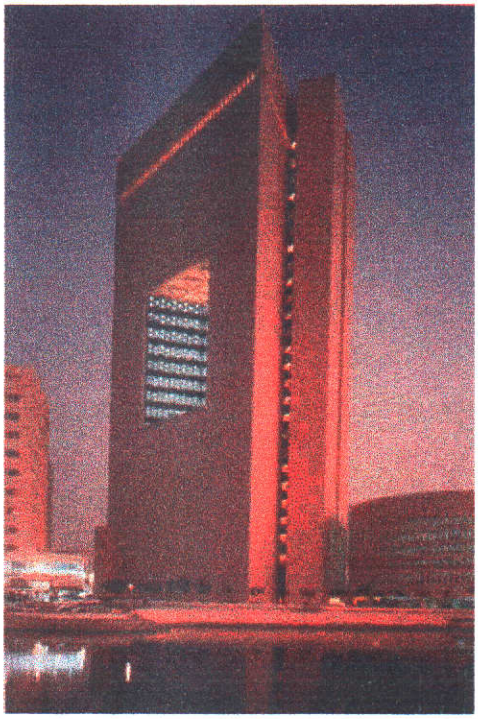


Figure 6.1 – National commercial Bank, Jeddah, Saudi Arabia (after Kultermann, 1999)

Figure 6.2 – National Bank of Kuwait (after Kultermann, 1999)

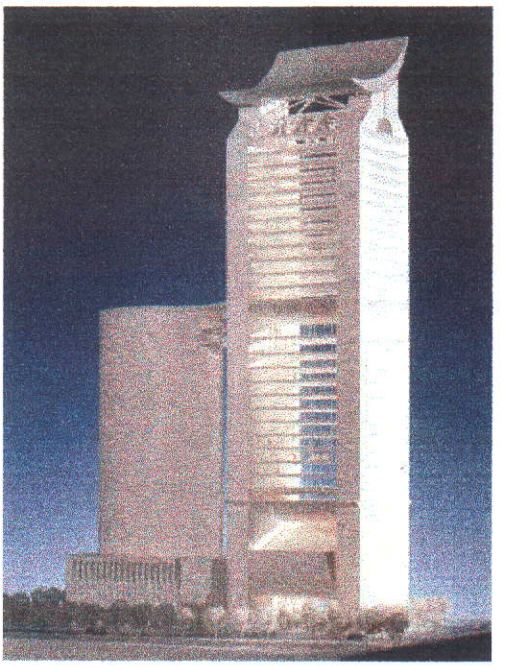


Figure 6.3 – Chamber of Commerce and Industry, Abu Dhabi (after Kultermann, 1999)

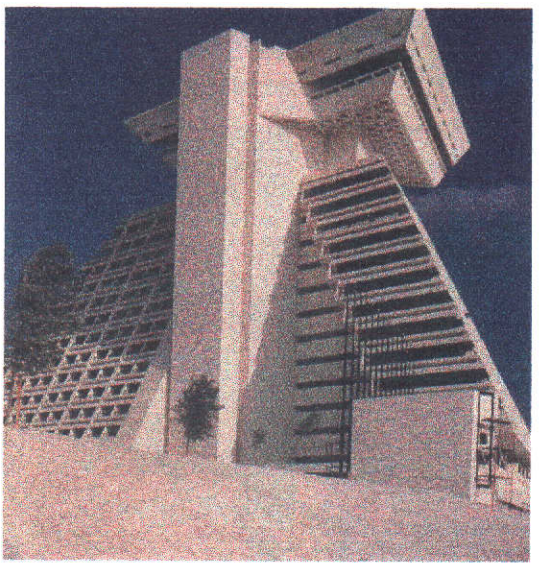


Figure 6.4 – Doha Sheraton Hotel and Conference Center (after Kultermann, 1999)

CHAPTER 7: CASE STUDY

CHAPTER 7. CASE STUDY

7.1 INTRODUCTION

Searching for the reasons of alienation and lost of identity, Hammad (1997) finds that the replacement of the Islamic architectural legislation by a modern one, without any reference to what already existed or suiting the needs of Arab society, caused extreme change in the style of the Arab cities. Moreover, it has destroyed or neglected its Islamic architectural heritage.

Asfour (1997) wonders, if we excuse Arab architects and researchers for not triggering a inquisitive conscious debate to foreign theories, what excuse can we give them for not depending on their own historic forms to generate a discussion? He thinks that the condition of being alien and remote are traditions share with Modernism. He suggests that research and teaching of the architectural history of the Muslim world would improve the situation and stop this alienation.

Serageldin (1990) explains that the dichotomies and tensions of contemporary Muslim societies and their inability to confront their own selves pose problems for all contemporary architects and all Muslim intellectuals.

Indeed one has to recognize the need to resymbolize the existing environment in Muslim societies as a fundamental task of contemporary intellectuals in the Muslim world, Serageldin added. Muslim architects should focus on the intellectual content of the form giving new architecture and on the role of a new architecture in reshaping and resymbolizing the environment. Serageldin (1990) suggests that an intellectual approach to contemporary expressions of Islam in buildings should promote a more thoughtful and enlightened critique of the efforts of contemporary architects and encourage constructive innovation. While this is a hard task, it is nevertheless important to open new horizons in the continuing search for the development of a new and contemporary architectural language in the Muslim world. Much intellectual effort as well as architectural talent will be required, for the future of Muslim societies is, even now, being forged.

Chapter 6 has raised two substantial questions; first one was, *what is the meaning of "Islamic Architecture"*? Both Western and Muslim view point have been considered.

The second question was, *does contemporary architecture fulfil Muslims' needs and demands according to Islamic teachings*? This aspect has been examined against crisis of Arabian contemporary architecture through the existent literature. After examining the literature it is concluded that these questions are previously unanswered. An explanation of why it is worthwhile to answer these questions has been made.

The aim of this chapter is mainly to answer the questions of chapter 6 by defining Arabian Islamic architecture in terms of Islamic teachings and through interpreting from Islamic doctrine and Arabian culture and environment, some principles, which can be applied to architectural practice. Also defining the principal characteristics of Islamic architecture that embody the needs and demands of Muslims according to their Islamic teachings, which enable us to examine Arabian architecture Islamically.

To achieve that aim, this chapter includes within its scope developing a further understanding of the role of architectural practices by analytical study of buildings from the Pre-modern Islamic periods and contemporary architecture in Egypt by undertaking the following:

1. Setting architectural standards and principles that satisfy Muslims architectural needs, by reintroducing (rewriting, classifying and arranging) Islamic architectural principles concluded in chapter 5, to measure whether or not the selected buildings are Islamically successful.

2. Analyzing architectural plans, sections and elevations of the selected buildings, through both writing and drawings, identifying their strengths and/or weaknesses in conforming to Islamic concepts. The Organization of Islamic Capitals and Cities' book 1992, *Principles of Architectural design and Urban Planning during different Islamic eras*", comprises one of the principle references at this stage.

3. Applying the emerged definitions and architectural standards on specific contemporary buildings of Hassan Fathy and others, examining to what extent

contemporary architecture meets Muslims' needs according to their Islamic teachings. Steel 1997 and Richards et al. 1985' books about Hassan Fathy, will be taken as a base at this stage.

This chapter requires the collection of data from original sources, organizations and scholars interested and specialized in Islamic architecture. Research has already been undertaken by visiting Egypt for six weeks to collect data such as drawings, plans, photographs, texts, and to discuss with scholars of Islamic architecture. The suburb of Al-Gammaliyah and Al-Mu'izz Street (two places in old city of Cairo are very rich in Islamic Heritage) were visited. Also, the Cultural Park for Children and Darb Qirmiz Quarter in Cairo (two projects rewarded by Aga Khan Award) were visited and documented. Important data and valuable references have been collected for review and analysis.

Translation from original Arabic scripts into the English language is essential for this research, which is done by the applicant.

7.2 SETTING ARCHITECTURAL STANDARDS OF ISLAMIC ARCHITECTURE

Chapter 4 and 5 have studied and analyzed Arabian Islamic architecture from both historical and Islamic perspective, some architectural standards have been concluded. The following section briefly reintroduces these standards, to be utilized in the rest of this chapter to test the selected case studies and find out to what extent they meet the Islamic requirement.

7.2.1 The Islamic context of architecture

Muslim architect should be obligated to the Quran and the Sunnah of His Prophet Muhammad (p.b.u.h.), since they are the main sources, which determine the fundamental ideas and basic principles of the Islamic society's architecture.

In general, the architecture of Islamic society is based on the following fundamental principles:

- Preservation of the family and/ or society.
- Providing privacy especially for women.

- Avoiding intermixing of genders by separating men and women in private and public zones.
- Preservation of neighbourhood rights.
- Prevention of harm to others.
- Avoiding extravagancy in buildings even in mosques.
- Avoiding construction of lofty buildings.

7.2.2 Some spiritual aspects should be considered in Mosques' design:

- The mosques are erected to worship God and not to glorify the people who donated for their erection.
- The mosque is God's house for people to pray in, stay in and benefit from all its functions.
- The mosque signifies society's economical and aesthetic standards rather than individual standards, without any extravagancy or parsimony.
- It expresses the ability of the Muslim worker to create and prefect his work as required by Islam, also to visualize the Muslim's architectural intellect guided by Islamic values and principles.
- Purity and clarity of the structural configuration which is adequate to the spiritual purity of the Muslim entering God's house, showing his respect to the place.
- The mosque in its content is part of the society, coherent with its urban structure and integrated with its facilities and not an isolated entity. It is the core of the residential neighbourhood, on its smallest scale, and the heart of the Islamic City, on its largest scale.
- Finally producing a genuine architecture expressing the society. Some architects see that the architectural elements inherited in building mosques and its configuration values, assure the mosques function and express its sacredness, which is always achieved by:
    - The cleanliness of the place.
    - The quietness.
    - Strong and safe constructional foundation.

7.2.3 Some concluded principles of Mosques' urban and architectural design:

- The mosque is not a monumental building but rather a part of the urban texture fully integrated in it and linked to its other members.
- Since the mosque is the radiant center in an Islamic society, it has to be centrally located between the urban units and annexed to facility centres such as educational, health, cultural and social centres. It could be surrounded by different administrative facilities concerned with security and financial matters.
- Mosques should not be built close to each other to maintain Muslim unity and brotherhood (Rasdi 1998), and to provide required tranquility during prayers time.
- The location of the ablution area and the toilets should not be positioned in the same direction of the *qibla* it should rather be deflected to its right or left.
- The mosque has to be located close to houses allowing Muslims to hear the callers for prayers and so that they can wash at their homes before leaving to pray.
- If ablution areas are annexed to the mosque, they should be located by side entrances to ensure the mosque's purity.

7.2.4 Some spiritual aspects should be considered in House's design

- The house (from the Islamic perspective) is a social unit where the construction is not separated from the family that lives in it.
- The Islamic content of Muslim family's needs determine the form of the residential space.
- An effective cooperation between the owner, architect and builder during the building process is necessary. The core-house in new settlements and the shell house which is confined to an open space left to the resident to complete its building according to his needs and capabilities, are two suitable approaches to community participation in housing.
- The manual work needed here is urged by Islam, even if the house owner is wealthy

and could hire workers to do this work. The aim is not only to invest manpower in building, but also to strengthen the sense of personality of the Muslim, so as not to depend on others to do his duties.

- Housing (from the Islamic perspective) is the housing of the Islamic society at any time or place. Thus, its architectural form differs according to the different natural and cultural environments, but its content does not differ in different place or time.

- The Islamic residence does not serve the functional and mechanical side only, but it is a comprehensive expression for everyday needs of the family, guided by Islamic principles and values.

- The entrance design should prevent the internal space from being seen from outside. Family members' direction is to the inside, while guests to take the opposite direction, as a principle for providing privacy. Both directions lead to a common area that can be easily used by the family members or added to the guest area as required. This spatial separation can occur on the horizontal extension, or it could be vertically by intervention of spaces vertically or horizontally.

- The privacy of the residence is not only for the interior but towards the outside too. Muslim architect has to consider the outer openings or the architectural elements that are exposed to the outside; mainly all the openings in contemporary architecture do not suit the basis of design or the Islamic content.

- The Islamic content does not extend from the architecture of the Islamic era, but it extends from Islamic fundamentals, values and principles.

- The inner courtyard as one of the main symbolic architectural elements for houses is an inherited feature that represents a true expression for the social and climatic needs required in private houses in this era.

- The design should meet the various demands required in a residential unit during different growth stages of the family members. The house should have enough room in order to allow the separation of boys and girls' bedrooms. A flexible design in the bedroom area can provide this future separation easily.

7.2.5 Some aspects should be considered in Multi-stories Residential Buildings

The other feature is represented in the numerous residential stories of the buildings. Muslim architect has to consider the social behaviour and public manners indicated by Islam, whether it is in the families movement to reach the residential units or by preserving their privacy during this movement, which could be achieved by the following:

- Decreasing the number of residential units that will make use of the vertical connections (elevators) and separating them sufficiently easy. However, some aspects should be considered such as bringing down a sick person or a coffin.
- Decreasing the building vertical extension to attain an equivalent balance between the population density and privacy requirements to avoid any inconvenience acquired from living in high-rise buildings, where the cross-sections areas are small and over crowded in such buildings ruin the privacy indicated in our Islamic conviction.
- In general constructional fundamentals has to be implied in order to achieve the required privacy in considering elevations, openings, directions of windows and locations of outer openings.

The Islamic content considers the house as a place for rest, so it has to provide that together with its functional requirements for the family. The configuration and aesthetic consideration interfere to complete this content, applied through cultural and inherited values to the place. Thus, the Muslim architect should not apply a model type unless it is required for a certain environment serving the massive public and its construction will benefit the Islamic society.

7.2.6 The Islamic context of Workplaces design

Muslim architect should consider Islamic values in the design of work places such as:

- Providing a suitable central area at the workplace - whenever possible- for Muslim employees to perform prayers.

- Providing suitable area for women's prayers.
- Avoiding mixing between men and women as much as possible in area zoning.
- Locating women's toilets far than men's ones and providing separate entrance for it.

7.2.7 The Islamic context of Educational Buildings design

Muslim architect should consider Islamic values in the design of educational buildings such as:

- Not mixing boys and girls in one school if possible, if necessary, boys and girls areas and buildings should be separated.
- Providing mosque or *musalla* at schools or educational buildings is essential.
- Avoiding mixing between male and female staff as much as possible in area zoning.
- Providing staff room for male and another one for female.
- Locating women's toilets far than men's ones and providing separate entrance for it, also the same for girls and boys toilets.
- On the other hand, the school could encompass a swimming pool, a horse riding course and other sports facilities, but not mixing boys and girls at the same place.

7.2.8 The Islamic context of Recreational Facilities design

- The design entertainment zones should care for privacy.
- Islamic perspective of entertainment differs according to age and sex.
- Teenager boys and girls should be separated in covered structures or open areas, as well as adult males and females.
- Providing praying area, regular praying does not contradict with entertainment, nevertheless praying is an entertainment for the soul that should be complementary with the entertainment of the body.

7.2.9 The Islamic context of Touristic Villages and Buildings

Waziri (1988) recommends that the designer of Muslim touristic villages and buildings, especially in coastal villages, should consider the Islamic values in his design, by providing the following:

- Complete privacy, both in urban design and buildings, by separating male youth zones and areas from families' zones.
- Privacy on beaches and in recreational areas, and providing indoor swimming pools and/ or allocating some parts of the beach only for women.
- Area for prayers on the beach, such as wide sheds, to be used for relaxation and for prayers at prayer time.
- Separation of males and females in sports playgrounds.
- Privacy in residential areas and chalets, by separating youth' zones from families zones; every chalet should have its private garden.
- Providing touristic cultural services for entertainment, instead of gambling casinos and nightclubs, which are strictly forbidden in Islam.
- The use of proper architectural elements and expressions, for example the designer should not use Islamic architectural elements in gambling casinos or nightclubs, while their activities contradict with Islamic teachings and give false impression about the place.

7.3 MAIN CHARACTERISTICS OF ARABIAN ISLAMIC ARCHITECTURE

According to Ibrahim (1983) some major features of Islamic architecture, which are found in Egypt as an example of Arabian architecture, could be classified as following:

- Organic expression of architectural elements
- The contrast between void and solid surfaces
- The architectural expression of structural elements

- The harmony in the architectural forms
- The integration of spaces
- Applying introvert design
- Using Gradual cross-section of the building
- Environmental control and climatic treatments
- Using geometric patterns
- Landscaping internal courtyards as the everyday living area of the family and to help in cooling the domestic climate.
- Using suitable construction methods and building available materials

7.4 CASE STUDY 1: To test architectural standards of successful architecture according to Islamic doctrine (by using some buildings from Pre-modern Islamic era).

7.4.1 Case study 1a: Al-Shabashiry's house, the Ottomans' Period Cairo, 1690 AD

By analyzing the plan of this house according to OICC, Ibrahim & Mustafa 1992 (pp. 356-359), it is evident that the architecture follows the introvert pattern in design, which emanates from inside to the outside. The elements of the house are arranged around an internal courtyard around which the vertical and horizontal movements are distributed (figure 7.1). The entrance to the courtyard from the street is through a cranked passage consisting of a vestibule and a corridor to prevent the people on the street from seeing inside to preserve privacy for the household. This cranked entrance is also considered as a climatic preparation and first transition between the outside climate of the street and the internal one. The movement of the visitors is separated from the residents' one, by preparing the *takhtabaush*, reception for commoners and sitting of the house workers, that is located next to the entrance of the house. Also services and storage rooms are located on the ground floor to be near the entrance, while the internal stairs, the *qa'as* (sitting rooms) and the bedrooms are all placed on upper floors (figures 7.1,7.2).

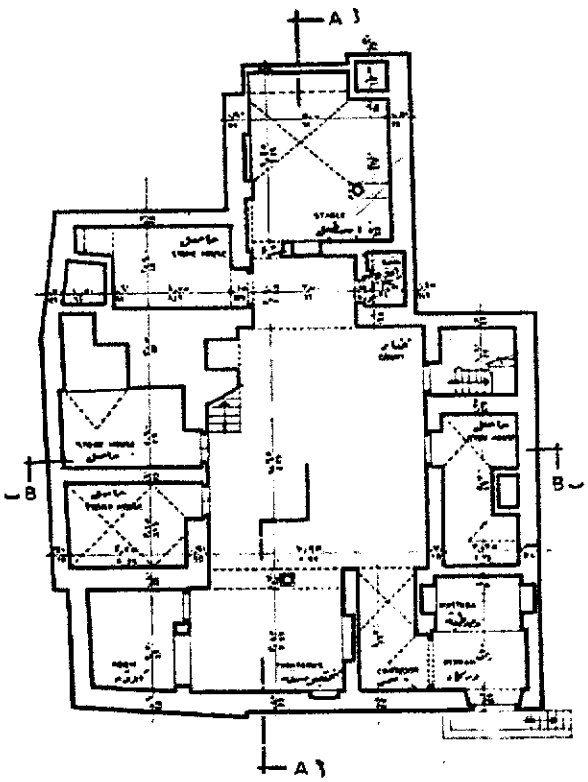


Figure 7.1- Plan of the ground floor, the elements of the house are arranged around an internal courtyard.

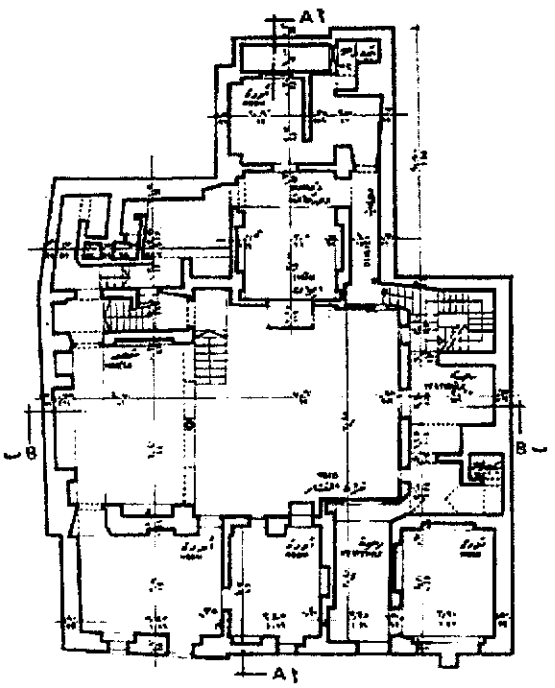


Figure 7.2 - Plan of the first floor where sitting rooms and bedrooms are located.

The upper *qa'as* consist of a *durqa'a* and one or two *iwans*, in most cases secondary rooms and utilities are annexed to these *qa'as* to provide its independence from the rest of the house, in respect to the privacy of the household. It is noted that elements of vertical communication and the change in its position from one floor to the other are numerous, so while the stairs in the north side of the upper floors continue (figure 7.3).

The stairs from the southern side of the courtyard stop at the second floor and take a different course to reach the third floor in order to achieve the independence of all elements (figure 7.4).

In general, the design has considered the climatic direction of the different elements, so we find that the sitting loggia opens, to the whole of its height, on the courtyard to the north direction. Also the *takhtabaush* opens on the courtyard to the northwest direction, which is the preferred wind in Egypt.

While the rest of the qa'as overlooking the courtyard in the other facades have their windows covered with *mashrabiyyas* to break down the intensity of sun-rays, as well as the protrusion of the upper floors, which allow the shades to cover the west, north and east facades of the courtyard in the lower floors (figures 7.5, 7.6).

From the analysis of the internal space, it is observed that formation of spaces depends on variation in internal heights between the different levels, also inside the *qa'as*, according to the function. Some elements like the great *qa'a* and the sitting loggia are two stories height (figure 7.7), also some recesses and small *iwans*, that are arranged in the *qa'as*, have the same height of the *qa'a* and the others have a raised floor. In most cases the two spaces are separated by two wooden stalactite consoles.

The internal facades overlooking the courtyard are distinguished for their variety. The sitting loggia opens on the courtyard through a double arcade of two pointed arches with an octagonal marble column in the middle. Also, the design of the turnery wood units for the *mashrabiyyas* overlooking the courtyard differ from one to the other, as some come out protruding from the wall block and the others are in the wall alignment. These *mashrabiyyas* act in providing necessary ventilation inside the *qa'as* after cooling the air, also the dim internal light.

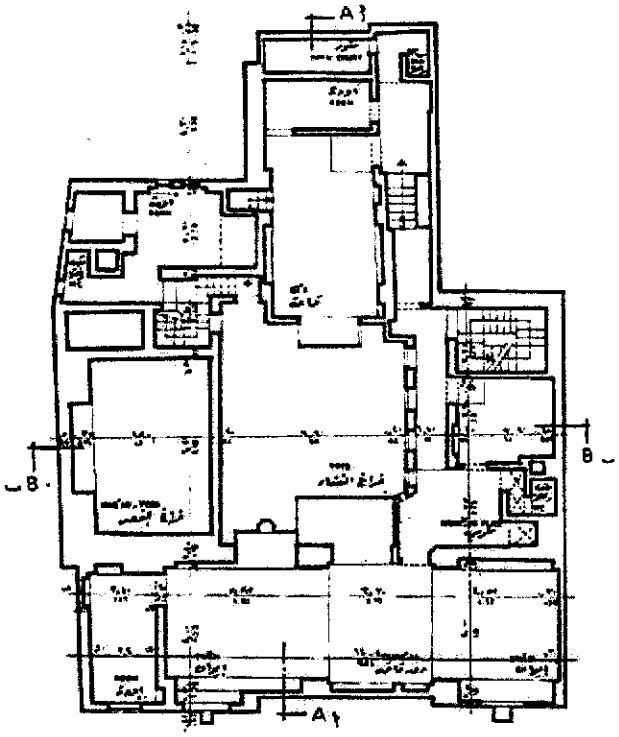


Figure 7.3 - Plan of the second floor, elements of vertical communication and the change in its position from one floor to another is numerous.

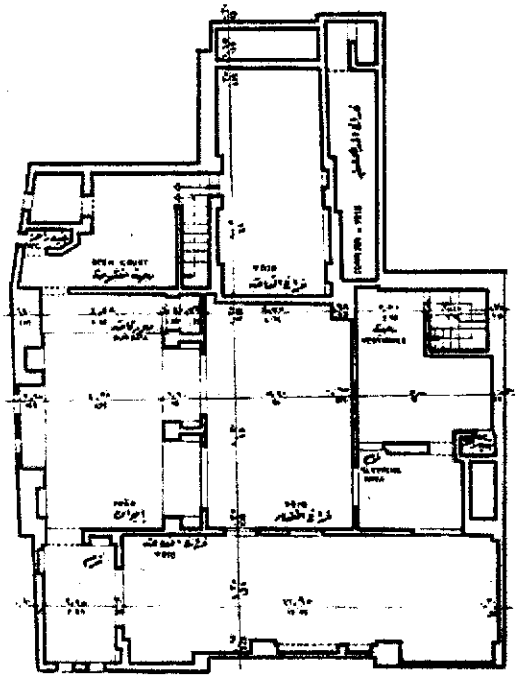


Figure 7.4 - Plan of the third floor shows independence of all elements.

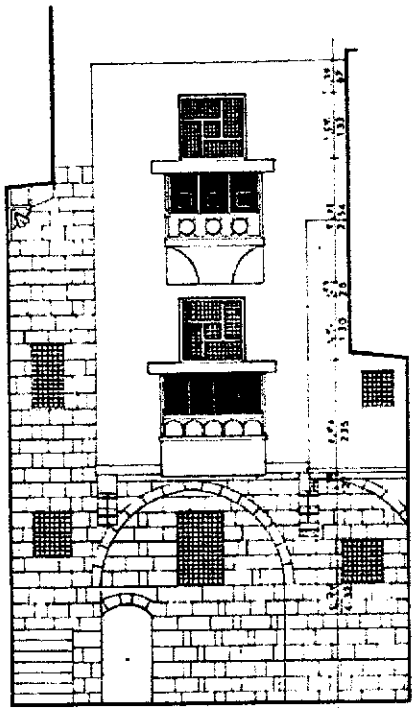


Figure 7.5 - Elevation of the entrance, windows are covered with *mashrabiyyas* for privacy.

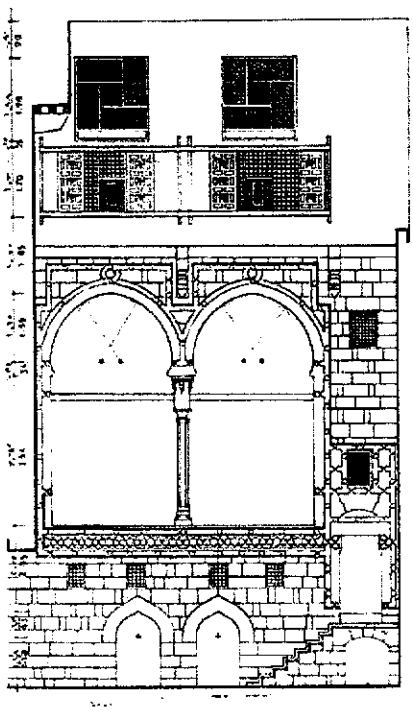


Figure 7.6 – Northeastern elevation of the courtyard, the great Qua'a and sitting loggia are two stories height.

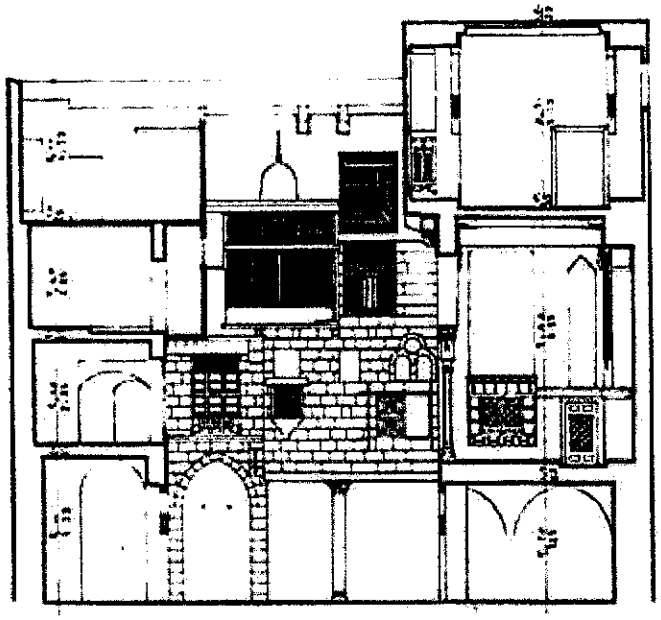


Figure 7.7 – Section A – A, the great Qua'a and sitting loggia are two stories height.

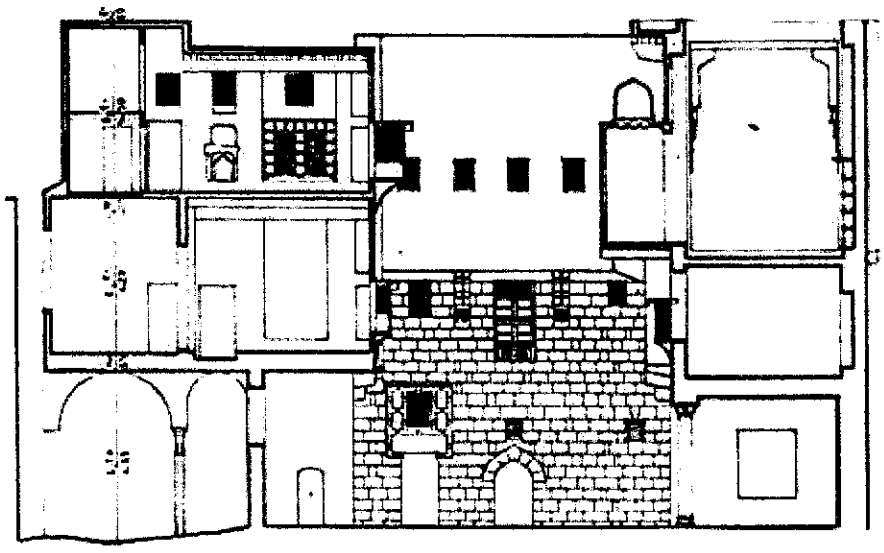


Figure 7.8 – Section B – B, the height of every level varies according to its function.

From studying the external facade, we find that architect has not given attention to the external formation as much as to the internal one, which confirms the principle of inward design and this is why the external facades are very simple. However, the entrance is articulated by using engraved stone decorations mainly of star patterns and its parts and moldings with circular knots. It is also noticed that windows overlooking the street are small, for climatic reasons and privacy. The openings of the facade are fitted with *mashrabiyyas*, which upper parts are projected and the lower parts are in the wall alignment (figure 7.8).

Stones are used for building the foundations and the walls of the ground floor with lime-sand mortar, while red bricks are used for the upper floors, which match with the wall bearing system. Stone tiles are used as flooring material in depots, the courtyard and servants rooms, while marble is used for the floors of the upper qa'as and the sitting loggia. The ceilings of the servants rooms and depots are made in the shape of pointed and cross vaults, while wood is used in the roofs of a qa'as in the shape of girders. All of these are natural materials mostly brought from the local environment and are commonly used, so it appears suitable to the surrounding environment and for the prevailing climatic conditions, as well as to the method of construction. The clarity of the skeleton and the building material internally and externally reflects strength and sincerity in expression.

As a whole, this house represents a model of the houses built since the Circassian Mamluk period and the Ottomans Dynasty in Egypt. As far as its composition, its elements and its adherence to the traditions, social habits, as being an outcome of the Islamic principles with regard to considering the neighbour, respecting the right of road and the privacy of the household. In most cases, the size or area of the house depended on the status of its owner. This house is considered as a successful example of Islamic architecture.

7.4.2 Case study 1b: Madrasa of Sultan Qaytbay, the Circassian Mamluk Period - Cairo, 1474 AD.

According to OICC, Ibrahim & Mustafa 1992 (pp. 210, 211) the specified function of

this *madrasa* is a *khanqah* for forty poor (Sufis), besides being a congregational mosque. By analysis, it is found that the plan consists of four perpendicular *iwan*s surrounding a small covered courtyard whose ratio to the total area of the *madrasa* is 1:12. In general, the plan follows the common pattern of Mamluk *madrasas* as far as the composition of elements and its relation with one another is concerned.

For instance, we find that the largest *iwan* is the *qibla* one then the one opposite to it, while the two other side *iwan*s are smaller in size. There are four doors adjacent to the *iwan*s which open on the *durqa'a*, connecting the *madrasa* to the other elements of the building and the cranked entrance, which leads to the study *iwan*s across a corridor that has the drinking space (*sabil)*. We also find the *sabil* and *kuttab* (Elementary School to teach the Holy Quran) occupying the corner of the building in an integral architectural mass directly in contact with the entrance vestibule, while the mausoleum occupies the other corner of the building adjacent to the *qibla iwan* (figure 7.9).

However, it is observed that there are two mausoleums in the plan of the *madrasa*, in addition to the former dome.

The architect separated the services and utilities from the *madrasa* and placed them in a lower level, in order to preserve the dry areas from wet ablution areas, which located in the south-west corner, considering the climatic conditions of prevailing winds, sun and ventilation. It is also noted from the plan the use of cranked entrances, which assist the gradual movement from the external space to the internal one by the different heights across the vestibule then the corridor to the *durqa'a*.

The architect also followed the ratios and geometrical relations of the square sides, its diameter and the golden rectangle ratio in the design of plans, halls and facades.

Furthermore, it is noted in the internal space formation the accentuation upon the *mihrab* and the axis perpendicular to it, as the *qibla iwan* and the *iwan* opposite to it are opened on the courtyard through an arch (center 1/5th of the span), while the two side *iwan*s open on the courtyard through a stilted pointed arch. The connection between the four facades overlooking the courtyard has been achieved by using the intersecting profile with sides of the *durqa'a* and on top of the arches a writing text is contained in-

between. The same projecting profile is used in other parts of the building to accentuate the elements, which confirms the integration of the space formation of the elements one with the other. The architect also depends on colour configuration in accentuating upon certain elements using the *ablaq* system (black and white courses alternatively) in the arch voussoirs overlooking the courtyard and the *mushahhar* system (red and white courses alternatively) in the bottom parts of the walls and the voussoirs of relieving arches on top of the doors and windows. The configuration of internal walls depends on projecting or recessed geometrical and floral ornaments pounded in stone. Also, white, black and red marble were used in colour formation of the skirting and floors in various geometrical shapes based on the square and circle (figure 7.10).

By analysing the external facades we find that its configuration depends on the use of vertical rectangular niches crowned by stalactites and in which upper and lower bays are arranged according to the architectural elements, surmounted by a row of leaf-shaped cresting, common for Circassian Mamluk buildings. Elements of the plan can be outlined from the facade through the variety and shape of the window openings which reflect sincerity in expressing the interior and the organic relationship between the plan and the facade, whereas the openings in the *qibla iwan* appear rectangular at the bottom and in the top, arched in rectangular niches enclosing the circular grill of the *mihrab*, while the bays of the preacher's room appear rectangular at the bottom and at the top arched in a vertical niche.

The areas of the openings in the mausoleum's facade widened and protruded from the *qibla* wall alignment. The façade was covered by a stone dome decorated with geometrical and floral ornaments (figure 7.11).

The position of the entrance is accentuated by the method followed in the Circassian Mamluk architecture and by using the same elements. The minaret is placed on the right of the entrance as a distinguishing landmark. The base of the minaret protruded a little from the facade's alignment to ensure the continuity of the minaret and its support on the ground instead of its appearance as though it was carried on the roof of the building. The building is generally distinguished for its richness in the configuration of its building block, in a way that shows each element *iwan* integral organic form. The

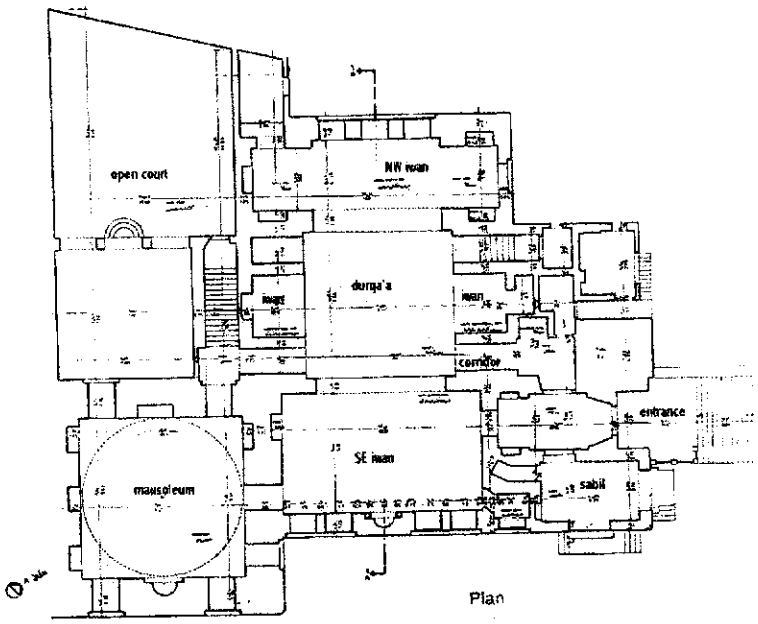


Figure 7.9 – Plan of the ground floor consists of Madrasa, sabil, kuttab, and mausoleum.

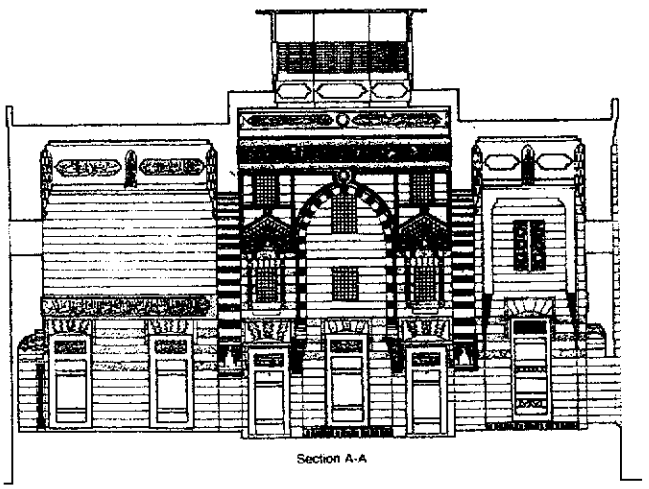


Figure 7.10 – Section A – A, The connection between the four facades overlooking the courtyard has been achieved by using the intersecting profile with sides of the *durqa'a* and on top of the arches a writing text is contained in-between.

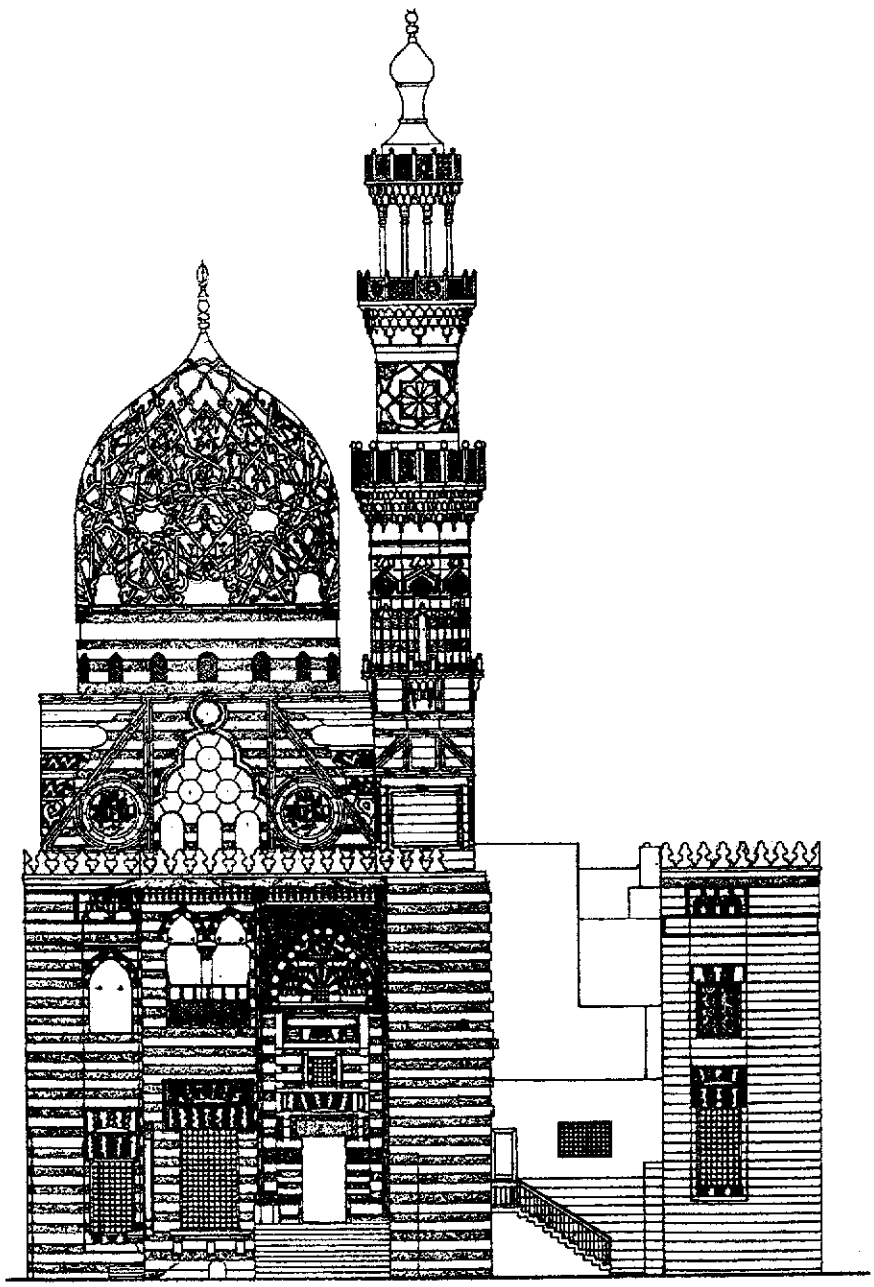


Figure 7.11 – Northeast elevation, The areas of the openings in the mausoleum's facade widened and protruded from the *qibla* wall alignment. The façade was covered by a stone dome decorated with geometrical and floral ornaments

surfaces' treatment appears through making projected or recessed geometrical and floral ornaments in stones. The external configuration is marked for being balanced between the building blocks.

Limestone is used for constructing the external and internal walls, while the ceiling of the corridor takes the form of a cylindrical vault. Wood is used in the ceilings of *iwans*, the *sabil*, the *kuttab*. The vestibule coloured marble is used for internal and external encrustation and stained glass covers the openings. All these materials were commonly used in the Mamluks buildings; they are natural materials brought from the surrounding environment, suitable for their functions and the prevailing climatic conditions. Also, these materials were used in with natural shape and form and expressed the structural skeleton.

In general, it is noticed that the function controlled the distribution the elements and its relation to one another. Also, the building materials used, such as stone and marble, were suitable for the climatic conditions and the surrounding environment, which would provide an amount of heat isolation from the external atmosphere and serves in ameliorating intern air. Using skylight for lighting the corridor and the upper rooms, as well as for cooling corridors leading to the *iwans* of the *madrasa*.

This *madrasa* contains some critical points that contradict with Islamic teachings, such as the recessed *mihrab* and the extending *minbar* that intersects the prayer rows and the minaret. In addition to exaggeration in ornaments and extravagancy which contradict with the call of Islam for simplicity. Also, the mausoleum itself is not Islamic and contradicts with Islamic teachings, according to a *Hadith* narrated by Jabir ibn Abdullah, Prophet Muhammad (p.b.u.h.) bans using gypsum, sitting, or raising any building above the grave. Confirming this point there is another *Hadith* narrated by Ali ibn abi Talib said that Prophet Muhammad (p.b.u.h.) commended him to efface any picture (for any human being or an animal) and to flatten any tomb raised on the ground (Hamoosh 1992, p. 680, 658- *An-Nawawi*). Moreover, adding a mausoleum to the mosque is forbidden according to a Hadith narrated by Kannaz bin al-Husain that Prophet Muhammad (p.b.u.h.) said do not pray at the graves and do not sit on them (Hamoosh 1992, p. 678- *An-Nawawi*).

Qaytbay's *madrasa* succeeded in some aspects of the Arabian Architecture and failed in other aspects, which contradicts with Islamic teachings. In other words, this building fulfilled the requirements of the Arabian Architecture (such as applying the introvert design, the integration of spaces, environmental control and climatic treatments, methods of construction, building materials and using geometric patterns). However, this building could not fulfil the requirements of the Islamic Architecture (such as adding mausoleums to the mosque, building a dome above the tomb, exaggeration in ornaments and extravagancy in construction in general, recessing the *mihrab* and extending the *minbar* that intersects the prayer.

7.5 CASE STUDY 2: To test to what extent contemporary architecture fulfils Muslims' needs (by using some buildings of Hassan Fathy and others)

7.5.1 Case Study 2a: New Gourna village 1948, constructed; 1983, theater restored. Sited in West Luxor, Egypt.

Designed by the pioneer Egyptian architect Hassan Fathy for the Department of Antiquities of the Egyptian Government.

7.5.1.1 Brief background for the project:

In his book 1973, *Architecture for the Poor*, Fathy explains his planning theory and implementation strategy of New Gourna Village (1948). Old Gourna was a thriving community of five hamlets built along the hills in West Luxor (historical city south of Egypt), on the ancient cemetery of Thebes (ancient Egyptian City).

The people of Gourna for generations had made their livelihood by tunneling into the tombs, plundering the contents and selling the artifacts on the black market. They built their houses in front of the tunnels to accord a certain degree of security to their operations. Determined to stop the tomb robbing, the Department of Antiquities engaged Fathy in 1946 to design and construct a new village for the relocation of the Gourna. From the onset, the project was plagued with difficulties. The Gourna, content with their living situation, resented the project and therefore were reluctant to cooperate. The Department of Antiquities and related governmental bodies put tremendous

demands on the architect, but were themselves fickle in providing the resources they had agreed to commit. The final result was a partial realization of the master plan (figures 7.12, 7.13).

7.5.1.2 Project Analysis:

According to Richards et al., 1985: pp 86-91, New Gourna was originally planned for a population of 900 families, the completed project has a current population of approximately 130 families and covers one fifth of the original site.

The great challenge has faced Hassan Fathy was how to convert this community from organized robbers and criminals to a well disciplined Muslim community earns his income from an appropriate lawful way.

In reading the architect's ideas for the village, one is struck by its mixture of social realism and utopian vision. A subsistence rural economy, widespread disease, illiteracy and the dynamics of traditional family and opposing clan structures are all recognized and factored into a formula that essayed to make the Gourna into a harmonious social structure, freed from abject poverty, disease and illiteracy, devoted to the pursuit of folk art and framed by an appropriate and relevant architectural setting.

Although the real message of New Gourna lies with what was in fact built and how the community has developed, what remained unrealized is also worthy of note. In the end, many of the social services, such as the dispensary and women's social centre and the *hammam* (public bath), were neither provided nor facilitated, nor was all the proposed housing constructed. Several of the community buildings - the crafts exhibition hall, village hall and the *khan* (market) - though built, have never supported their intended functions and are now used as housing or workshop space. The utilization process and apparent absence of demand by the villagers (the 130 families) for additional public buildings suggests that their essential and relevant institutional needs were only: a school, a mosque and streets that accommodate social interaction.

In the design of New Gourna as constructed, there is an architectural hierarchy to the village, which is easiest read by the system of open spaces. The main route to the village

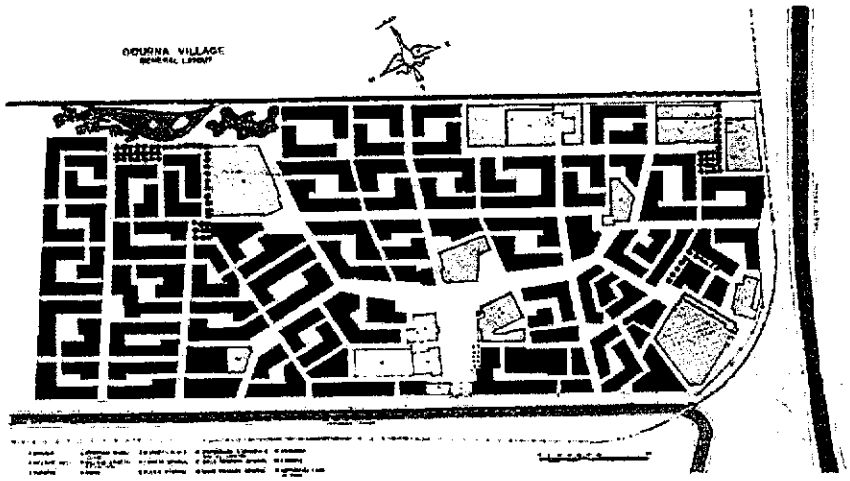


Figure 7.12 – Site plan for the New Gourna to relocate of the old one.

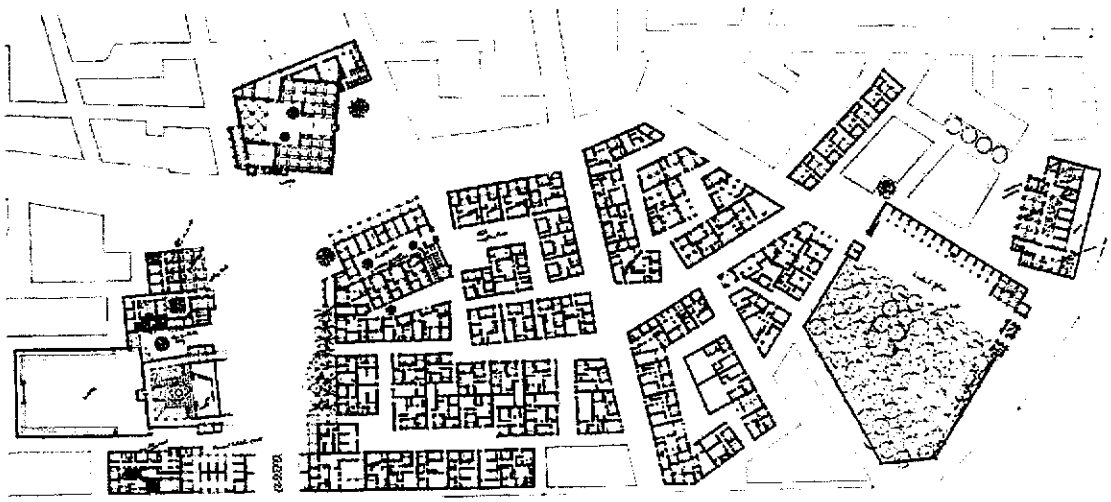


Figure 7.13 – Master plan implementation shows the main residential and public areas.

interior widens to create a kind of public square around which many of the community functions were to take place including prayer, shopping and entertainment housed by the mosque, *khan* and theater respectively. The housing is planned in irregular allotments. These allotments force variation in house plans while shaping a network of angular streets that turn on themselves to create broken vistas (figure 7.14).

Much of the lives of households are played out in these small, quiet streets that serve as extensions to the home as workplaces (figure 7.15a) and as play areas for children. Informal socializing occurs in the streets or under the domes that cover the village water wells (there is no running water in individual houses).

The smallest unit in the hierarchy of open space is the multipurpose courtyard incorporated into each house (figure 7.15, a - d). In a sense, the village design began with this spatial unit since Fathy conceived the plan in experiential terms whereby a man is led through an ascending scale of spaces that begin with privacy of his small courtyard, leading to the semi-public neighbourhood street, to the larger avenue, then the village square and finally the open fields of the Nile Valley. This particular engineering of space replicates unplanned villages in the region that are built on agricultural land.

Over the years, enterprising households whose financial situations have advanced have annexed land for goat and cattle pens in front of their houses. In addition to attesting to the economic vitality of the community, these pens demonstrate the flexibility of mud brick architecture to serve the evolving needs of its inhabitants - an important factor for any building scheme intended to foster economic development.

These needs embrace architectural style as well as basic facility. The Old Gournii had developed refined facade architecture characterized by rectilinear silhouettes that scoop up at the comers of parapet walls. The parapets themselves are accentuated with a textured line that visually functions like a cornice. Windows in these houses are small in ratio to the overall facade surface area. Fathy gave the housing in New Gourna a different visual image, one that shared more with the village of Gharb Aswan than Old Gourna. With time, the households of New Gourna have redefined their facades by

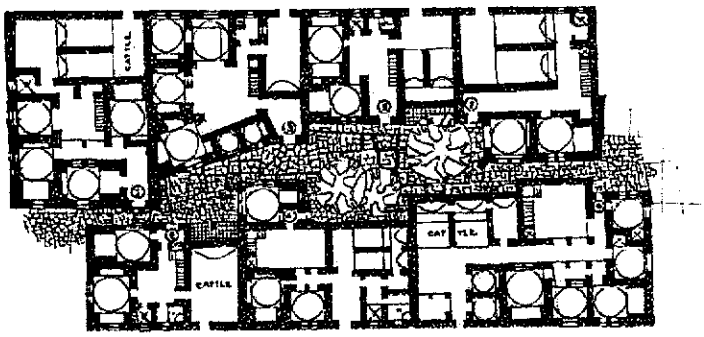


Figure 7.14 – These allotments force variation in house plans while shaping a network of angular streets that turn on themselves to create broken vistas.

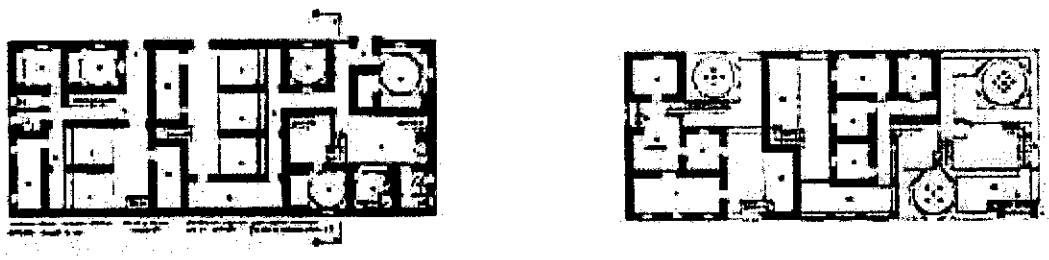


Figure 7.15a , 7.15b – Ground and First floor plan, the smallest unit in the hierarchy of open space is the multipurpose courtyard incorporated into each house

Figure 7.15c – Section

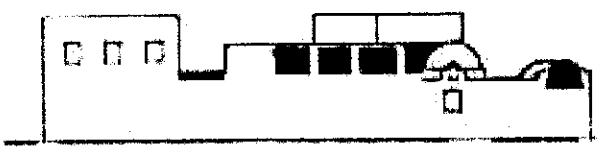


Figure 7.15d – Elevation

reducing the area of windows and adding cresting parapets. The architect has expressed dismay at the changes. One might, however, argue that the ability of the housing to be personalized, in this instance "vernacularized", is an overall design strength.

Fathy provides a basic structural architecture that carries with it a simplified universally appealing image. This is taken up by the villagers as a framework for place-specific stylization. This layering of visual content makes villages and cities humane.

The extent to which an architect can predetermine the social climate of a community is debatable. Certainly in his choice of building materials and techniques and the spatial organization, Fathy "prepared the ground" for New Gourna. The economic and institutional framework he planned had a lesser effect on the social climate that emerged. Craft industries were to play a major role in bolstering the village economy. Two buildings were built for folk art - the crafts exhibition hall and *kahn* - but no industry was founded. Instead, to compliment their income from agriculture, the New Gournii participate in service industries connected with Luxor's lucrative tourist trade. (Siting the village with a favorable adjacency to the tourist traffic was a conscious planning tactic of Fathy's.) The grounds of the open market are used for grain and livestock trade (Figure 7.13), small merchandise stalls have been set up in the buildings that form the main West Luxor road. The Village Theatre has not generated a revival in the folk arts. Unused for decades, it was recently restored and is now controlled by the government and closed to the villagers (figure 7.16).

The one school designed by Fathy that was built is dilapidated (figure 7.17). No longer in use, a concrete building has taken its place.

In contrast, the Village Mosque has been perfectly realized (figure 7.18). The monumental structure uses light to create a variety of atmospheres for worship. The religious followers that gather at the mosque are attentive to the building's maintenance. New Gourna's identity is related to similar villages in the region, but it possesses a character all its own and if there are shortcomings, they are measured in the gap between intention and realization. The planning intentions far exceeded the rural population's frame of social reference while overestimating the community's ability to

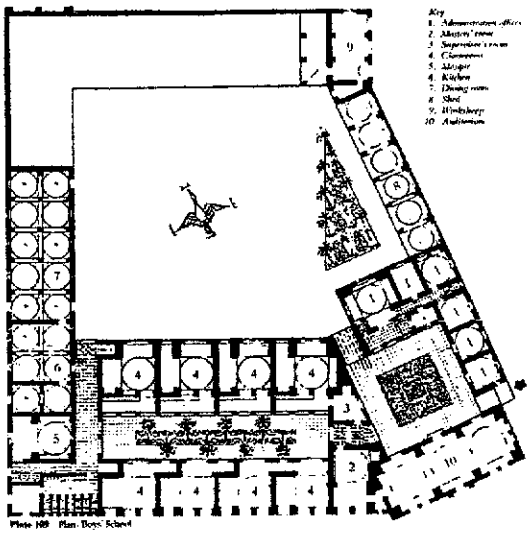


Figure 7.17 – Boy's School, the one school designed by Fathy that was built is dilapidated No longer in use, a concrete building has taken its place.

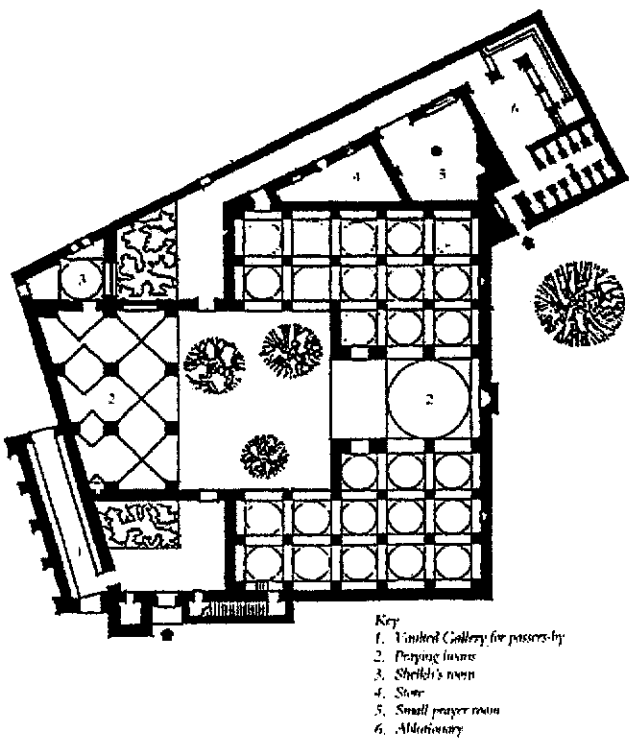


Figure 7.18 – The Village Mosque has been perfectly realised.

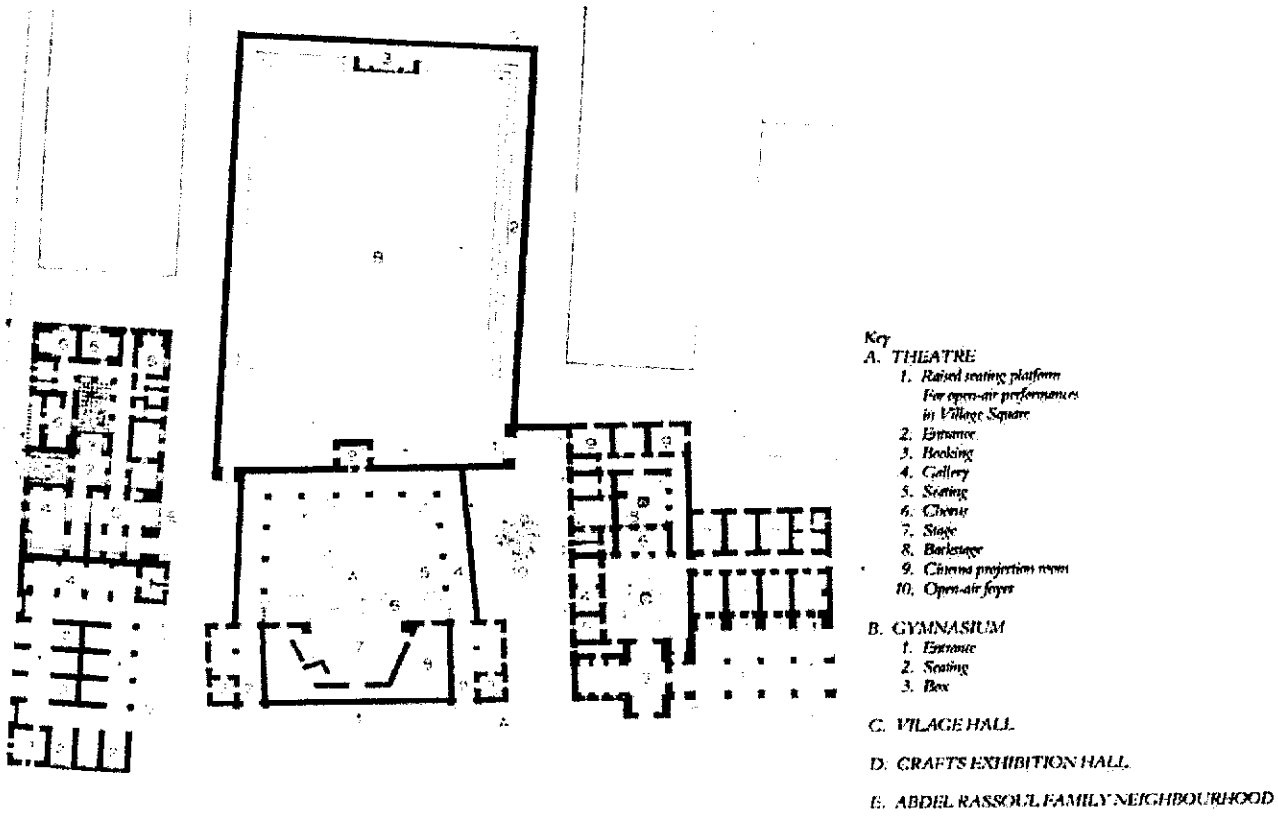


Figure 7.16 – Village Recreation Centre has not generated a revival in the folk arts. Unused for decades, it was recently restored and is now controlled by the government and closed to the villagers.

upgrade itself. Though community life in rural Egypt is undergoing transition, people have not yet broken fundamental ties with a traditional lifestyle. The architectural and institutional structures the community deemed necessary for that lifestyle came alive.

New Gourna was an experiment in a community-orientated *process* of building as well as an aesthetic investigation by the architect. In the process, the human resources of a community would be enriched through the transfer of skills and the buildings produced would be more satisfying for the user through their direct involvement in the detailing of a design. Coincidentally, this process, referred to by Fathy as aided self-help or cooperative building, promised to put new housing within the economic grasp of the rural poor (Richards et al., 1985).

Although the challenges that have faced Hassan Fathy in implementing New Gourna project, he has succeeded in adopting the main principles of Islamic architecture.

In this project Hassan Fathy considered the Islamic context of architecture while Islam aims at building the character of human being on clear basis, determining his social behaviour as an individual related to a social group on the one hand, and as an individual who has his own privacy on the other hand. The same comparatively applies to urbanization, which should carry a social expression from the outside belonging to the society in which it exists. Hassan Fathy tried to change Gouranas community from organized robbers and criminals to a well-disciplined Muslim community earns his income by proper lawful way.

In general, Fathy took into his account the fundamental principles of the architecture of Islamic society by preserving the rights of the family and society, providing privacy especially for women, by providing each house by an internal court for women daily activities, avoiding intermixing of genders by separating men and women in private and public zones, preserving of neighbourhood rights, preventing of harm to others by stopping the Gourniis from steeling, avoiding extravagancy in buildings even in mosques and avoiding construction of lofty buildings.

Also, Hassan Fathy considered some spiritual aspects in the village Mosque design:

The mosque is erected to worship *Allah* and it is *Allah's* house for people to pray in,

stay in and benefit from all its functions, by reading and studying the holy Quraan.

The mosque signifies society's economical and aesthetic standards rather than an individual's standards, without any extravagancy or parsimony.

It expresses the ability of the Muslim worker to create and prefect his work as required by Islam, also to visualize the Muslim's architectural intellect guided by Islamic values and principles.

The village mosque is part of the society, coherent with its urban structure and integrated with its facilities and not an isolated entity. It is the core of the residential neighbourhood, on its smallest scale and the heart of the village, on its largest scale.

Further more Fathy fulfilled the Islamic principles of Mosque' s urban design by considered the village mosque as a part of the urban texture fully integrated in it and linked to its other members and the radiant center in the village society, it is centrally located between the urban units and annexed to facility centres such as educational, health, cultural and social centres. It is surrounded by different administrative facilities concerned with security and financial matters.

Also, he fulfilled the Islamic principles of Mosque' s architectural design as he located the mosque close to houses allowing Muslims to hear the callers for prayers and so that they can wash at their homes before leaving to pray, the ablution areas are annexed to the mosque, but located by side entrances to ensure the mosque's purity. The location of the ablution area and the toilets are in different direction of the *qibla*.

Hassan Fathy provided the spiritual aspects of house design, as he considered the house as a social unit where the construction is not separated from the family that lives in it. The Islamic content of Muslim family's needs determined the residential the space.

He provided an effective cooperation between the owner, architect and builder during the building process.

Fathy considered the village residence as a comprehensive expression for everyday: needs of the family, guided by Islamic principles and values.

The entrance design prevents the internal space from being seen and the family members direction is to the inside while, guests to take the opposite direction as a principle for providing privacy, both directions lead to a common area, that can be easily used by the family members or added to the guest area as required. The privacy of the residence is not only for the interior but towards the outside too, so Fathy considered the outer openings or the architectural elements that are exposed to the outside by using small windows or adding screens to the large ones.

Also he used the inner courtyard, as one of the main symbolic architectural elements for houses and an inherited feature that represents a true expression for the social and climatic needs required in private houses in this era.

The design meets the various demands required in a residential unit during different growth stages of the family members. The house has enough rooms in order to allow the separation of boys' bedrooms other than girls' bedrooms.

Fathy preserved the Islamic context of educational buildings design, he considered Islamic values in the design of educational buildings such as not mixing boys and girls in one school if possible, he designed one school for boys and later he designed another school for girls and providing mosque at the schools.

Finally Fathy considered the main characteristics of the Arabian Islamic architecture by applying its major features as following: organic expression of architectural elements as it seen on the site of the village.

The general form of Fathy's architecture organically reflects the different functions of its components without any previous specific formal or architectural considerations. Therefore, his architectural form expresses the function, the natural environment, cultural and social life.

A contrast between void and solid surfaces arose because of construction methods, which were depending on local materials such as stones and bricks that gave most openings the vertical direction and created arches to cover large spans.

Homogeneous harmony appears in the elevations of residential buildings, which reflect

a continuous movement between a group of horizontal levels constituting its various elements. Harmony and architectural rhythm also appears in the triangular slots of the village buildings, where mud was used as the main building material, they constituted a continuous rhythm with the skyline.

The integration of spaces is considered one of the basic design principles of Fathy's architecture and urban design, also in residential buildings.

The introvert design, or concentration on the interior, in the Islamic house expresses the nature of the social life and climatic conditions. The internal courtyard replaces the external environment and includes various activities of the occupants.

Hassan Fathy's architecture characterized by the use of various architectural elements to control environmental conditions. Beside the courtyard houses, wind towers (*malaqf*) are considered one of the most characteristic environmental control devices. The *mashrabiyya* (or window screen) is another architectural element that serves both a climatic and social function, which allowed the occupants (especially women) to view the outside world without being seen by the passers-by.

Using geometric patterns in window openings, or in solid elements like doors and interior finishing.

Landscaping internal courtyards that was given special concern not only because it was the everyday living area of the family but also as it helped in cooling the domestic micro-climate.

Methods of construction and building materials depended on the available materials in the village.

7.5.2 Case Study 2b: Residential and Educational Building, Heliopolis, Cairo. Architect: Prof. Abdelbaki Ibrahim, head of the center of planning and architectural studies in Cairo, former Chief of Arch. Department Ain Shams University.

7.5.2.1 Brief review of contemporary architecture in Egypt:

Teoharis David 1983 (pp. 4, 5) introduces the current architectural situation in Cairo,

explains that Heliopolis, where this project is located, means "city of the sun" in Greek, in fact this fashionable suburb of Cairo was, in its heyday in the 20's and 30's, home to a large affluent colony of Greeks. Its civic architecture built by a Belgian-trading empire, Is a strange amalgam of Eastern, Mogul, Islamic and even Art-Deco styles. The large houses and spacious apartment buildings with their deep outdoor rooms and verandahs were designed by mostly Egyptian and Viennese architects and trained abroad in the Art-Deco and Modernist movements of pre-World War II Europe.

Interspersed in Heliopolis is a more "Egyptian" presence, in the form of palaces and official buildings, built by the modern Egyptian Dynasty that ended with the aborted reign of King Farouk in 1952.

All this architectural exuberance and "generosity" was brought to an abrupt end, not only by a changing economic base created by an expanding population, but by political changes and an architecture for the masses was imported by the socialist era of the charismatic Gamal Abdel Nasser.

Alas, it seemed that a shallow adaptation of the modernist style of slab and beam and white banded horizontally, devoid of any character, was then, and continues to be the most feasible architectural order of the day. In the Egypt of today, this style of building persists more for economic reasons and because it is "simpler" to design, than as a rejection of Pharaonic, Islamic, Colonist, or Monarchist past.

7.5.2.2 Building Analysis:

The structure shown an architectural expression of Prof. Ibrahim's thought, as Teoharis David believes. The building processes and personal/professional interests, which have come about as a result of his concern for the salvage of the cultural soul of an Arab Muslim country and the redefinition of its architectural and general environmental identity, all this at the time when Egypt is compelled to cope with problems of its future.

Prof. Ibrahim's motivation behind the design and construction of this multi-use structure, was to create a living example as to how the architect could reflect Islamic values in his design without using the traditional decorative features, or excess of

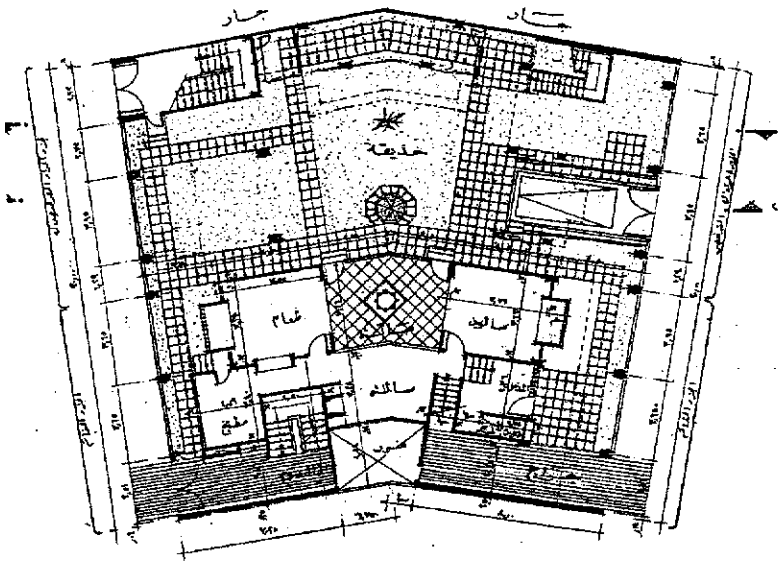


Figure 7.19 – Plan of the ground floor, an enclosed court with a tiled fountain, off to which are the main sitting rooms, or *majlis*, dining room, kitchen and services spaces.

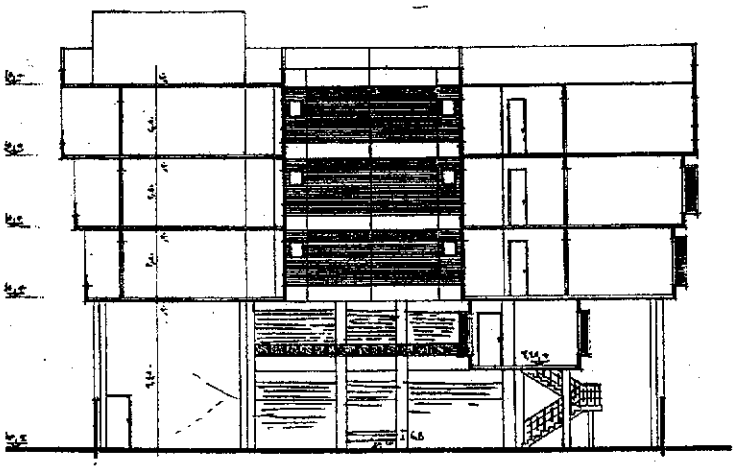


Figure 7.20 – Section B – B, shows the internal courtyard.

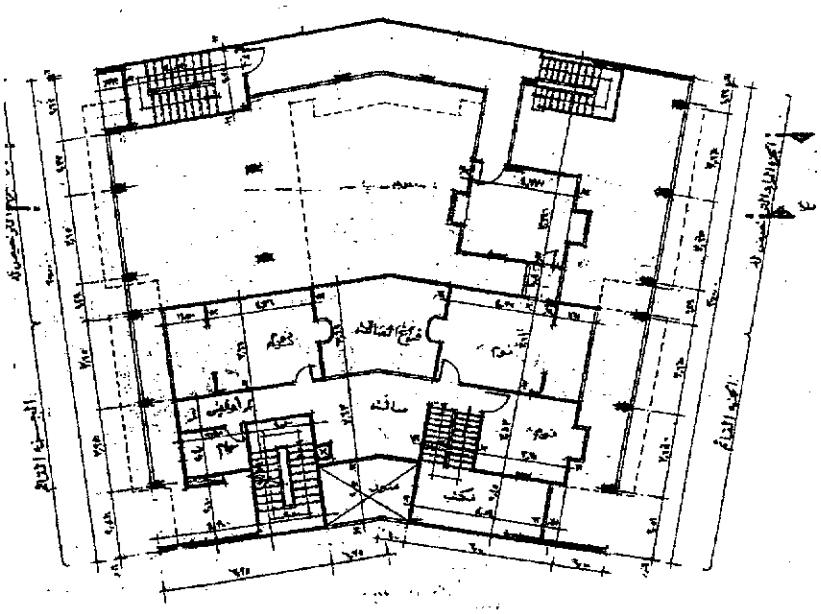


Figure 7.21 – Plan of the first floor, there is a second family living space on the upper level, which looks through screens onto the inferior court.

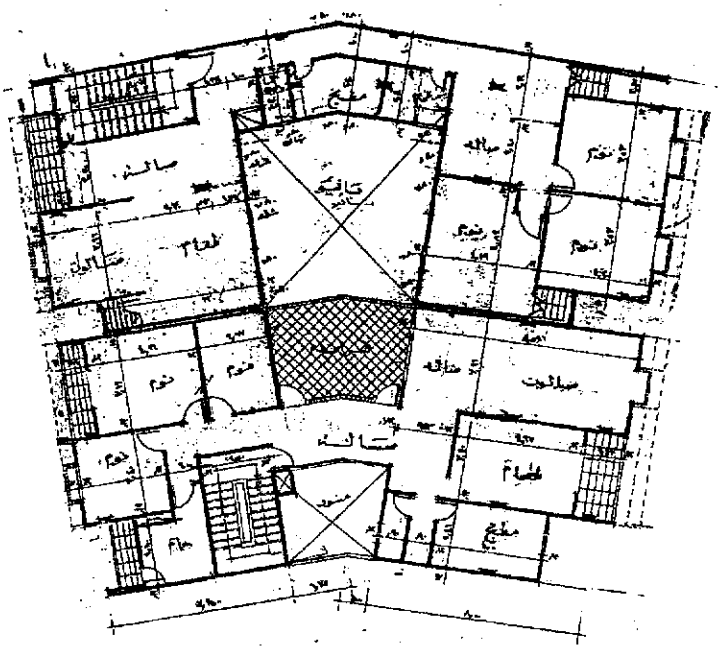


Figure 7.22 – Plan of the second (typical) floor.

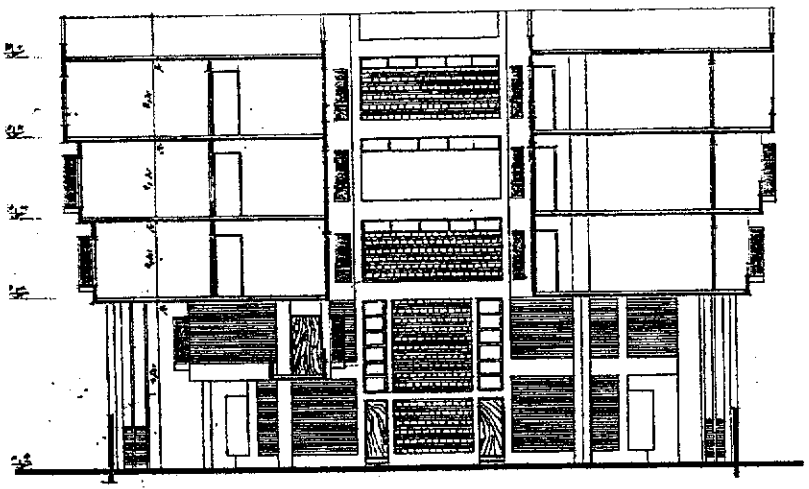


Figure 7.23 – Section A – A, the elements of the building, along with the central garden court, insure that the entire structure is comfortable even during the hot weather.

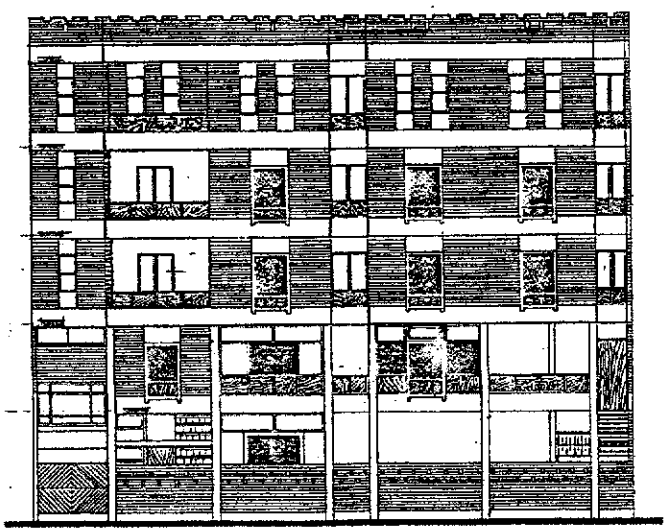


Figure 7.24 – Elevation

expenditure characterizing the buildings of similar standards. At the same time this project was designed to answer those who, according to Prof. Ibrahim, oppose the call for the revival of Islamic values in contemporary architecture. Unfortunately the opposition to this call came form fellow professionals. However, a few, lead by Hassan Fathy, the pioneering architect of this direction supported him.

The U-shaped structure is located on an irregular through plot of 430 m^2 and 20m wide, in a quiet residential area of five and six-story apartment buildings. If combines two basic functions, living quarters for Prof. Ibrahim, his family, a rented flat above and in The Center of Planning and Architecture Studies (1965); a Doxiadis style design and educational organization founded by the architect.

These two different function, entered from opposite sides of the site, are joined not only by a building mass at the upper level, but by a walled garden courtyard, which also opens out onto the two streets bordering the site.

The plan and spatial volumes of the residence respond very much to a traditional Islamic living and social pattern. Upon entering, one sees a two-story space, an enclosed court with a tiled fountain, off to which are the main sitting rooms, or *majlis*, dining room, kitchen and services spaces (figures 7.19, 7.20).

There is a second family living space on the upper level, which looks through screens onto the inferior court. In a traditional Islamic household, if is customary for the women to have a separate social space screened from visitors (figures 7.21, 7.22).

Each floor steps out over the floor below, thus helping with the wood screening in front of all openings, to protect the exterior walls and interior spaces from direct sunlight, an element that is undesirable in this region of the world.

These elements of the building, along with the central garden court with its crosswind openings, insure that the entire structure is comfortable even during the hottest months of the year (figure 7.23).

The design criteria outlined by the architect included that the building should reflect Islamic values in contemporary Arab architecture, without applying any characteristic

features, such as arches, domes, stalactites, or any decorative stonework (figure 7.24). Also, construction costs had to be within current costs for similar structures, commonly used building materials and building techniques used.

There had to be an emphasis on inward orientation as a reflection of the sense of inward life on the occupants, but the automobile was to be accommodated as reflection of modern technological achievement. The interior would reflect the same theme of Islamic values, in the design of its furnishings and in the use of water.

It is believed that this structure represents an imaginative and realistic resolution of the opposing forces previously mentioned and an answer to those that on the one hand continue to declare that we must return to the traditional forms and expressions of the past and those that have become bridgeheads for importers of the most mundane expressions of popular aesthetic formulas and unimaginative applications of "the latest" materials and Western stylistic elements.

David (1983) reports that Prof. Ibrahim has been able to design other structures, within the same principles that he believes in, for Kuwait, Saudi Arabia, in addition to Egypt.

7.6 ANSWERING THE QUESTIONS

Q.1 What is the meaning of "Islamic Architecture"?

A.1 According to previous research of this thesis it is evident that Islamic architecture means "the architecture for Muslims, regardless time or place that reflects Islamic values. It must be directed by Islamic teachings and doctrine from the Holy Quran, the Sunnah (The traditions of Prophet Muhammad) and in form, expresses the spirit of Islam.

Q.2 Does contemporary architecture fulfil Muslims' needs according to Islamic teachings?

A.2 According to several previous discussions it has been confirmed that contemporary Arab architecture does not fulfil Muslims' needs and demands according to Islamic teachings, moreover much modern architecture in the Arab world is problematic,

many features of Islamic Architecture have largely been destroyed. But, there are few efforts done towards reviving Islamic values in contemporary Arab architecture, such as the work of Hassan Fathy, Addel-Baki Ibrahim, Abdel-Wahid el-Wakil and others.

7.7 SUMMARY

This chapter aimed mainly to answer the questions of chapter 6 by defining Arabian Islamic architecture in terms of Islamic teachings and through interpreting from Islamic doctrine and Arabian culture and environment, some principles, which can be applied to architectural practice. Also defining the principal characteristics of Islamic architecture that embody the needs and demands of Muslims according to their Islamic teachings, which enable us to examine Arabian architecture Islamically.

The two substantial questions have already been answered. Developing an understanding of the role of architectural practices, by analytical study of buildings from the Pre-modern Islamic periods and contemporary architecture in Egypt, has been achieved by undertaking the following:

Architectural standards and principles that satisfy Muslims architectural needs have been reintroduced and developed.

Architectural plans, sections and elevations of the selected buildings have been analyzed through both writing and drawings, their strengths and weaknesses in conforming to Islamic concepts have been identified.

The emerged definitions and architectural standards have been applied on specific buildings from pre-modern era of different Islamic periods and contemporary buildings of Hassan Fathy examining to what extent architecture of the Muslim world meets Muslims' needs according to their Islamic teachings.

PART IV.

CHAPTER 8: CONCLUSIONS

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8.1 General

This chapter reviews the conclusions and the answers of the previous questions, regarding to contemporary architecture and fulfillment of Muslims' needs, and how the success of the Arabian Islamic architecture lies in following particular standards to fulfill Muslim's needs. Finally, criterion of successful Islamic architecture is defined and definition of Islamic architecture is arisen. This chapter also introduces a summary of the contributions of this thesis to the body of Islamic architectural knowledge.

8.2 Conclusions

The problem that stated in section 1.1 has been addressed as shown in sections 7.6. An appropriate definition for Islamic architecture of the Arab world, in terms of Islamic teachings and doctrine, has been developed. Islamic architecture does exist, but it does not only mean the historical architecture of the golden Islamic eras. Islamic architecture means, "the architecture for Muslims, regardless time or place that reflects Islamic values. It must be directed by Islamic teachings and doctrine from the Holy Quran, the Sunnah (The traditions of Prophet Muhammad (p.b.u.h)) and in form, expresses the spirit of Islam.

By reviewing the literature, contemporary Arabian architecture has been examined against the fulfillment of Muslims' needs according to their Islamic teachings. It is evident that much modern architecture in the Arab world is problematic, many features of Islamic Architecture have largely been destroyed by the Modern Movement with its reverence for object buildings, functional separation and new forms of structure and construction.

The reasons the serious problems are the replacement of the Islamic building legislation, by Western legislation, without sufficient examination and the serious the cut-and-paste policy, which pulls the images and ideas from one cultural context and randomly sticks them into another.

The Results are cities without Arabian Islamic identity and contemporary architecture does not fulfil Muslims needs according to their Islamic teachings and culture.

Architectural standards, that satisfy Muslims architectural needs, have been set, as shown in sections 5.4.1, to 5.4.3. A definition of the criterion of what is considered in an Islamic context as successful Arabian Islamic architecture has been developed, as shown in sections 7.2.1, to 7.2.9.

Analyzing some case studies from pre-modern and contemporary Arabian architecture, it is evident that not all pre-modern architecture that titled "Islamic architecture" are pure Islamic architecture, and some times contradict with Islamic teaching, such as *madrasa* of Qaytbay. Contrarily, some sincere efforts have been done to contemporary Arabian architecture to revive its genuine Islamic identity, such as Hassan Fathy, Abdel Baki Ibrahim and others.

8.3 Summary of Contributions

Developing architectural design principles applicable to Arabian Islamic world, which were generalized to be applicable to Islamic world.

Introducing main characteristics of Islamic architecture and setting standards for successful architecture from the Islamic viewpoint.

Preparing some tables, from the developed architectural design principles, to help testing whether Pre-modern or contemporary buildings against fulfilling Islamic teachings and principles (tables are found in the end of this chapter).

Understanding Arabian culture, traditions and environment and how they have affected architectural design.

Understanding Islam as a religion and a way of live, and their influences on the architecture of Muslims.

Translating from Islamic doctrine, some principles, which can be applied to architectural practice, and to recognize Muslims' architectural needs and demands according to Islamic teachings.

8.4 Future Research

Studying the architectural history of the Muslim world referred to Islamic content and traditional historic forms, to generate a discussion and engender a debate based on inquisitive consciousness to Western theories.

Studying and analyzing the Islamic building legislation as a safe guard to ensure the development and growth of cities in a well-planned Islamic manner. It is an important factor in preserving the identity of cities.

Reintroducing Islamic legislation in regional and urban planning, which has not been known to most legislators, architects, engineers, and was replaced by a modern legislation without any reference to what already existed or suiting the needs of Arab society. Reinterpreting this Islamic building legislation would preserve the heritage and traditional style of the Arab cities.

In a cross-cultural perspective, Islamic architecture could be studied with reference to western architecture, a tacit position that has implicitly dominated the discourse since its emergence. Such an understanding requires openness to both western and Arab/Muslim traditions and receptivity to any theoretical development that may offer new ways of perceiving the difference.

Table A. General principles to be applied on all types of buildings:

Architectural Approach	Islamic & Arabian Principles	Fulfillment Degree					Points / 10
		NA	A > 8	B 6-8	C 3- 5	D < 2	
7.2.1 Islamic Context (Islamic Factors)	1. Preserving of Family & Society						
	2. Providing privacy						
	3. Separating males & Females						
	4. .Neighbourhood Rights						
	5. Prevention of harm to others						
	6. .No Extravagancy						
	7. No Lofty Buildings						
Total number of available factors		00	Total points				00
(Islamically) Results	t. p. / n. a. f x 10 = %						% 00. 0
7.3 Main characteristics of Arabian Architecture (Egypt as an example)	1. Organic expression						
	2. Contrast						
	3. Structural express.						
	4. Harmony						
	5. Integration of space						
	6. Introvert design						
	7. Grad. cross-section						
	8. Climatic treatment						
	9. Geometric pattern						
	10. Landscaping						
	11. Construction Method						
Total number of available factors		00	Total points				00
(Arab/Arch.) Results	t. p. / n. a. f x 10 = %						% 00. 0

N/A = not available

t. p. = total points

n. a. f = number of available factors

10 = the points is out of

Table B1. Mosques and Religious building:

Architectural Approach	Islamic & Arabian Principles	Fulfillment Degree					Points / 10
		N/A	A > 8	B 6-8	C 3- 5	D < 2	
7.2.2 Mosques spiritual (Islamic Factors)	1.Glorifying God						
	2. Multi-purpose						
	3. Economic-aesthetic						
	4. Worker's ability						
	5. Cleanliness						
	6. Quietness						
	7. Construction safety						
	8. Purity and clarity						
7.2.3 Mosques' architectural design (Islamic Factors)	1. Fully integrated						
	2. Centrally located						
	3. Not close to each						
	4. Ablution area						
	5. Close to houses						
	6. Toilets & *Qibla*						
Total number of available factors		00	Total points				00
(Islamically) Results	t. p./ n. a. f x 10 = %						% 00. 0

N/A = not available

t. p. = total points

n. a. f = number of available factors

10 = the points is out of

Table B 2. Residential Buildings

Architectural Approach	Islamic & Arabian Principles	Fulfillment Degree					Points / 10
		N/A	A > 8	B 6-8	C 3- 5	D < 2	
7.2.4 Housing (Islamic Factor)	1. Social unit						
	2. Form & Function						
	3. Cooperation						
	4. Owner participation						
	5. Stable & Variable factors						
	6. Expression of everyday activity						
	7. Entrance privacy						
	8. Screen windows						
	9. Islamic values						
	10. Inner courtyard						
	11. Expansion ability						
7.2.5 Multi-stories residential (Islamic Factor)	1. Separation of Units						
	2. Density & privacy						
	3. Openings' Privacy						
Total number of available factors		00	Total points				00
(Islamically) Results	t. p. / n. a. f x 10 = %						% 00. 0

N/A = not available

t. p. = total points

n. a. f = number of available factors

10 = the points is out of

Table B 3. Public Buildings

Architectural Approach	Islamic & Arabian Principles	Fulfillment Degree					Points / 10
		N/ A	A > 8	B 6-8	C 3- 5	D < 2	
7.2.6 Workplaces design (Islamic Factor)	1. Place for prayer						
	2. Women's prayers						
	3. Separating Genders						
	4. Toilets entrance						
7.2.7 Educational buildings design (Islamic Factor)	1. Sep. Boys & Girls						
	2. Sep. Staff Genders						
	3. Staff room						
	4. Toilets location						
	5. Sports facilities						
Total number of available factors		00	Total points				00
(Islamically) Results	t. p./ n. a. f x 10 = %						% 00. 0

N/A = not available

t. p. = total points

n. a. f = number of available factors

10 = the points is out of

Table B 4. Recreational Facilities & Touristic Villages

Architectural Approach	Islamic Principles	Fulfillment Degree					Points / 10
		N/A	A > 8	B 6-8	C 3- 5	D < 2	
7.2.8 Recreational facilities design (Islamic Factor)	1. Privacy for women						
	2. Age and Genders						
	3.Separating genders of teenagers						
	4. Praying area						
7.2.9 Touristic Villages and Buildings (Islamic Factors)	1. Separating male youth zones						
	2. Privacy on beaches for women.						
	3. Area for prayers on the beach.						
	4. Separating Genders in sports						
	5. Privacy in residential units.						
	6. No gambling casinos & nightclubs						
	7. Proper use of arch. expressions						
Total number of available factors		00	Total points				00
(Islamically) Results	t. p. / n. a. f x10 = %						% 00. 0

N/A = not available

t. p. = total points

n. a. f = number of available factors

10 = the points is out of

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