



**INFLUENCES OF ISLAMIC ARCHITECTURE ON GOTHIC
ARCHITECTURE**

MOHAMMED AHMADJALAL

JUNE 2015

**INFLUENCES OF ISLAMIC ARCHITECTURE ON GOTHIC
ARCHITECTURE**

**A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED
SCIENCES OF
ÇANKAYA UNIVERSITY**

**BY
MOHAMMED AHMADJALAL AIRUBYE**

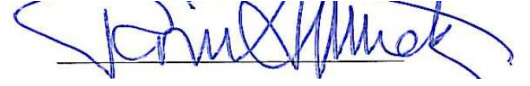
**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF
MASTER OF SCIENCE
IN
THE DEPARTMENT OF
INTERIOR ARCHITECTURE**

JUNE 2015

Title of the Thesis: **Influences of Islamic Architecture on Gothic Architecture.**

Submitted by **Mohammed Ahmadjalal AIRUBYE**

Approval of the Graduate School of Natural and Applied Sciences, Çankaya University.



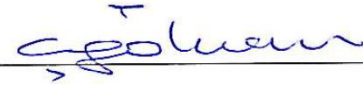
Prof. Dr. Taner ALTUNOK
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.



Prof. Dr. Arda DÜZGÜNEŞ
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.



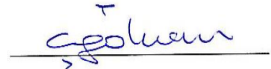
Assist Prof. Dr. Çigdem GÖKHAN
Supervisor

Examination Date: 25.06.2015

Examining Committee Members :

Assist Prof. Dr. Çigdem GÖKHAN

(Çankaya Univ.)



Prof. Dr. Pelin Yıldız

(Hacettepe Univ.)



Assist Prof. Dr. İpek Memikoğlu

(Çankaya Univ.)



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Name, Last Name : Mohammed, Ahmadjalal AIRUBYE

Signature : 

Date : 25.6.2015

ABSTRACT

INFLUENCES OF ISLAMIC ARCHITECTURE ON GOTHIC ARCHITECTURE.

AIRUBYE, Mohammed Ahmadjalal

M.Sc., Department of Interior Architecture

Supervisor: Assist. Prof. Dr.Çigdem GÖKHAN

June, 2015 pages. 151

In starting of the 7th century and with beginning decline of the Byzantine Empire, Islamic civilization has appeared as a new power. Benefited from the science of preceding civilizations, honed and developed it and put it within its own private template and it became the fountain that all humanity benefited from. At this time, Europe was overwhelmed in the darkness of ignorance and corruptions. As a result, it was natural it seeks to find who takes her hand to advance heading for a fertile source of science and knowledge (Islamic civilization), to capitalize on various sciences like medicine, chemistry, architecture, decoration and mathematics. Here, will highlight on the possible influences of Islamic art and architecture on the Gothic architecture in Europe. The study dealt with different models of Islamic and Gothic architecture as it contained features, characteristics and architectural and decorative elements especially those that are believed to be in connection with this influence. The aim of the study is to frame the magnitude of the influence of Islamic architecture in Gothic style of European architecture and it seeks to make the reader and the receiver know the estimated size of this effect through the compare and analysis method according to the temporal and spatial appearance for each element, and the impact of these items on the interior space of the Gothic style. The study concluded that there are large number of Islamic architecture elements (architectural and decorative) that have affected and sometimes were directly transferred to the Gothic style through multiple ways, including trade, Islamic expansion and the Crusades. And these borrowed elements have a big role on architecture, interior and ornamentation of Gothic church.

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Keywords: Islamic Architecture, Gothic Architecture, Mozarabic, Mudejar.

ÖZ

İSLAM MİMARİSİNİN GOTİK MİMARİSİ ÜZERİNDEKİ ETKİSİ

AİRUBYE, Mohammed Ahmadjalal
Yüksek Lisans, İç Mimarlık Anabilim Dalı
Tez Yöneticisi: Doç. Dr. Çigdem GÖKHAN

Haziran 2015, 151 sayfa

Bizans İmparatorluğunun çöküşünün başlangıcı 7. yy'dan itibaren İslam Medeniyeti yeni bir güç olarak ortaya çıktı. Daha önceki medeniyetlerin üzerine bina ederek ve geliştirerek tüm insanlığın yararlanabileceği kendi öz damgasını geliştirdi. Bu sırada Avrupa karanlık, cehalet ve çöküş içinde boğuluyordu. Sonuç olarak bilim ve bilginin gelişmiş ve verimli bir kaynağın tıp, kimya, mimari, dekorasyon ve matematik gibi ortaya çıkışından yararlanmaya çalışmak doğaldı. Burada biz İslam mimari ve süslemesinin Gotik mimari üzerindeki etkilerini inceleyeceğiz. İslam ve gotik mimari ve dekorasyonun özellikle bu etkiyi açıkladığına inanılan örnekleri bu çalışmanın kapsamındadır. Bu çalışmanın amacı tahmin edilen bu etkinin büyüklüğünü mukayese ve analiz yöntemleri ile okuyucuya göstermektir. Mekansal ve görsel öğelerle Gotik mimari ve iç mekan üzerindeki bu etkileri görmek mümkün olmaktadır. Çalışma sonucunda çok sayıda İslam mimari ve iç mekan elemanının Gotik'i etkilediği belirlenmiştir. Bu etkilemenin pek çok yolla, ticaret, savaşlar, İslam'ın genişlemesi, Haçlı seferleri yoluyla doğrudan bir etki olduğu gibi önce diğer Hıristiyan mimari-dekoratif elemanları etkilediği ve dolaylı olarak sonra Gotik'i etkilemesi ile gerçekleştiği anlaşılmaktadır. Bu İslam'dan ödünç alınan elemanlar Gotik kilise mimarisi ve iç mekanının oluşumunda büyük bir etki meydana getirmişlerdir.

Anahtar Kelimeler: İslam Mimarisi, Gotik Mimari, Mozarabik, Mudejar.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Assist. Prof. Dr. ıgdem Gökhan for her supervision, special guidance, suggestions, and encouragement through the development of this thesis.

It is a pleasure to express my special thanks to my family for their valuable support.

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CHAPTER 1

1. INTRODUCTION

The architecture is a pot of civilization, and represents the cultural identity of the creative and aesthetic level of human being. As it has been said since the ancient times, architecture is the mother of the arts because it combines the art of building as well as sculpture, painting, calligraphy and ornamentation. Since all the civilizations are affected by each other in terms of art, the Islamic Art and architecture has been affected initially by Hellenistic civilization that existed before Islam. Furthermore, Islamic Art started and continued with various civilizations in the Levant, Iraq, India and Europe, and it was influenced by cultural interaction with the other civilizations (but maintained its own character which reflects the essence of Islamic thought).

In general, it can be considered that the art and especially architecture tell us truer news from the history because it functions as an encyclopedia and strong store to nations' imagination, to achieve communication and cultural interaction. Moreover, architecture enables the communication between cultures when compared to other informants of the history.

Islamic art and architecture has played a major role in creating a civilized artistic and distinct dialogue, because it started from its identity and maintained on its cultural specificity, this was achieved only through aesthetic, artistic and technical innovation to provide true face of Islamic civilization. Then, it was the era of the Islamic civilization to return the debt to the civilizations that preceded it.

With the beginning of the 7th century and the decline of the Byzantine Empire, Islamic civilization has emerged - with different its sciences - on the horizon. Benefited from the science of its preceding nations, honed and developed, it put everything within its own private template and it became the fountain that all humanity benefited from.

At this particular time, Europe was mired in the darkness of ignorance and corruptions. Therefore it was normal to turn to the fertile source of science and

knowledge (Islamic civilization), to draw on various sciences like medicine, chemistry, architecture, decoration and mathematics.

This influence of Islamic architecture appeared in the Middle Ages, as the Western rulers and artists were impressed by Islamic civilization, and affected by the architecture and decoration.

In this context western Orientalists frequently mention the effect of Islamic civilization in Europe. Edgar Pisany states that “We are Europeans. The heirs of Andalusia miracle despite all of what we are used to hide behind the fingers, and search for our Greek and Latin roots. Our roots are not there. New Europe was born from an Andalusia uterus.”[1] .

Edgar added Why it has always been ignored who’s taught medicine and pharmacology, astronomy and mathematics at the first place? Spain has turned at the hands of the Arabs and Muslims into an upscale global beacon to human thought. From Andalusia, Europe had been fertilized and Western thought became richer which was still mired in the darkness of the Middle Ages [1].

Here, will shed light on the possible influences of Islamic art and architecture on the Gothic architecture in Medieval Europe. If follow the architectural styles that prevailed in Europe at the beginning of the seventh century, can notice the winds of change and influence starting to move in many directions. The first one is the decline of Byzantine & Roman Empire, because of the Arab Muslim conquests, in the regions of the Levant and North Africa. The second one is the great influence on the evolution of architecture elements and its vocabulary in many parts of Europe. Thus, and with the beginning of the ninth century, a new architectural style appeared with spirit of the past and breezes of present influences. Its Romanesque style which spread to the beginning of the 12th century intertwined closely between Romanesque and the Gothic-style which is an extension of Romanesque architecture accompanies some renovations in the way of roofing and some new elements, ornamentation and decoration etc.

Today, Islamic civilization is considered to be the background to western civilization in terms of science, architecture and the arts. The admired western civilization had

flourished in Renaissance beginning with 13th and 14th century onwards. The Renaissance period had its well-known reasons like finding sea routes and new scholastic thinking with admiration for ancient Hellenistic culture.

During these times in east and in Spain where west Islamic culture had been flourished, Gothic architecture and art was changing and it was forming a base of Renaissance. Therefore it is important to analyze Gothic architecture and which is the starting point of this study.

In the next pages, the effects of Islamic architecture in Gothic, how it reached and how it has been affected to formed interior space of church and how big the effect of Islamic architecture in Gothic will be discussed.

1.1. Justification of Research

There are many purposes to decide on this kind of research. The first one is the academic purpose. When the literature has been gone through, it can be noticed that academic search in Islamic architecture is little or not up to the ambition. So this research firstly came from the wish or need to develop a vision for Islamic architecture in our academic institutions and the study of Islamic architecture from the perspective of Theorists and Muslim architects. Secondly, the lack of focus to study Islamic architecture in our academic institutions motivated me to highlight on the authenticity and origins of Islamic architectural elements, and its impact on the rest of the architectural patterns and movements. That would give way to study the magnitude of the influence of Islamic architecture on European architecture, especially Gothic architecture.

In addition, because of the majority of studies on Islamic architecture were produced by foreign theorists and researchers who are non-Muslims and that sometimes caused a biased evaluation. Therefore, in the beginning, Islamic art and architecture is analyzed thoroughly according to their understanding of the impact on Gothic architecture . Finally, this research will highlight the importance of architecture as an element of cultural interaction between different communities intellectually and ideologically.

1.2. Research Questions

Each research has to answer a group of questions, so in this study we are trying to answer some questions. First of all, are going to explain what's the impact and what is Cause. Since this study focuses on the influence of Islamic architecture in gothic style, we are going to explore the magnitude of this effect, how it happened and the factors that had helped this effect happen. Secondly, we will explore whether the intellectual basis of Islamic and Gothic architecture has a role in this influence. Finally, we will try to limit the main features and elements of this effect and figure out what the role of architectural pattern in this influence is.

1.3. Aim of the Study

The research aims to find and prove some influence of Islamic architecture in Gothic architecture by researching in the details of the architectural elements and searching for the origins of both of these patterns of architecture. Then we aim to prove the sustainability of Islamic architecture and its suitability for every time and place.

We will try to bridge the shortfalls in Islamic architectural theories and find a way to get knowledge and evaluate architecture. Furthermore, we will refute some extreme views that are trying to downplay the influence of Islamic architecture on European architecture, particularly gothic architecture. We will also clarify the extent of the impact of architectural and decorative elements as well as the techniques that are used by architects on the interior spaces.

1.4. Methodology

The study is based on the practical comparison and analysis of the common architectural elements between the Islamic and Gothic architecture. It focuses on the origins of both of them and its sources and if there is any exterior effect. It further explores how this impact occurred and the magnitude of the influence. Through the study of the architectural elements, the link between spatial and temporal evolution

of the appearance of each of the elements in Islamic architecture and Gothic architecture will be tracked.

This is done through first, the knowledge the origins and then, feature and characteristics of both the Islamic and Gothic architecture. Secondly, the primary and secondary sources in Arabic, English, other languages about architecture, history, ancient travelers or commerce and the extent the effect of the neighboring civilizations temporally and spatially will be studied. Thirdly, analysis and comparison of common structural elements in both styles will be conducted and the possibility of the use of these elements in terms of structural or aesthetic significance will be studied. For example, the question of why the pointed arches in the European architecture was used after 11th century and not before can be kept in mind. Furthermore, the possibility of influence, potential aesthetic and construction benefits will be discussed and analyzed. Lastly, relying on the analysis of a number of examples of Islamic architecture elements in the early times, as well as the examples of the early Gothic style, the analysis and interpretation of the theories that talk about the origins of both models will be conducted.

1.5. Theories on Intercultural Effects and Influences

Each research must base on the theory or set of theories. Our subject addresses the issue of the influence between different civilizations and how this effect occurs, what resulted and impacts.

There are number of theories found dealt with intercultural effects, in the following two most influential authors are stated.

1.5.1. Wolfaga Welsch _ Transculturally

Wolfaga Welsch state about transculturally (Transculturally: The Puzzling Form of Cultures Today) that:

“Culture de facto no longer have the insinuated from of homogeneity and separateness. They have instead assumed a new form, which is to be called transcultural in so far that it passes through classical cultural boundaries. Cultural conditions, today are largely characterized by mixes and permutations” [2], p. 197, see Fig. 1.

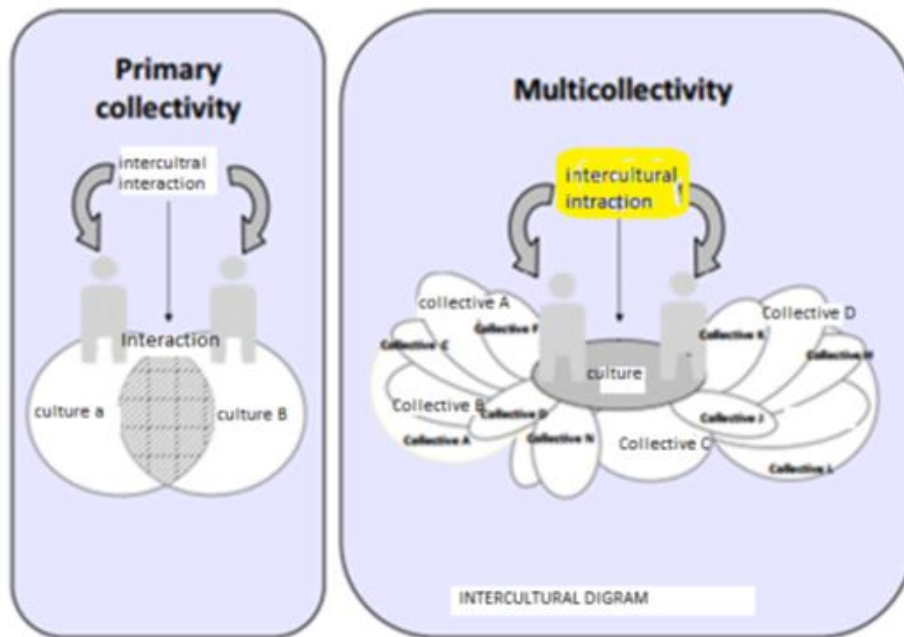


Figure1: Transcultural Theory.

According to Welsh theory, in my opinion the causes of possible influences that appear in Islamic architecture may be happen by pre-culture that might found before Islam. In another side the same thing may be happen with Gothic architecture. The next pages we are going to discuss what has happened and improve or reject it.

1.5.2. Oleg Graber Views About Mutual Effect Between East & West.

Oleg Garber may not be considered as a major theorist but his studies are focusing on the effects between east and west, stated:

” It is not by the accident that most discussions of Oriental and more specifically Islamic influences in Western art have dealt with objects or with motifs found in object. Textile, metalwork, even glass and ceramics traveled easily; they were essential ingredients of an East-West luxury trade ,and after the beginning of the Crusades, become almost automatic items of the loot brought back from East. The impact of such objects appears in architectural decoration , such as in imitations of Arabic writing like those on the door of cathedral at Le Puy in central France, in the use of Persian and Syrian ceramics in several church of northern Italy , or earlier in the mosaic decoration of Germigny-des-Pres”[3], p.380.

It is easy to support Graber says of presence of this element according to historical logic. It reveals the mutual influence in art, while in architecture the matter is different. Where Graber claim that;

” Since its monuments are immobile, influence and impact can only take place if one of three types event occurs. A_ masons, architects or other technicians

move from one area to another. B_ patrons or other influential taste-makers carry with them the impact of alien architectural monument or effect and seek to translate their memories into local techniques; C_ drawings, photographs, and at times literary descriptions transmit technical or aesthetic impressions which are then used or transformed by some receptive milieu”[3], p. 381.

According to Graber that the impact of architectural between the East and the West should not be limited to the identification and assessment of direct and indirect impact and tradition.

Especially he sees the necessity of attention to a phenomenon that both of Islamic and Christian civilizations benefited from it. This phenomenon benefit returns directly or indirectly to Roman architectural heritage.

Influences and imitations are easiest to detect and most obvious in areas where two cultures coexisted for any length of time or where Christian rule replaced Muslim hegemony. Such is the case of Spain, where a whole architecture style, what is known as mudejar art, is clearly derived from Islamic art. Its major monuments are in the cities of Zaragoza, Toledo and Seville though hardly a province of Spain outside of the extreme northwest has escaped the impact of Islamic forms [3], p381.

Islamic has influenced clearly in Western architecture especially in Spain, which appears in the form of elements or motifs within the general configuration as the case in the square minaret for Teruel or octagonal ones for Zaragoza.

Generally in these two examples, the interior and exterior walls and ceilings were made by different techniques. The ceilings were made by wood and covered with motifs and finishing techniques that seem as original Islamic character. Just like in case of Alcazar palace in the fourteenth century.

Grabber, indicates that the influences of Islamic architecture were not only confined on Western Europe and Spain but it had an impact on Western Europe too, referring to its impact on the Armenian architecture in the tenth century[3].

When one moves out of Spain and Sicily, matters become much more complex. All scholars have agreed that certain ornamental motifs, for instance Kufesque writing, are of Islamic origin. Almost any motif or novelty is given an Islamic background since a high Islamic technical growth occurred earlier than in the west” [3], p. 382.

Grabber, indicates that there is more than one way to direct or indirect influence. One of them, a type that called the Regions influence and gave the example of the

pilgrimage routes which erected in the Romanesque architecture era where became contact with Spain's usual norm which enabled the builders, architects and art connoisseurs of friction in that era . What resulted in the transmission of Arts and decorations from south to north through the Architects? What we mention above it can be seen in Burgundy or Provence and Auvergne.

“For the most part they consist of architectural details, horseshoe arches, polylobes, masonry of stone of alternating colors, roll corbel, impost block, certain kinds of vegetal ornament, tendency in some monuments to cover entire surfaces with ornament” [3], p.382.

It seems that the regional influence of the Roman and Gothic both came from Italy because of their proximity to the center of the Islamic world, which played a role in the development and transfer of some artistic techniques as is the case in Sina Pisa and churches in Venice, as well as some of the details in San Marco. All these simple examples of buildings borrowed some elements of Islamic Art.

In an important and long study of Ahmad Fikri pointed out clearly the extent of Islamic influence on the Church (Le Puy in central Auvergne). He noted that the decorations and ornaments that have appeared which may have been moved through the normal or acquired routes because it occur on the pilgrimage route in the Crusader period. Where he noted that a large part of the church building does not look like shapes of Romania construction where the shapes close to the Islamic construction such as domes and vaults. He stated that "[3]. as he states;” **wide variety of squinches relates Le Puy to Kairouan and North Africa rather than to Spain**” [3].

1.6. Boundaries of This Study and Understanding of Some Terminologies.

In order to start our research, we most know the most important terms and terminologies that will be axis of this discussion.

A. Islamic Architecture:

“Islamic art and architecture, works of art and architecture created in countries where Islam has been dominant and embodying Muslim precepts in its themes” [4]. Islamic architecture encompasses a wide range of both secular and religious styles from the foundation of Islam to the present day [5]. What today is known as Islamic architecture was influenced by spirit of new religion and ancient structures that have already existed

in Egyptian, Roman, Byzantine, Mesopotamian and Persian lands which the Muslims conquered in the 7th and 8th centuries[6-7]. These styles are represented by Mosque, Madrasa, Fort, and Palace which derived its principles from Quran and Sunnah [8]. The area that we are covering in this research from Spain- to North Africa to Mesopotamia - Persia and Anatolia.

B. Gothic Architecture.

Gothic architecture is the stage of European architecture characterized by Structural graphical distinctive and new patterns in the late Middle Ages, especially from the middle of the twelfth century to about the sixteenth century. These architectural patterns appeared in France and were the first beginnings in the Church of St. Denis in 1140 when it was rebuilt by Abbott Sugar then spread from there to the rest of Europe. Characterized by using an architectural elements which somewhat differ from Romanesque architecture in terms of using pointed arches, ribbed vaults, gargoyle, flying buttresses and etc [9-10].

(We will not concentrate all aspects of Islamic architecture but the aspects which have influenced to Gothic architecture within the boundaries of above areas).

C. Mozarabic.

“The term ‘Mozarab’ is intimately associated with part of the population of the Iberian Peninsula that lived following the Muslim invasion of AD 711”[11]. Mozarabic architecture refers to Churches buildings that were built by Christian and reveal strong influence from Islamic architecture. The Church of Santa Maria de Melque in Toledo and San Cebrian de Mazote in Valladolid is the most important examples of this style. [12-13].

D. Mudejar:

The term Mudejar refers to the Andalusia’s Muslims who were allowed to stay in Spain after the demise of Islamic rule after the Catholic Kings gradually took on Andalusia, where they were allowed to remain in Islam and did not turn to Christianity. Because of their experiences in architectural and artistic.

This architectural style appeared in the 12th century at the end of Al_Muravid era [13]. This style did not invent new forms or adds new construction or architectural elements but they re-interpretation Christian architecture pattern with Islamic

influences. This style is the most important architectural styles that influenced to Christian architecture in Spain and south Europe. The best remaining work of this type is Alcazar palace, parts of Alhambra palace and Moneral Church [14-15].

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CHAPTER 2

MUTUAL INFLUENCES OF CULTURES ON ARCHITECTURE AND INTERIORS.

2.1. Possible Influencing Channels Between East and West

2.1.1. Effects of Architectural Character of Previous Existing and/or Nearby Cultures

Islamic architecture was influenced by ancient structures that have already existed in Egyptian, Roman, Byzantine, Mesopotamian and Persian lands which the Muslims conquered in the 7th and 8th centuries. Further east, it was also influenced by Chinese and Hindu architecture as Islam spread to Indonesia .the most important effect was by Sassanid and Byzantine models [7].

The Dome of the Rock (*Qubbat al-Sakhrah*) in Jerusalem (691) is one of the most important buildings in all of Islamic architecture. It is patterned after the nearby Church of the Holy Sepulchre [16-17], p.43-44. and Byzantine Christian artists were employed to create its elaborate mosaics against a gold background [7-18], p. 68. The great epigraphic vine frieze was adapted from the pre-Islamic Syrian style[19-20], p. 67-68.

2.1.2. Trade routes:

The trade route in whole the world was an important mean to connect between east and west [21]. According to Vadime Elisseff in his book *The Silk Roads* was the first trade routes through it the western and eastern world was joined [22], see Fig. 2.

"Along the Silk Roads, technology traveled, ideas were exchanged, and friendship and understanding between East and West were experienced for the first time on a large scale. Easterners were exposed to Western ideas and lifestyles, and Westerners too, learned about Eastern culture and its spirituality-oriented cosmology. Buddhism as an Eastern religion received international attention through the Silk Roads"[22],p.54.



Figure 2: Silk Road .

2.1.3. Expansion of Islam.

Islam was appeared in the beginning of 7th century by Prophet Mohammad, and then his successors established a very big state. in 640 this state was expand in west and east of Arab peninsula, and became control great part of Mediterranean through conquering Sicily and Iberian peninsula. The Mediterranean was a The link knots between the European continent, and Asia and North Africa. Where the Romans used it and then the Byzantines and the Sassanids. The most uses are for the purposes of trade between the East and the West, and sometimes for military purposes, and the passage of armies. The Muslim side of the Mediterranean ancient trade networks station between East and West Asia as well as Europe. In Europe, the main destination for these luxury imports was Italy. Republics of Venice and Florence, Amalfi and Genoa, Toledo(in Toledo about 300 Islamic building which was effect in Norman art) which was in control of the maritime trade.[23].

The impact of trade across the Mediterranean clear on the cultural interaction between the Muslim and Christian worlds, as well as the rest of civilizations. Through the large amount of artistic works that have moved between the Mediterranean parties, such as what has been exchanged gifts between kings and princes of the Islamic countries and the European [24].

the Islamic countries on Mediterranean become a great center to export product to Europe which was prefer a luxury product like metalwork, ivory, and glasswork. And like this product was famous in Fatimid era, It was of acquisition in Italy and has become one of the churches assets [24], see Fig. 3 .

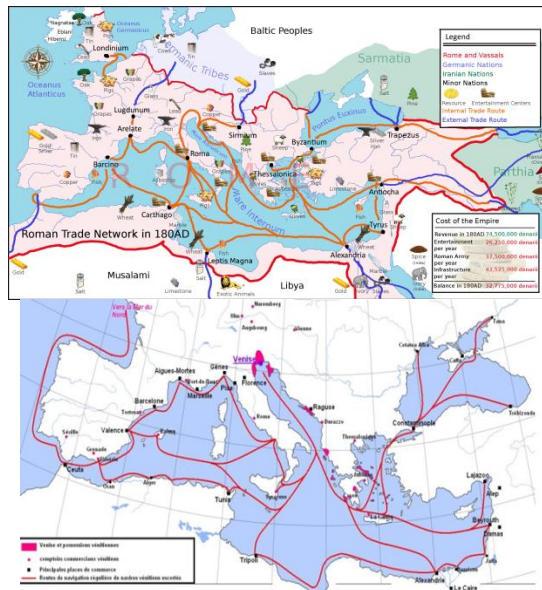


Figure 3: Mediterranean trade routes .

“The Spread of Islam: 632-661: conquest of Persia and parts of India, the Middle East, and North Africa as far as Tripoli. 662-750, Moslems conquered Armenia, the rest of North Africa, Spain and the southern parts of France. Muslim expansion into Europe at Battle of Tours (732), but failed to take Constantinople. The conquests meant that the Moslems controlled the Mediterranean Sea and its trade routes” [24],see Fig. 4.

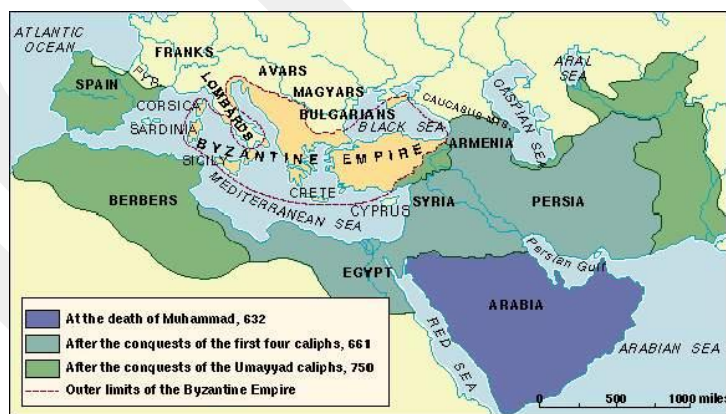


Figure 4: Expansion of Islam.

After the death of the Prophet Muhammad as a result of the expansion of the Islamic conquests in all of the trends and within a few decades of the expansion of the Islamic empire, see Fig.1, We find that huge numbers of people from three continents, Asia, Africa and Europe have chosen Islam as a ways of their life. These millions who converted to Islam as a result of the Islamic conquests in their countries. Was carrying the heritage of ancient civilizations such as Egypt, Greece, India, Persia and Rome. Muslims interested in the heritage of these civilizations and

Honor their scientists also maintained their libraries. as well as Many Muslim scholars traveled to those countries, and translated many of their sciences to the Arabic language [25].

For example translated many of the philosophical works of Aristotle, Plato and Pythagoras and product of the main Greek astronomy, mathematics and medicine, as well as important works have been translated from Pahlavi language and Sanskrit. And so were the wars of Islamic expansion one of the cultural interaction channels between Islam and other nations, which resulted in a scientific renaissance in the Muslim world considered later the cause of the European Renaissance.[25].

2.1.4. Crusaders.

Hattstein and Delius mention opinion of one of important Arab historian “ Ibn Al-Athir “ on Crusader and crusader war [24].

“The Crusades overpowered the eastern Mediterranean during 12th century . Following their occupation of Jerusalem in 1099, the Crusaders, whom the arabs referred to indiscriminately as " Franks" occupied almost all the coastal cities of Palestine. The historian Ibn al-Athir from Mosul (today north of Iraq) followed events from a certain distance and classified the Crusaders as an important episode in the cultural conflict between Islam and Christianity. Although phases of Holy War (jihad) alternated with periods of peaceful coexistence, he warned his contemporaries urgently of the decline of islam and Islamic culture.” [24],p. 385.

Crusaders faced a very rich tradition of art in the areas occupied by the end of the 11th century and the beginning of the 12th century, as these areas can be considered as the confluence point of East and West cultures in that time . Since afford both civilizations of models and distinctive artistic style, where the presence of all of Byzantine art and Islamic art in the areas controlled by the Crusaders Add to the presence of both the Syrian art and Armenian art who are considered indigenous to regions of the Crusader state. This original art forms merged with models that the Crusaders carried with them from Europe, which is already different models and represent a variety of art like French, German, Italian and English. The effects that appeared on the art of the Crusader explained big effect by the Christian eastern arts compared by Islamic art. This is due, according to the author's opinion that the Christian artists who have worked in the crusade state with the same backgrounds in terms of race and belief. [26]. The author tried to minimize the impact of Islamic Art at the Crusader art but acknowledged implicitly that there is effect cannot be denied.

2.2. Islamic Architecture.

2.2.1. Concept of Islamic Architecture.

Ernst Crook asks in his introduction to the book "Architecture in the Islamic world," Is there a so-called Islamic architecture? Does that mean the architecture of the Islamic, the architecture that provided by the Muslims of the service Islamic religion, such as mosques and cemeteries and schools? Or do we mean by the architecture that emerge in Islamic countries? And if so, what Islam means to do so, or if the Islamic character is not a recipe specifies a religious value, is understood from the word it defines a kind of architecture reflects the cultural values of the Islamic civilization? He wonders then that it was for this architecture, already existing before. Is it possible to distinguish it as different from other architecture built outside the scope of Islam [27].

In the same area, the Pakistanian architect, "Kamil Khan Mumtaz" in his book "Architecture in Pakistan" 1985, controversy which is being about the distinction between the word of Islam and Muslims. And then distinguish architecture as Islamic architecture, or it is a Muslims architecture

If the "Islamic" characterization applies to the doctrine of Islam, the characterization of "Muslim", which applies to convert to Islam, and it can be for the definition of "Islamic architecture" that applies to buildings associated with faith in thought and practice and aims to serve the purpose of an Islamist. The other concept is a "Muslim architecture." It applies to buildings that are linked to Muslims as a people. He adds, "Kamil Khan Mumtaz" The Orientalists who were fired characterization (Islamic architecture) to express architecture in the Islamic world, from India in the east to the west of Andalusia in Spain [27].

He adds, the understanding of Islamic architecture needs to be aware of the philosophical and historical frame that link it with religious and cosmic ritual. Referring to the thought of some architects such as "Bokhart" and "Ardalan" and "Laleh Bakhtiar," and others when they interpreted the symbolic aspect for geometric forms of architecture according to their Sufi thought. Without reference to the teachings of Islamic jurisprudence in the evaluation of architectural works.

As well as being the doctrine, and Islam and its values were the ones who bestowed upon on Islamic architecture, and identity of Islamic civilization as a whole. 'where communities identities come of three relationships, the human relationship with God (faith). And the relationship of human in human beings "community", and the relationship of man to nature "environment". Through the general pattern of human life with respect to these three relationships generated laws make up the basic philosophy of life in each community of communities [28].

Some looking for the identity of Islamic architecture through Formalism relations, while others are looking for through the content, as the self-underlying of historical forms in a particular thought be the source of his designs, so Islamic architecture came as a result of harmonious response by the designer to the principles of his religion. as Islamic religion accept, all the previous Heavenly messages and religions and Contained It.

It has been affected particularly by a creative arts and architecture of civilizations that contained by Islam. Therefore transmitted creatively genius and made new ones, and addressed the arts in line with the spirit of Islam and its teachings and his philosophy, till came up art and expressed implicitly and outwardly about unity of Islam art across time and place. [29].

To say that the Islamic Art refers to the civilization or culture of a great group of people gathered to acknowledge of faith in Islam, and whether Islam as a religion or civilization it is a historical phenomenon formed in the third decade of the seventh century and has grown and evolved in a special and unique pattern [3].

At the beginning of the Islamic era in Medina, there were not clear of Islamic architectural traces, Except the Prophet's Mosque, that Who built with simplest images of architecture at the time, was a practical principle to perform religious duties is the basis for the reconstruction, and this continues to the end of the succession of the first caliph, "Abu Baker AL_Sedieq", and after the expansion of Islamic conquests and the mixing of the Muslim nations of the other, the effects of architectural appeared taken evolving stable shape in the Abbasid era, and in general,

we find that the architecture of the Holy Prophet time and the Caliphs were to confirm Islamic values in asceticism and austerity and rejection of monumental architecture, and was in the Umayyad era close to architecture of countries conquered by the Muslims, Confirming the Islamic identity, but the clarity of the architectural profile of Islamic architecture was in the Abbasid era, the era of prosperity and stability. From above can identify the sources of Islamic architecture- which are Islamic Art- the following aspects:

- A. Architecture and architecture by the Quranic revelation (and this reflects the spirit of Islam.
- B. traditions that belong with the life of the Prophet (PBUH) and his ideas, Hadith and his thought .
- C. the first Islamic buildings (house of the Prophet (PBUH) and his mosque in the Al_Madiena.
- D. Arab Art & architecture pre_Islam (and this reflects the time-communication).
- E. Architecture and art in neighboring countries (and this reflects communicate spatially) [29].

Islamic architecture is truth we can discover it when we visit the Islamic environment, Where we feel. As Schulz seen, before we meet any human being or see any written sign, feel it in every building and every ornament and on the level of the city as a whole [30]. This feeling is who made Schulz called Islamic architecture Unity architecture. What are the characteristics that are evident and we say Islamic architecture.

The speed and success, which appeared by distinct Islamic architectural style, primarily due to the need felt by the Muslim caliphs, and their agents on the regions, and to show the reality of the Islamic presence in the physical image is different from what surrounds them, (and this only confirms the deliberate architectural forms that characterized Islamic Architecture), it was characterized by a clear and understandable Islamic body, and this is a point of great importance when studying and looking at the Islamic heritage. In terms of creating an architectural model in distinct cultural type[31] .

In this opinion we respond too many of the propositions that make Islamic architecture a kind of artificial architectural language. Came from very diverse non-Muslim cultures , as well as respond to proposals that make Islamic Architecture utilitarian architecture came just to meet the functional needs ... and other proposals that lacked objectivity, but the and honesty and integrity scientific required .

2.2.2. Philosophy and Source of Islamic Architecture.

In this part philosophy and source of Islamic architecture and its effect on architecture, interiors and ornamentation will be discusses.

2.2.2.1. The Pre-Islamic Arab Art and the Neighbor Civilization.

Since the first appearance Islamic architecture showed the basic architectural elements in the Prophet's Mosque in Medina, a large qualitative development, especially after taking enlarge Islamic area and join the nations and peoples of ancient and upscale civilizations to Islam and molded under its banner. All this has led to supplement Islamic architecture with new elements and vocabulary contributed, through the stages in pushing the development of arts and architecture in the Islamic world to high levels of artistic and aesthetic and heritage aspects [31].

Islam during half a century of its starting, entered the oldest centers of human civilization, starting from Mesopotamia ,The Sassanid Empire, Egypt, Byzantium, where Greek and Roman heritage, to Syria even North Africa and Spain as well. This widespread, is an important historical and cultural transformation in human life . the Islamic architecture that arose and appeared have been absorbed Tributaries art of these civilizations', in less than a century after the migration, so the Muslim Arabs conquerors affected of aesthetic values of the Arts those ancient civilizations, therefore, appealed their care to pay attention to their architecture and decorate it with different types of elements and vocabulary of architectural engineering and decorative, which won her aesthetically look commensurate with the importance of the role played by these architecture [31].

And over many centuries the Islamic architecture are developed and included geographic areas stretching from Andalusia and Morocco in the west, to Central Asia

and the Indian sub-continent to the east. These areas include a number of regional centers that characterize each of them a special character was always impressive.

What we are seeing today from the landmarks of Islamic civilization from Damascus mosque to mosque of Cordoba and all the Muslim areas. These buildings all its new arts as Domes, minarets, arches and decoration and its distinctive architectural character, added new features to all elements that taken from the ancient cultures last art forms and put it in its template that proper spirit of Islamic law [31].

The most prominent appeared in the Arts of Islamic architecture is the formation of the new architectural elements, and innovation a technical and vocabulary expressions. This came as a result of Arab Muslims benefit from the arts and architecture of peoples who entered Islam. Arabs quote from other arts what they found an appropriate to Islamic civilization and consistent with the traditions and customs, so, the Muslim artists inspired of Arts civilizations of ancient Mesopotamia buildings that have high mega exterior walls decorated with variety pottery motifs, as well as some of the architectural forms as Babylonian ziggurats which have left their mark on minarets in Abbasid era, as the minaret of al-Mutawakkil mosque in Samarra-Iraq, and the minaret of the Mosque of Ibn Tulun in Cairo [31].

Most of the buildings constructed at the beginning of the Abbasid era may be affected by elements and vocabulary of Sasanian architecture and Hairia style that constructed in Iran and Iraq, like the great Iwan, the grand lobby that covered with vault, and in particular in the Abbasid Caliph Palace Mutassim in Samarra, which was built in 221 AH (836 AD) as well as Ukhaydir Palace near Karbala, which was established in the first era of Islam. In addition to the advantage of the architectural style that was prevalent in the Mesopotamia building [31].

There is also another essential architectural element is consider as a distinctive Islamic architecture elements taken from the Sassanid architecture and has spread in many Muslim countries, and solved the problem of moving from the square base building to the semi-circular dome that topped, where corner curvature used. which is concave triangles of stone or brick with stucco. This is different from the dome of

the triangle, which is transmitted from square to the circuit by arches or by Octagon ribs, which we see in the Byzantine and Romanian Antiquities [8].

As for what took by Islamic architecture of the Turkish architectural style that influenced by the Byzantine style, it is a building of circular shape design, which contains a large central part topped by a gigantic dome, meet around it consecutive domes smaller ones with different sizes, and many of the Turks architects could develop this type of construction, especially the great architect Sinan, who has made the Byzantine building (Hagia Sophia) architectural model after that enter the geometric creations and become the platform and a model for the establishment of many of the buildings and mosques in Turkey and abroad[31].

The geometric and floral decorative arts in Islamic architecture that has evolved considerably thanks to the overlapping items and decorative items for various arts, where this development included all known forms, simple or complex, overlapping or interlocking, becoming Represented all of beauty artistic images of Islamic architectural. Many Islamic buildings have been affected by this high art that prevailed before Islam in Mesopotamia and the Levant, especially works of Byzantine mosaics [31].

2.2.2.2. Quran and Sunnah as fundamental of Islamic architecture.

Spahic Omer in long article about effect of Qur'an and Sunnah infoundmental of Islamic architecture. To begin with, however, it must be said that if we want to talk about the sunnah as the foundation of Islamic architecture, and by extension as the foundation of Islamic culture and civilization, a regular and appropriate reference to the Holy Qur'an ought to be made as well. This is because to talk about the Sunnah means in so many ways to talk about the Qur'an [8].

“It stands to reason that the sunnah is the Qur'an in action, or the Qur'an-implemented, at the hands of the infallible and most trusted person, Prophet Muhammad (pbuh). The sunnah thus cannot be observed and rightly understood except through the prism of the Qur'an. Allah explicitly says about this status and role of the sunnah: “I swear by the star when it goes down. Your companion (the Prophet) does not err, nor does he go astray; nor does he speak out of desire. It is naught but revelation that is revealed. The Lord of Mighty Power has taught him, the Lord of Strength; so he attained completion.” [8].

And he proves the role of Quraan and Sunna in:

“The roles of the Qur'an and the Porphet's sunnah in shaping the identity of Islamic architecture are as follows:

- A. **The Qur'an and sunnah afford a perfect guidance on how Muslims are to perceive the creating, using and possessing of architecture. Such is an integral part of the total Islamic worldview.**
- B. **The Qur'an and sunnah afford sets of general values and principles which are central to the body of Islamic architecture: from the ideological and abstract aspects concerning the philosophy of Islamic architecture to the practical and tangible ones concerning the functions of many of its components. If one expects to find in either the Qur'an or the sunnah a concrete formula for designing a dwelling or a mosque, for example, one is then seriously misguided.**
- C. **The Qur'an and sunnah with their approach to architecture serve as an everlasting source of inspiration and a catalyst for matchless ingenuity. And the two notions: inspiration and ingenuity, are fundamental to every successful architectural story. For instance, the Qur'an and sunnah do not speak about how to design a house entrance and windows, but they speak about the issues which are pertinent to the subject of the house entrance and windows. Nor do they speak how to organize inner spaces inside a house, but they speak about many issues which are related to that particular subject" [8].**

And he add_ in term of role of Quraan and sunnah in Islamic architecture.

"The roles of the Qur'an and the Prophet's sunnah in shaping the identity of Islamic architecture can be summarized in the following concepts: education, guidance, inspiration, thrust, point of reference and contentment. It follows that any recipe for reviving Islamic architecture must address firstly the subject of the Qur'an and sunnah as the conceptual base, which will then be followed by mastering the building technology and engineering of the day, and by duly answering the requirements of the cultural, environmental and economic conditions of a given age and a given geographic zone [8].

Ibrahim Abdul Baqi says: (that the concept of Islamic architecture is no longer valid for deliberation without the presence of Islam as a fact in the construction of urban and architectural theory[27]. According to the same article, "The description of architecture by Islamism needs to intellectual review both for historic and contemporary architecture, Since Islam was the way of life that regulates the life of the individual and community values , behaviors , transactions , rituals and worship, so, what is produced by the individual or the Muslim community of architecture necessarily reflect those values , behaviors and rituals. This means that the architectural form linked with ideological content is essential to build the architecture of Islamic community [27] .

These two properties have been reflected in the art of Islamic architecture and that to application of an important Islamic principle stated in the Quran in urging not to exaggerate and extravagance, (The spendthrifts was Devils Brothers and the devil was ungrateful to his Lord) Alasra [27]. As well as we can shows moderation approach also to control the spending - the Almighty said: "And those who, when they spend no have transgressed not skimp and was between that as mainstay" -67 This Islamic orientation is to govern the economy in Architecture and Urban Planning, both in design in construction [27] .

If we look at the Qebaa Mosque, Mosque of two Qiblas and Prophet's Mosque in first image, we find examples of that simple method in architecture.

architecture as the engineering art in particular and all the other arts, must be compatible with the doctrine, social ties and the Sharia, and innate reasons that associated with this art . where a lot of Quranic sin refer to this like, Allah says: (And remember when made you successors after Profit Aad and enable you in the land to take from its plains palaces and sculpt homes in the mountains, and remember God grants not mischief in the land spoiler.At the urging on the reconstruction without to encroach upon the others confirmed. The Messenger of Allah (peace be upon him) when he said: (who built a house without neither injustice nor attack, it was reward for him what it benefited from the creation of the Almighty God) [32].

2.2.2.3. The First Islamic Building.

Represented the migration of the Prophet to Medina, the starting point in the history of Islamic architecture, as it was for his exercising in leadership tasks in the Almadiena-state, the impact on the internal structure of the Almadiena construction, as it introduced new jobs within the city, in order to fit with being the capital of the Islamic state emerging, which take Islam approach. and since that date the jurisprudence of architecture is emerging in the Islamic civilization[33].

2.2.3. Different Stylistic Periods of Islamic Architecture.

A. First Islamic era.

The era of the Prophet Muhammad, peace is upon him Distinguishes Islam when it appears very simple and rigor. And this two characteristic reflected on the Islamic architecture at the time. The starting point in the history of Islamic architecture in the House of the Prophet (PBUH) in Medina after his emigration to it, and what following of additions and modifications and development stages when that house turned into a mosque. Until when its form reach to the what it was by year of [26], at the time of migration at Caliph Othman era which became a role model for Muslims all over the world. It is noted that the Prophets House had planned at the time of great simply and severe economy, according to the circumstances that were surrounding the Muslims at the time. This design although its simplicity became the nucleus of Islamic architecture not only mosques, but for all Islamic buildings. If we look at the Quba Mosque, mosque is two Qiblas and Prophet's Mosque in the first image, we find examples of that simple style of architecture. Even when renewal, these mosques remained at the same simplicity compared to other mosques, [34-35], see Fig. 5 .

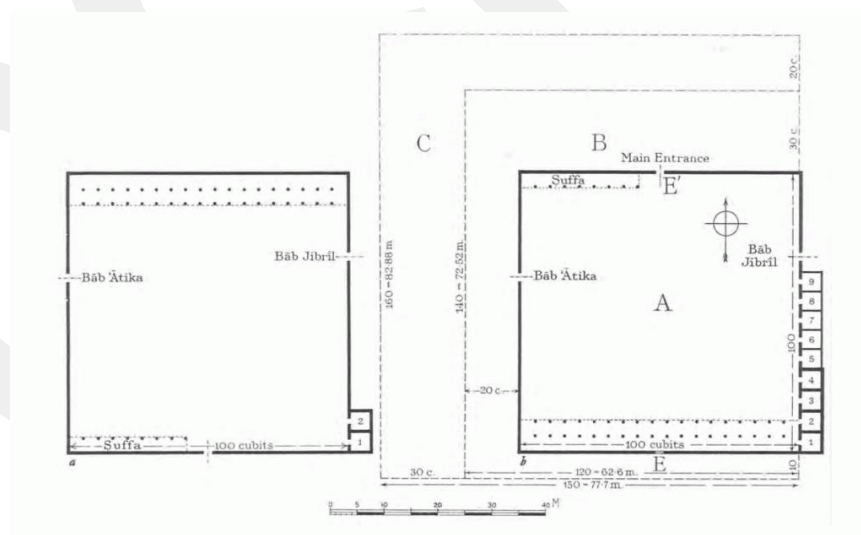


Figure 5: Prophet Muhammad's House/Mosque.

B. Umayyad style.

It's clear that the Arab and Islamic art and architecture has grown in light of the Umayyad dynasty in the Levant. Umayyad art may quote the first effervescence and artistic characteristics of the environment in which was born alongside some of the influences that formed in the entirety technical features of the Umayyad pattern. Umayyad art has flourished in the first and second centuries after the migration, and it was a luxury style that has spread in all Islamic countries, including Spain [35].

The artistic style of the Umayyad architecture, it gleaned the first origins of artistic schools that were scattered and prosperous in the Levant before the Islamic era as Hellenistic and Eastern Christianity arts, along with some Byzantine and Sasanian artistic influences because of neighborly. It is worth mentioning that the techniques of arts in the Umayyad period was extremely development, thanks to the system followed by the Umayyad caliphs, of the obligation of the Muslim regions of the world to provide the craftsmen, artists and materials to the construction to caliphate center for architectural and artistic huge work. For this reason, Umayyad's enables of building and renovating the greatest religious buildings in that time, including the construction of the Umayyad Mosque and the Dome of the Rock, and others [34].

The Umayyad's enter the most of the new architectural elements to their religious building either by constructed or that they renew. From these elements: minaret introduced for the first time in the mosque of Kufa, Fustat and Damascus, also credited with the introduction of the cabin, which had separates a caliph in his prayers. And also introduced the hollow mihrab in mosques and domes and other architectural elements. As well as the Umayyad's also excelled in secular building like palaces, baths and houses, representing the civilian side in the Umayyad buildings. One of the greatest remainder of those buildings desert palaces built by the Umayyad outside the cities in the desert, in Jordan and Syria, such as Amra Palace, Palace of AL Mushatta and Hisham's Palace and the Palace of the Western Heer. The form of these came as small forts. But from the inside, was mediating by opened courtyard surrounded by aspects of supplements and architectural units. As well characterized by using different material like carved stone, brick, and stucco [34].

In terms of similar architectural elements in buildings of that period, we find the circular arcs, and horseshoe arch as well as the first appearance of the pointed arch we also find semi-circular vault, neighboring vault, lintels, domes, architectural longitudinal vault , cross architectural vault, columns and capitals Corinthian inspired by classic buildings. While for decorative items in those palaces also, we find the mosaic has been used extensively in artistic subjects, as well as al fresco (stucco). We can notice the dominated of Sassanid and Byzantine style especially in the inscriptions and statues. In fact, all these palaces architecture and decoration reflect the benefit that obtained by the Muslims from arts of countries that they conquered, which, at the same time, a testament to the greatness of the art of civil architecture in the Umayyad period[35], see Fig. 6.



Figure 6: Remains of Hisham Place.

Dome of the Rock in Jerusalem and great Mosque of Damascus are looked great Umayyad architecture monument in the Levant which was rebuilt in a way to suggest the Christian influence with the introduction of some new characteristics of Islamic architecture. At that time, it was rebuilt Al-Aqsa Mosque and the Dome of the Rock in a way refer to Christian influence with introduction of some new characteristics of Islamic architecture. Domes, minarets and style of the Arab decoration were added

to Christian architecture style what led to formed Umayyad style of architecture. The addition of Arabic writing(Calligraphy) from Quran and Hadith to the decoration of mosques was in great touch.

C. Abbassid style.

Abbasid style buildings in the Islamic world characterize with artistic feature due to the transmission of the succession of Syria to Iraq, and the consequent with emergence of new artistic and environmental effects were deployed in Iraq. Such, old influence of past civilizations in the Abbasid buildings also appeared through the use of the Abbasid architecture cooked mud and brick in architectural buildings , as well as Abbasid used of plaster cladding in facades of buildings [34].

The most important architectural elements that were common in the Abbasid architecture, we find the pointed and foil arches , also shoulders and the pillars used by the Abbasid architect in abundance in buildings instead of columns. Also popularized the use of coverage's and vaulted arches, along with the use of portable flat roofs on the shoulders and rectangular beams. As popularized in the Abbasid style use Iwans , vaults doors and fences with huge fortified towers, including the various forms and arches which it was pointed and broken known Islamic and lobes arch, along with the use of flat and hollow niches [36], see Fig. 3.

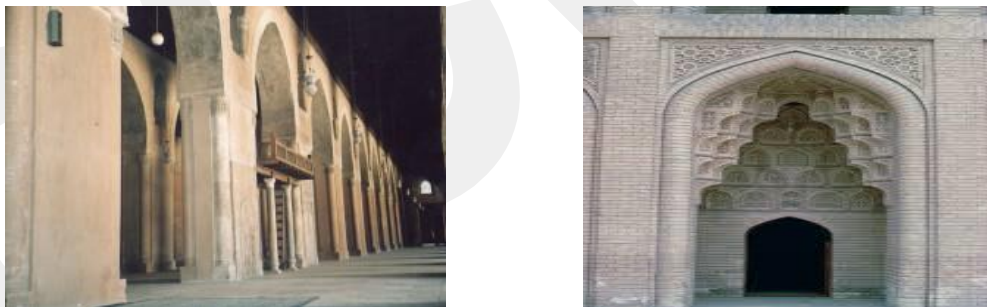


Figure 7: Pillar & pointed arch & Abbasied Palace Baghdad_ foil arch.

Abbasid minarets marked by conical forms and separation from the mass of the mosque and climb a staircase that wraps around the building from the outside into a spiral. Orientalists have described this type of minarets that he adapted from the ancient temples in Iraq, known as ziggurats. Among the most famous Abbasid minarets was minaret of Samarra Great Mosque, Mosque of Abu Dalaf Iraq and minaret Ahmad Ibn Tulun Mosque in Egypt. These type of minaret called minaret Al_Malwia [34].

The decorative elements that common used in the Abbasid buildings, we can find in cladding of stucco that carried out in a template way on all interfaces Abbasid buildings from outside and inside, as well as the arches frames and window openings and doorways and niches. As well as the Abbasid buildings of mosques and palaces marked by of magnitude and larger in size capacity of courtyards. Among the most important legacy of Abbasid style is a mosques. Like, Great Mosque in Samarra, Abu Dalaf in Iraq and Ibn Tulun mosque in Egypt. those mosques characterized by same architectural and decorative elements, in terms of use brick in construction and decorative and stucco work as well as the use of props and shoulders instead of columns [37].

Among the most famous civic buildings in Abbasid era the city of Baghdad , founded by Caliph Abu_Jaffer Al-Mansur in 147 AH. was planned a circular shape, mud brick and bricks used in the construction . other Abbasid cities that received wide reputation in the Islamic civilization was the city of Samarra, which was built by Mutassim Caliph in 221 AH 0.835 m. Among the most famous Abbasid era palace was AL_Jawsag Khaqani Palace, AL_Ashiq palace . And Ukhaydir Palace, which is located south of Karbala city in Iraq [34-36].

D. Fatimid style.

Fatimid architecture style characterize for other Islamic architectural styles, and became have special character, reflected in the existing buildings, mosques , shrines, fences, towers and other architectural and artistic elements that characterized by durability and luxury. One of the main characteristics of the Fatimid architecture style was using stones primarily in Military buildings, religious shrine building and Mosque. Also used brick in the construction of domes, vault, ceilings and internal side of walls [34].

Fatimid architecture has cared very carefully with refined carved stones and coordination in construction, helping to dispense on cladding in stucco, also helped to the use of stone on implement decorative shape by Drilling or sculpture stone directly , for example, interfaces Aqmar mosque and the walls and gates of Cairo [36].

Besides that, keystones mesh (cut small stones) Commonly used in Egypt for the first time, for example, the doors of Fatimid Cairo, such as Bab al-Nasr. Keystones that have been used in the formation of door openings arches frames, as well as in the Threshold, and vaults . And then evolved in the Aqmar Mosque, see Fig. 8 , and AL-Saleh Talaie, where keystones mesh taken decorative look, while retaining architectural function [34-37].

As well as, Fatimid mosques in Egypt and Morocco characterized , by introduced the great development on how to use the column capitals. Began, for the first time, the columns are made specifically for the mosque after it was transferred from the old buildings. Not just that; Props and shoulders were also used in some examples of the Fatimid mosques like AL-Hakim Mosque, which was said that built along the lines of the Mosque of Ibn Tulun Mosque and also Mosque of AL_ Mahdia in Tunisia see fig 8. As well as the spread of many types of arches vault and including the the pointed arch and obtuse and convex and broken and semi-circular. and Among most famous of arches prevalent in the Fatimid architecture is the Abbasid arches or what is known as a Persian arches . Also the Fatimid used in thier buildings notable entrance to the interface, known as Memorial portlets, and the oldest examples of the main entrance to the AL-Mahdia mosque in Tunisia and the main entrance of the AL-Hakim Mosque in Cairo [34-36-38].

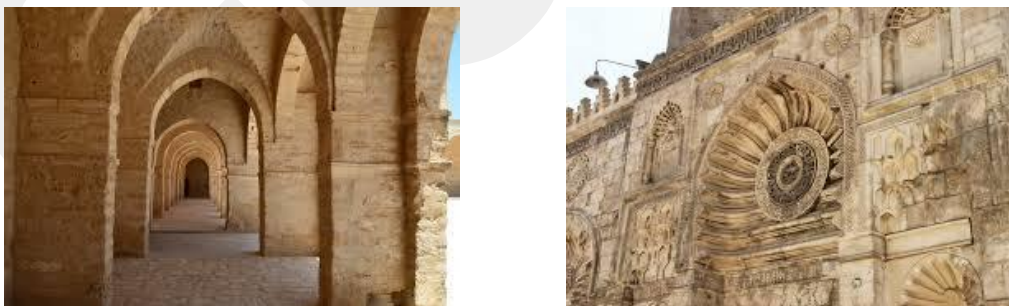


Figure 8: Al-Mahdia mosque. Al_Aqmar Mosque Cairo.

Religious buildings in the Fatimid style also known many types of mosques schemes, including the Mahdia mosque, which appeared in it the first time the phenomenon of multiple courtyard and Al-Azhar Mosque, which was composed of the courtyard and three corridors, then the Al-Hakim Mosque who plans as a courtyard form and four

canopy , not to mention the other plans, which appeared in the mosque Al-Aqmar and AL-Salih Talaii Shrines [34-35]. Also popularized in the Fatimid religious and military buildings use of vaulted coverages, for example, the use of domes for the first time in Egypt on the mihrab and courtyard or covering of canopy cover of Qibla as is the case in the Al- Aqmar MosqueAs well as Popularized in style of Fatimid buildings a phenomenon of multiple niches, either flat or hollow ones of that examples was a sharine os Ruqaia in Cairo, and niche Djioshi mosque in Cairo [35-36].

E. Ayyubid style _ (1176-1250) .

Saladin and his brother AL-Sultan AL-Adil era was of brighter times to Ayyubid state , the state extended to include Egypt, Syria and Yemen and stay until 658 AH .1259 Ad. The nature of the political situation of the Ayyubid state was affect by war imposed by the ongoing Jihad against the Crusader threat. Where buildings marked in the Ayyubid style with defensive character, therefore, Increase fortifications of buildings and defensive castles [34].

The inner of cities full by school, also built hospitals, mosques, shrines, caravanserai and hotels. the monument of this era still standing now espicially in Egypt and Levant, which give us enough of the general features and architectural characteristics of that period, which the most important of the following [34]. Dominated on the Ayyubid buildings in both civil and religious, character of austerity and not excessive ornamentation; because of the war and Jihad that declared by the Ayyubid state against the Crusaders. military buildings marked by force, durability and the use of huge towers to strengthen the walls. Carved stones in large size used in construction of buildings, especially in the facades and entrances, fences, towers, also brick was used in the construction of domes and vaults [35].

Appeared in the Ayoubi style some of Seljuk-style effects, including the use of domes in coverage, of Iwans, layouts of schools and caravanserai. Ayyubid architecture also affected some of the Fatimid architectural and artistic elements, including use of Ayyubid architecture, castanets mesh, as well as interest in

interfaces and filled by muqarnas and abbassid arches like The Madrasa of al-Salih Najm al-Din Ayyub . As similar to what prevailed in the AL- Aqmar Mosque and AL-Salih Talaai Mousque of the Fatimids era [34],see Fig. 9.

Also popularized in the Ayyubid style using domes, which saw its architecture developed at that time, Ayyubid domes characterized by the existence decorations glass on external helmets a technique which spread widely prevalent in the Mamluk domes [34].

Also, Ayyubid took care of patents in particular. Constructed in the deep places with vaulted arched. closed the top of arch with the ranks of stalactites and culminate slots by pointed arched. using arches in various kinds also spread in Ayyubid buildings, where used pointed arch , and popularized the use of a horseshoe and the shoulder arch (the arch is to ease the load on the lintel entrance), who took a new look at that period where it became very low, and a component of small castanets stone[34]. Ayyubid architect also used for the first time. The column with Islamic crown that formed from compositions of Muqarnas. and In terms of niches forms that used in religious buildings,Ayyubid architect has been affected by the Fatimid niches that were decorated its arch radioactive motifs from one center [39].

It is worth noting that the biggest characteristic of buildings in the Ayyubid style has come in the buildings that are still fastened to the day in Egypt and the Levant. They bear witness to the evolution of defensive techniques, which came in the architectural elements of defensive fortifications [39].For examples the military walls of Cairo that the Sultan Saladin surrounded all Islamic cities of Egypt as a whole to protect them from attack by the Crusader. This is Except what Was constructed of castles which is the most important one is mountain castle in Cairo, the Citadel of Aleppo, Najm Castle on the Euphrates, Castle of Homs, Damascus Castle and Hamah Castle, and all of them were include defensive elements of a highly developed greatly helped to repel the progress of the Crusaders [34-35].

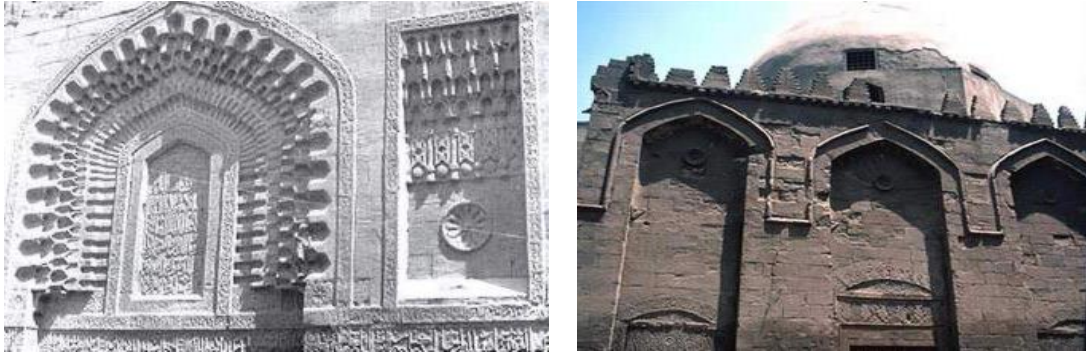


Figure 9: The Madrasa of al-Salih Najm al-Din Ayyub .

F. Seljuk style.

Architectural characteristics for Seljuk-style can be summarized, as following:

Innovation Iwans planning in mosques and Seljuks schools; where Iwan became a key element in Seljuk buildings. Iwan is hall or room with three walls opened full on inside, either on the yard, or in any hall, and often Iwan covers architect arches based on the carrier walls instead of columns. Seljuk buildings characterized by lack of concern of large sizes of courtyard where built on the small sizes and they covered it in a large domes and entered its spaces within the covered area [34]

Commonly used polished stones and carved in architectural installations, especially the exterior elevation and entrances, and this has helped the development industry of the inscription on the stone. This is shown clearly in the Anatolia buildings; decorative inscriptions on the facades of religious buildings added a new and unique appearance, and as a result of the use of craftsmen and artists an innovative carving methods rely on the emergence of decorative elements to become thick lines giving to facade an artistic look, which popularized its use in European buildings. Among the most famous Seljuk architectural models that reflect this art, school of ange Mannar in Konya, Mosque and Bimaristan Devri city , school of Qirtai, and Aladdin Mosque in Nigde and Ulu Mosque konya [35], see Fig. 10.

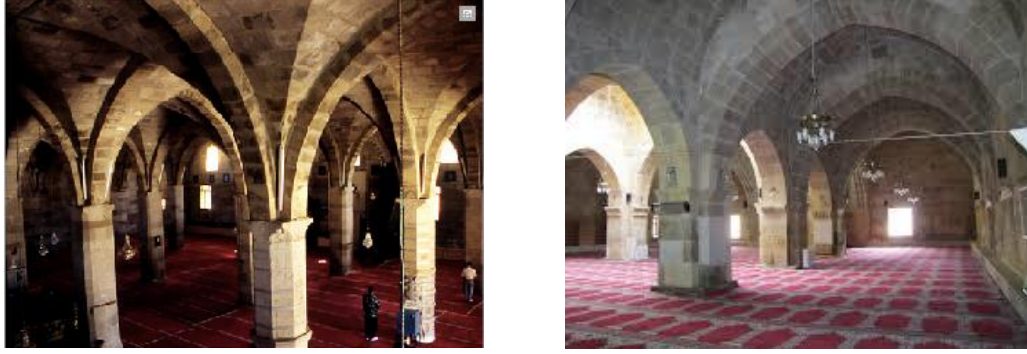


Figure 10: Ulu Mosque konya (1408) and Aladdin Mosque in nigde (1233).

Also, used brick was popular in the of the Seljuk's era , and the method of construction bricks evolved in that period, where the bricks used in the construction of domes and vaults along with used it in decorative and structural style together in some facades. as Examples are found in shrines Seljuk in Anatolia region. Seljuk buildings used a ceramic tiles as a major material to ornamental and cover a brick walls from the inside, Seljuk ceramic tiles features with turquoise color, also used plaster on brick [34-36].

used domes and architectural vaults was popular, particularly architectural vault with a half Cylinder and the cross-vault, dome used as a key element above the mihrab, as new types of domes appear , each one surmounted by a lantern. Stalactites was used commonly structurally and decorative element in Seljuk installations, and has become one of the most important elements that architect constitute the of insides hoops doorways and niches and balconies of minarets [35-39].

The minarets of the Seljuk, have characterized forms cylindrical or conical or polygonal, and were punctuated in most models balcony or balconies carried on stalactites. Seljuk minaret summit in the form of a pencil, a method that effect later in the minarets of the Ottoman era [36]. In Iran, religious buildings have witnessed great development in the Seljuk era characterized as mosques that period with numerous domes and vaults, for examples the AL-Jumaa Mosque in the city of Isfahan. Seljuk took care of build walls, castles and forts and other military fortifications as a result of the ongoing wars with the Romans and the Crusaders, which gave their architecture with character strength and durability, buildings came as close as possible to the defenses. Among the most famous of their military

building a wall of Damascus city and its castle and the wall of the city of Konya and others. The Seljuk palaces, there was no left them just little, for examples Prince Badr al-Din Palace Lulu in Mosul, which is located on the Tigris River. Among the most famous characteristic of Seljuk-style, groups of Khans that the Seljuk built in various major roads, and was designed much like a school planning [35-36].

G. Mamluk style.

Undoubtedly, the modern state of the Mamluks was a golden era in the history of Islamic architecture in Egypt, Levant and the Hijaz; the sultans and princes competed of that period in the construction of various buildings like mosques, schools, caravanserais, bathrooms and much more. Mamluk style Coupled with evolution in artistic and decorative techniques, as well as the evolution of the architectural elements of construction; Mamluk architect cared in interfaces of religious buildings which used in most important architectural elements such as the main entrance and the Shrines dome and window openings mesh with colored glass along with main vaulted entrances and the ranks of stalactites which crowns the top of interfaces, as well as serrated balconies or which had been formed as triangular or quintet paper plant body [34-35].

Also, Mamluks used new architectural systems in the planning emerged clearly in mosques, schools and shrines architecture, although it has overcome some of the architectural elements that were common in that period Seljuk influences along with the continuation of established a tradition architectural in layouts mosques. Examples of the Mamluk mosques also al-Nasir Muhammad Mosque, which consists in architectural planning of the yard and four sunshade, largest canopy of Qibla. Distinguishes this mosque huge dome above the Qibla canopy was carried on huge columns of granite [34-39].

In addition to the Mamluk mosques and schools constructed in accordance with the canopy system, a new system in mosques and schools known as Iwan planning system. It is an open courtyard situated in middle, Iwans surrounded its four ribs, largest deeper one is Qibla Iwan and all iwans opposite and vaulted, this planning has spread widely prevalent in the Mamluk religious buildings in Egypt and the Levant, this was planning the beginning of emergence of another new system known

religious complexes system, meaning that the facility was lead more than one job. The architect began adding new architectural units to school or mosque building. Among the most famous examples in Egypt Sultan Qalawun complex and Madrasa of Sultan Hassan bin Qalawun, which was built in the 757 AH 1356 m, which is one of the finest examples of Islamic schools at all [35],see Fig.11.

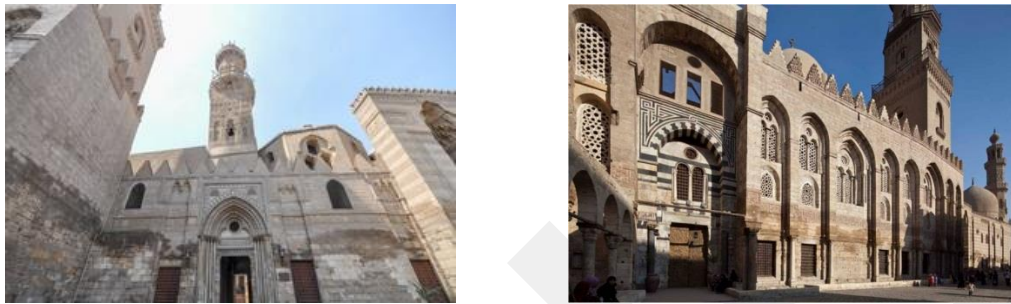


Figure 11: Sultan Qalawun complex and Madrasa of Sultan Hassan bin Qalawun

Mamluk minarets characterized by slim, elegant, height and beauty of decoration. Most of it was built on a square base surmounted by an octagonal building punctuated by prominent balconies carried by muqarnas. As for the entrances of Mamluk building, the architect gave it great interest and occupies a prominent place on the facade along with a set of decorative elements that fill out the Mamluk artist the entrances of religious buildings from prominent and deep friezes (prominent architectural ornament on entrances, windows and facades) and stalactites and architectural inscriptions. Entrances religious buildings have been affected in the Mamluk style by Seljuk portals.

Also flourished in the Mamluk era decoration of colored marble frame on the walls, in the floors and in the niches. Among the most prominent examples is Sultan Hassan bin Qalawun School, a school of Sultan Qaitebay and Sultan Ghouri school [34].

H. Andalusia-style.

Arab-Muslim presence in Spain and Andalusia extend for 903 years, starting from 711 AD until the 1614. Has emerged in this period architectural achievements that have survived to this day, as in the Mosque of Cordoba, and the Golden Palace and the Hermitage in Seville, and the Alhambra in Granada. These cultural and

architectural evidence which used ingenious methods, was get attention to accurate detail, reflect the high artistic taste , and represent in a whole prosperous of Arab Islamic art. Andalusian architecture characterised by adoption of simplicity from the outside with a plenty of decorative works from the inside, as we see so clearly in Alhambra And also stay away from huge size , avoid vertical height, and rely on a reasonable ratio between the volume of construction and function carried out with the human size. Columns in the Andalusian architecture is far from great, and came minutes and graceful topped with crowns in the very consistency and harmony [34] see fig. 12.



Figure 12: Al-Hambra Palace & Cordoba mosque.

The Umayyads in Andalusia are use several forms of arches : regular, oval, the horseshoe, swollen, the cog, Al_Muqrnas, overlapping, embracing. and Did not known of any historical era of architectural or engineering in the whole world use this number of brackets elaborately as it is in Alhambra, the arches in the form of the horseshoe is found above Al_Adil door , and Al_Muqrnas inside the throne hall, and Serrated around the Lion courtyard, and overlapping above the bathrooms [35-36].

The Arab and Muslim artists in Andalusia adopted to escape from the vacuum property,so, they Cladding interior walls - almost completely - decorative distributed elaborately from the bottom to the top. An important element in the decoration of the Umayyad Andalusian what is known as securitization, which is the art of decorative formative depends on the accumulation of leaves and clusters and intensify flowers with aesthetic forms consistent. also, Calligraphy and carved inscriptions of Quranic verses and poems and various sayings used predominantly Kufic script. And what's more the Umayyads excelled in Andalusia is their The use of decorativ pottery

coated by Porcelain, which was known to them as «Zaliej_ tiles», geometric forms overlapping with great precision and perfection, and the west researchers called «Art of arabesque»,The tiles used in the decoration of facades and doors and windows, and side of the rooms and halls of palaces, and in the arc of the mihrab and friezes minarets [36] .

There is no doubt that the draw polygons and geometric shapes based on interlocking lines with multiple angles, its idea unique to the Arab and Islamic art, and unparalleled in any other art. and this geometric drawings comes in form of multiple angles Star; some of which is eight corners, some of which is twelve, some of which is sixteen angle. In Alhambra arabesque frequently in the lobby of (Bny Seraj) and two sisters room on the wall of the Ambassadors Hall. And wood ceilings came in Andalusia style inlaid with ivory, and decorated with colorful geometric motifs, represent asterisk forms decorated with Gold , silver and copper threading, surrounded by a wooden or plaster friezes clad with Securitizations and variety of inscriptions writings [34-35].

However, the most important characteristic of the Umayyad Andalusia ceilings, are those stalactites hanging from the corners of some ceilings and arches. These stalactites made of plaster, which empties in wooden molds made artistically accurate, then remove the mold and decorate with more sculpture and decoration. It must be pointed out that the Andalusian architecture began simulating the architecture in the Levant, but it is evolution in some of methods and objectives to take his characteristics which distinguish it from others. But the most important and greatest shortcomings that we got their names of the palaces of the kings of Andalusia and Granada Aljafaria in Zaragoza. The Alhambra in Granada of the greatest Islamic buildings left behind by the Muslims there [34-40]. The architecture of this building collect between defensive fortifications symbolized by external walls and towers and between the splendor halls and courtyards and vaulted with Muqarnas and unique stucco-plaster works and domes inlaid by muqarnas.

2.2.4. Design principle of Islamic architecture.

Islamic architecture features been associated for some Theorists of the physical aspects, forms and materials. And some other dealing with other aspects that are associated with meaning and content mentioned as follows:

2.2.4.1. Concentrating on inside more than outside (hide beauties).

This property carries, including both sides. The first is to focus on the interior and space. The second is reflected in the fact that the outside (exterior) following the internal space of the importance of from where richness decorative architecture processors.

Ernst Grube. He see Islamic architecture has no external interfaces [41]. Where the buildings are interconnected with other buildings in the crowded fabric makes the exterior less important. And does not reflect what the inside of the organization of the building and its spaces. While Ibrahim Abdul Baqi replied to this view, stressing that many residential buildings that have emerged in the Islamic era. Albeit hide what's inside an expression of the Islamic social values, but what appears on the exterior expresses a true reflection of what is in the back of the elements of touch, or living or services[27]. As Walls believes that Iwan, the most important space in Islamic architecture was possible to locate it without entering the building where the front of the building refers to its location and its relationship to the direction of Qibla [42]. iwans generally refers to the axis of the building where strengthened symmetry of the building through iwans on the intersecting axes While we do not disagree on the fact that the exterior of residential buildings reflect what the inside of the building as mentions Abdel Baki Ibrahim _ we agree with the opinion of Ernst Grube in the fact that the exterior is less affluent than the internal interfaces and spaces, where it was treated as part of the urban fabric as a whole, which the building is part of it, along with the fact that Islamic Architecture is a solid in the external façades and even at the level of decorative detail, we find that the majority of islamic building of abstraction from The fine details in their appearance. While the internal processors concerned with the details and inscriptions give a space elements a richness and vitality [42].

The care of inside of building was exceed than those made on the outside. Grapr confirms that the tendency of internal space and processing is one of the characteristics of Islamic architecture. and Alhambra palace outstanding example of the edifice with superfine external features that create the foreign visitor gently see the minutes proportions inside . With the deliberate effects of light and shadow and emptiness, Graber and in his opinion, this puts attention alongside the internal space, attention outside. And sees the minaret is a clear example of that. He also gives the Dome of the Rock and Madrasa of Sultan Hassan in Cairo examples of the beauty of dealing with the outside [43]. Islamic architecture has been characterized by the existence of overlapping visual and sensory integration between mass and space. there is clear a harmony between buildings line and ends of external surface with the surrounding spaces. So that consists of a total of artistic formation, nonwoven, balanced and harmony of their parts with each other. and seems this overlap more visible on the overall composition of the urban fabric level. So the city looks sculptural piece which is balanced space, mass and interconnected in an elaborate organic relationship [44],see Fig. 13.

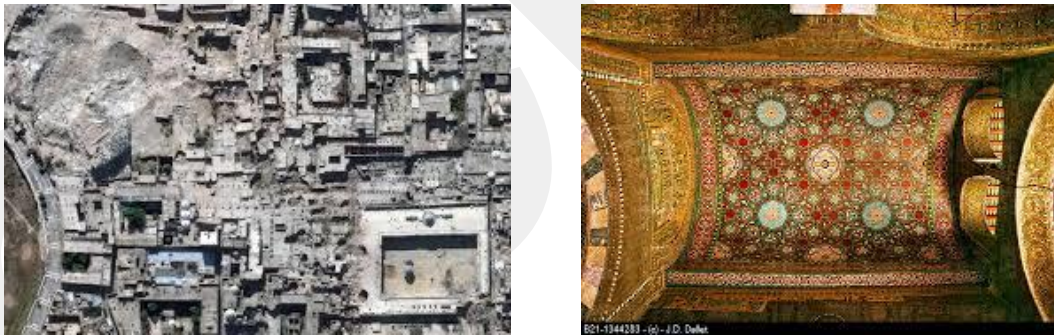


Figure 13: Historical Damascus (urban fabric).

With the balanced relationship between mass and space .The Islamic architecture still as a solid wall architecture with few openings if we compare it with the architecture of other civilizations, with a few decorative details in outside, with richness inside space. And where the wall covered to structure what makes them hidden architecture .The wall which differs from the transparent wall in the Gothic architecture. For

example, is different from the European wall with generally being characterized by a lack of manifesting pictorial analogy European wall [30],see Fig. 14.

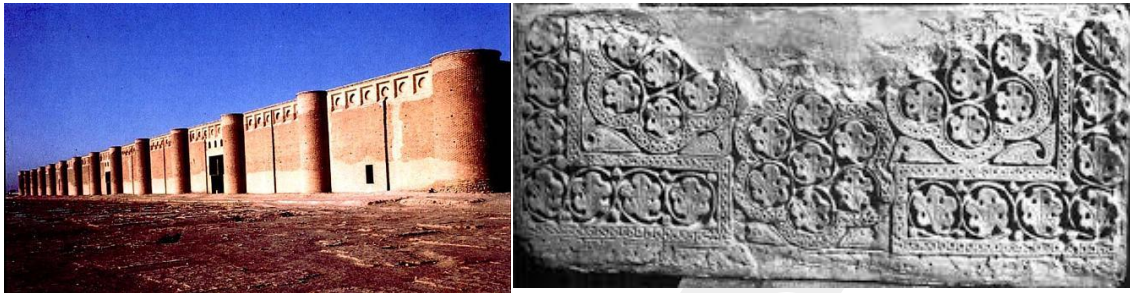


Figure 14: Elevation of great mosque of samara(external faced with less decoration).

The advantage of focus on the inside is also reflected in the fact that the yard is the focus in most Islamic architecture models. In the case of his absence we can find it has mutated to a central domed that dominate on whole spaces of the building see Fig. 15. The domes in mosques and other buildings patterns confirm the principle of looking at the inside (Inward Looking). And the Muslim consider that this yard as a small universe within the large universe who its inclusion and others.

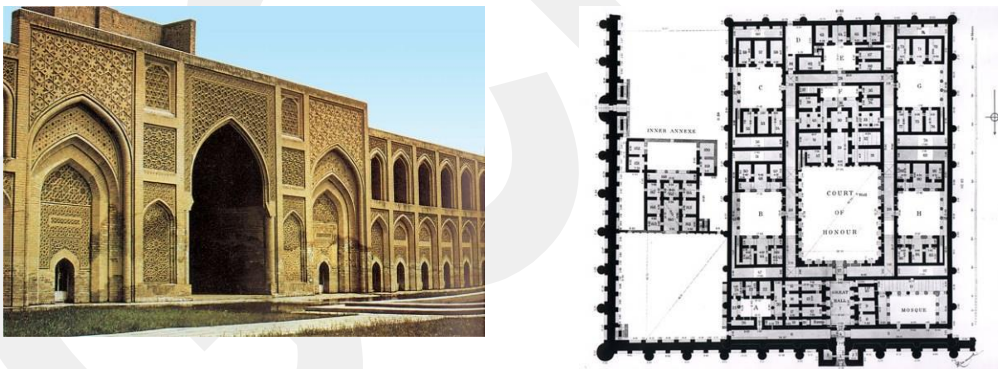


Figure 15: Left: AL-Mustansria madrasa courtyard. _ right_ plan of AL-Ukhaither Palace.

From above we can find that the property of focus on inside without outside is reflected in the interest of Islamic architecture in the internal space of architecture and decoration In existence the space as a dominant medial space. In being mass architecture, Wall and solid with richness of decorative detail on the inside more than on outside. Knowing that the directing the buildings to inside to reflect the nature of

the social life and climatic conditions. Were Islamic buildings adjacent with distinct courtyards.

2.2.4.2. Flexibility and Adaptability and Horizontal Extension.

Islamic architecture is unique from all other Architecture by the phenomenon of horizontal extension of the building in any direction by adding units with varied shapes and sizes into the building. Without regard in the origin shape of building, or more correctly, without damage to the final shape of the building. And this trait rather reflects the organic of the Islamic architecture and harmony, and we find this feature is more pronounced in the mosques than in other types of buildings. Where the mosques pass through the stages of _ identify and expand in different periods of the Islamic era. Perhaps of the clearest examples the Mosque of Cordoba Who was characterized without centralized configuration, stemming from a lack of basic medial axis[45]. As well as the mosque was characterized by facades adopted in the style of its processed a repeated similar formulations. by of these features the mosque has gained a susceptibility of proliferation and spatial expansion through time without prejudice to in assets of architectural configuration and its value. What characterized the Mosque of Cordoba and other examples of Islamic architecture but it is a (flexible configuration) and there is no such architectural value in the products of other civilizations. It is a great tampering to application of this principle to the Greek structures or Romania or the gothic cathedrals or other examples of architecture belonging to other civilizations this reflects the specificity of Islamic architecture and its vocabulary [46].

The flexibility of configuration in Islamic architecture had no effect in the architectural configuration and its balance which makes Islamic architecture as system to accommodate change and added the amendment through the relationship between a part and whole is through adopting the repetition rhythmic according to Controls thoughtful proportional see Fig.16.



Figure 16: Expansion of Cortoba mosque. –Right- Uqba mosque. Source [45].

The flexible configuration property and horizontal extension is found at the level of the city, where repeated residential units, for example, without prejudice to the city system, as found at the level of the building and decorative details. The general rule in the Arab and Muslim configuration as refaatd Jadraji mentioned in his article (Heritage necessity) are leaving the door wide open either to add or revocation and modification in any direction at any time, which contributes to enrich the composition and diversification and enriching[45].

2.2.4.3. Human Scale.

Humanitarian scale is one of the most important distinguishing features of Islamic architecture. So that the humanitarian scale feel in all models, regardless of the magnitude and luxury of architectural model. We never lose the sense of Humanely of space even when the Muslim architect was forced to Giving luxury at the entrances for example.(that built high-rise, such as the entrance of Sultan Hassan Mosque). the architect Never sacrifice human scale but was realize an increase of architectural elements metrics. With the retaining of such elements by its standards . the architect was tempted to fragmentation and multiplicity of elements without compromising the design integrity (47). Through of his asylum to different styles such as stalactites in the transition from one form to another, and the adoption decorative wall of which reduce the feeling of a capacity of surfaces, as well as through repetition and multiple columns in the wide spaces , such as mosques . while the style of Vaulting and containment strong sense of humanitarian scale well as of his asylum to the dividing the fences and other processors that keeps the human scale see Fig. 17.

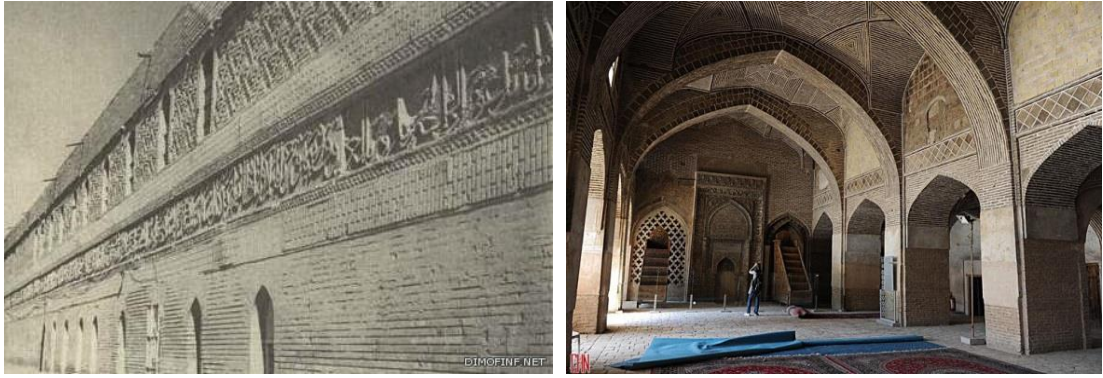


Figure 17: Left: AL- Mustanseria Madrassa. Right: Asfhan Mousque.

2.2.4.4. Stability of Shape with Variation of Function (Same features though different type of buildings).

Ernst Grube is confirmed on this property in Islamic architecture, where he found it does not change shape easily depending on the function. And the building who serve a particular function can appear in more than one form, and one shape may be serve more than one function. And Cited an example, by four Iwans which mediates the building in Islamic architecture They are found in the palace and mosque, school and bath and private housing. And the phenomenon of the four Iwans often appear in the heart of the building which is the horizontal scheme is irregular form. Here Ernst Grube talking on the level of style (pattern) in Islamic architecture, with the fact that what he says is true, but we must find presence to diversity of form with the function. And the phenomenon of the four Iwans often appear in the heart of the building which is the horizontal scheme is irregular form [41] see Fig.18. Here Ernst Grube talking on the level of style (pattern) in Islamic architecture, with the fact that what he says is true, but we must find presence to diversity of form with the function. Palaces in Islamic architecture are units grouped together with multiple courtyards while other buildings such as mosque for example, characterized by medial distinct courtyard and pure and clear mass, and the more we looked for more details, we found biggest variations, and what we are saying this only confirms the feature of unity and diversity of Islamic architecture.

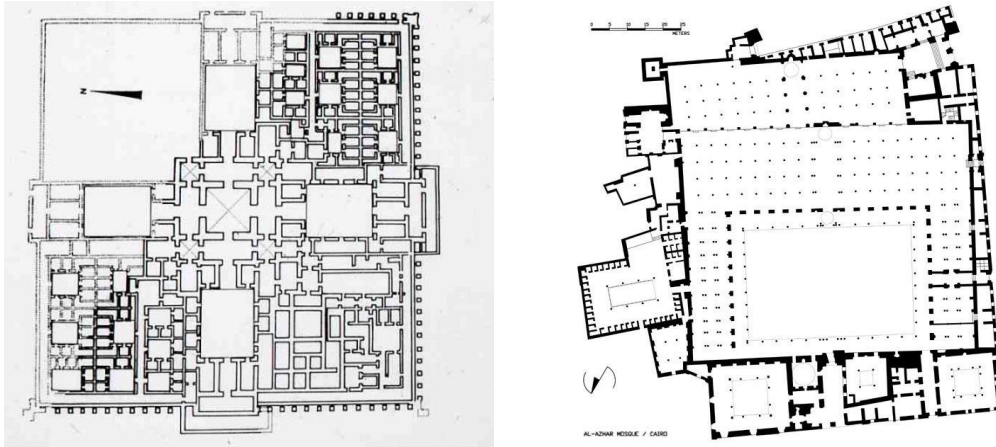


Figure 18: Qasir AL-Juss in Sammarra (principle of four Iwans in islamic architecture).

2.2.4.5. Rhythmic and Geometrical.

Islamic architecture Characterized by harmonically tune elements and high geometries with Thoughtful mathematical relations that have made them a balanced harmony. architect Hassan Fathy see that Islamic architectural construction represents a continuous dynamic transitions in horizontal and vertical directions are subject to mental rate _ as he show _ It is as Symphony create mental comfort also provide visual comfort[27] see Fig.19.

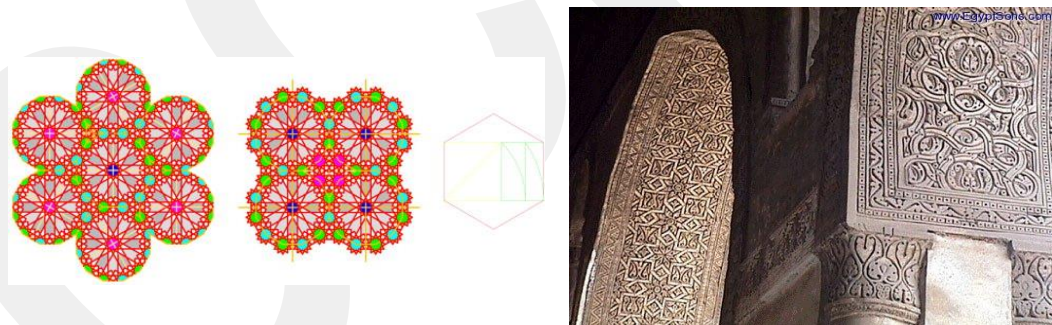


Figure 19: above-geometric and rhythmic in Islamic architecture. _ right_ motifs from Ibn tolun mosque .

The adoptions of geometric patterns clear in the Islamic architecture. At the level of the individual building as well as the urban fabric level, with high axial and there is clear isomorphic on one axis or axes and more to create geometric shapes regularly as a square or rectangle with deliberate rates. and find in the city of Samarra, an example of the high engineering with the clarity of symmetry in all buildings. The symmetry was not for all parts of the building or the palace, but only about the axis.

As in the (Stucco Palace in the ALhowislat) (more than one axis) and AL- Ashiq Palace and the Palace of Mutassim and others [48], see Fig 20. the pivotal and symmetry was hallmark of Islamic architecture have accompanied formations in the different time stages and symmetry in the Islamic architecture is a translation of thinking rational mathematical shall be resorting to symmetry to find the axis or confirmation on a specific space or item a specific element or to show the the importance of a space and distinguish it without the rest of the other spaces.



Figure 20 : Rythmic and geometric in islamic architecture(Urban planning)- some Ummayyad Palaces in Jordan .

2.2.4.6. Abstraction and Symbol.

Architecture in Islamic art was concerned with rhythm doomed by strict mathematics and geometric and numerical relationships abstract from any formality depiction may be in conflict with the spirit of the Islamic religion . Abstraction and the symbol twin two attributes of Islamic art. and abstraction in Islamic art is an absolute, none final, unlimited in visual dimensions visions and free of affectation governed by the laws of mathematical rhythm and found in the art of photography and decoration in architecture and in calligraphy. Where the calligraphy combines between Abstractionism and representational. It gives Negotiable match content with abstract patterns. Arabic calligraphy has contributed to provide an alternative to the formal decorations for unIslamic civilizations or Arabic pre-Islam. Calligraphy was also associated strongly with engineering with proportions of letters . Including curved movements, where all of it governed by mathematical proportions[41]. Besides calligraphy there is multiple decorative processors for surfaces in Islamic Architecture. We find the continued development of the outcome of the very rich decorative formulas of abstract geometric shapes and patterns securitization and inscriptions minute for multiple models of Arabic calligraphy. This leads to religious

goal and another frilly. Be found in Islamic architecture Keeping up the inherited tendency toward repetition to no endless [49] see Fig. 21.



Figure 21: Abstraction and symbol (left_symbol from India and right Dom of Rock mosque).

In addition to the abstraction there symbolic. Islamic architecture do not know the idea of the Incarnation ... This does not mean that things is hidden not visible. It exists but distinct from being have a physical presence being have a possess symbolic dimension, Most of formal elements (arches, vaults, etc ...) are present in the European architecture but interpreted differently [30].

There are those who exaggerate to this symbolic aspect to the extent that turns the building into geometric Nested shapes and link it with the elements of the universe and form as following : The land corresponding to the cube, and the water matched the ball, and fire correspond to the cone. The transformation of the form of the lighthouse from the circuit box to the symbol of the transition from the ground state to the heavenly status[50].

When we judge that the abstraction and symmetry are important elements of the Arab Islamic art elements. Shows us how much the fundamental abstraction and how that accidental symmetry. How are their rhythm Who is unity, and these three constitute law Which governs the general of Islamic Art (49). We see that the ancient Muslim artist exceeded creative concepts prevailing when stressed the interest of a deep meaning of the presence. Instead of interest in the simultaneous Figure of the elements of this presence [51-52].

2.2.4.7. Unity and diversity.

That science, philosophy and art is media rights used by human for the detection unity of Universe. Or to create unity in it. The scientist and philosopher working in the Detection unitary phenomena in our complex world's in the areas of time and space, thought and art. while the artist, he is trying to create aesthetic unity by organize those things in his works.

And branching out from the unity Related phenomena as contradiction and domination. When there are contradictions, the work for the unity and preservation requires either raise contradictions or find hegemony there. Unity is the coherence and consistency, integration, and unity is a configuration and no configured without unity. unity is a fundamental principle for organizing the aesthetic and this is the case in all kinds of arts.

Besides raising the contradictions - As we mention Unity produces by hegemony, and domination mean weighting and superiority and hegemony produces by repetitive [50],see Fig. 22.

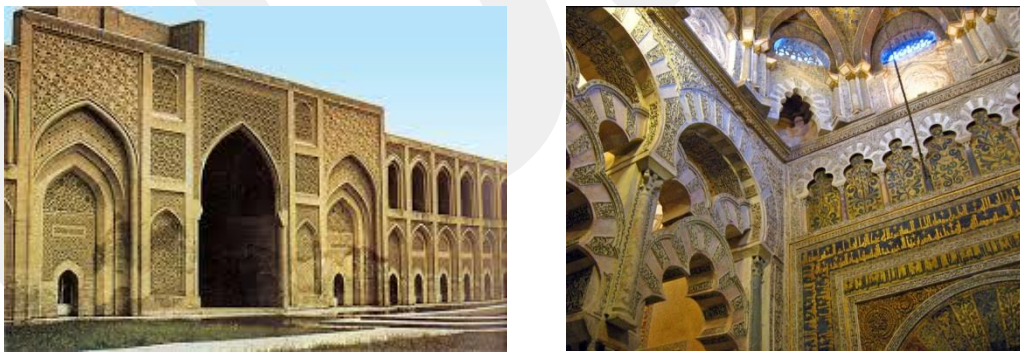


Figure 22: Al-Madrasa Al-Mustanseria Bghdad. Source: [35].Right- Cordoba Mosque.

In architecture there is unity in shape and diversity. Unity without diversity leads to monotony. And diversity without unity leads to chaos. Thus, harmony and homogeneity is achieved through the presence of unity and diversity. Two of the basic fundamentals of the design. But that Laiptnz, believes that beauty is unity with

diversification. Meaning the appearance of beautiful shape in terms of availability the redundancy of proportionality and balance [51] see Fig.23.

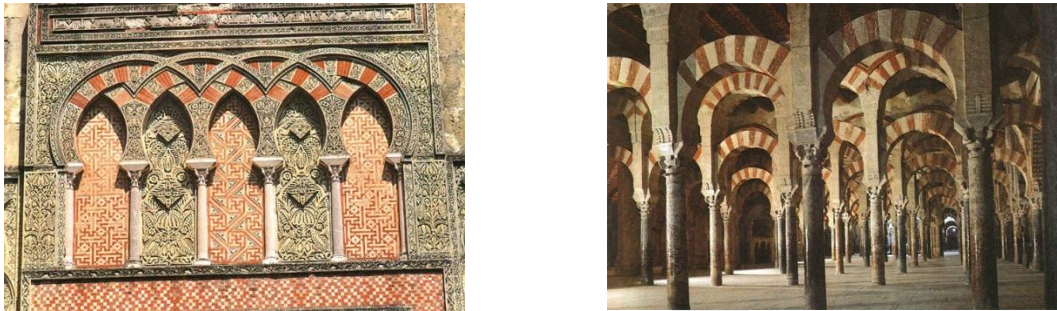


Figure 23: Unity and diversity in Islamic architecture (Cordoba Mosque).

But design is an art of connecting contrasting and opposing elements and standardization. The division of the Surface of what to the various conflicting parts in shape or size with relations linking parts to each other and to the original shape helps us to get unity and attract attention, and be the adoption of the constant proportionality or repeated proportion to create the link and produce unity of the use of methods of organization involving balance, respectively, sequencers, measure, and proportionality dramatically and some of these methods are more complex than others in delivering the intended meaning, and achieve unity [44]. Scott identifies four essential things to the creation of the unit, including: layout, balance, rhythm, proportional relationships[51] .

The unity is a dominant and clear feature in Islamic architecture are derived from the unit of Gad [52]. They tend to build its system on principle of similarity. More than privacy of standardized formats, where we find indefinitely from various forms as arch for example ...and often found in the same building. While we find that the classical architecture set of architectural systems that allowed only one style of arch. Also identified variations in sample of column. The Mosque of Cordoba a clear example of the unity and diversity of Islamic architecture [52].

That unity in Islamic art and architecture we can feel it when take a look at the work of Muslim architecture in different places and spaced times seems bearing the features of the same family.

Through that unity Emerged the achievements of Islamic architecture barely resemble each other in other Islamic countries, With a little bit of variation Who afford each environment, without prejudice this ironies in the unity of the of Islamic art ,Islamic Art It was found easy way to absorb the different arts that impressed by them and changed them in the personal melting pot, where was Muslims able to absorb the data of surrounding civilizations and turned what they borrow from it into some self-characteristics, through of effect of unity of religious belief, which was reflected on the civil and religious architecture together .

Marsieh George sees that the impact of climate _ Geographical factor_ strengthens and extends the impact factor who calls the historical and intended conditions that dominated the emergence Islamic Art. And the continuation of the properties that owed to the its roots.as well Workers interact with each other and across the Muslim world, all of these factors (geographical, historical and social) influential factors in the unit of Islamic Art, stressing that by saying, however, the proof of the unity that each artwork holds its character between Islamic Art regions more than anything else is Islam itself as the religious factor remains the most effective and survival [53] see Fig. 24 .

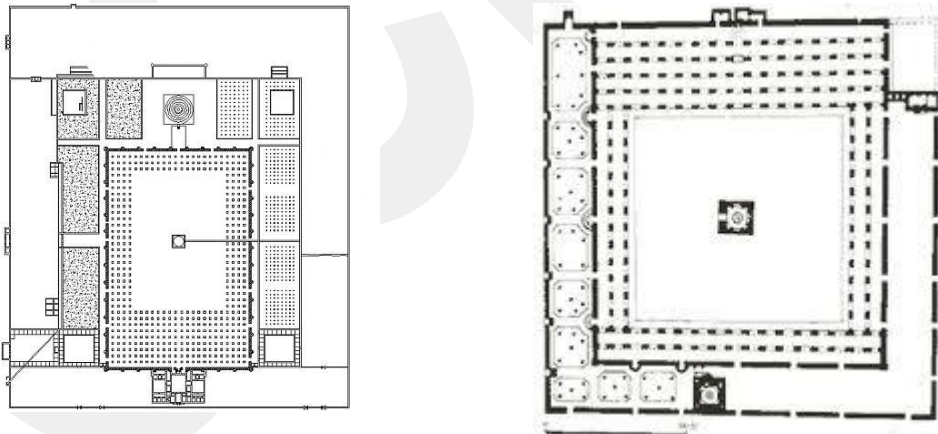


Figure 24: Similar in shape although different place in Islamic world – left- Samara mosque _ right _ Asfhan Mosque.

The Islamic buildings have the flexibility to the traditional architecture and in the changes in functions and forms, if we moved from Samarqand and Bukhara to Andalusia, we find that the idea of what one of them is in other places and find their way to it but it's not only to accommodate the function , but also to adapt thought of

place, where the presence of the basic pattern is very flexible so the same shaped can accommodate different functions [54].

2.2.5. Islamic Art.

2.2.5.1. Islamic decoration.

Muslim architecture that deals with surfaces (walls) through the ability to adapt and change the scale to make it commensurate with the human scale. As well as use of different decorative designs in color and formats, but latter we can note unity in general shape. This is one of the features of Islamic Art, where its ability to give the impression of diversity and unity at the same time despite the lack of exaggeration in the use of sculpture, or the difference in surfaces levels” [36].

“Islamic decoration cover building like a mantle, its purpose is to conceal the structure rather than reveal it. The element of decoration as mostly limited to calligraphy, geometry and foliation, but their manipulation result in rich and sumptuous effect”[36],p. 87.

For example, when treatment or decorate the surface walls in Islamic architecture. We may find that each part is treated separately and differently from the rest of the parts. But the result, we find that there is a logical thread linking all the parts together. Examples of this subtraction are the surface treatment walls in the Friday Mosque in Afghanistan, as well as the school Mustansiriya Madrassa in Baghdad (Unity and Diversity). This kind of coherence, leads to the unity of configuration, this principle are applicator not in finishing building or walls surfaces only but we can be found in the in metal work, ceramics, textiles and woods works even in books. And it can be found even in different scales were small, as in the books, textiles or as large as in large buildings”[36].

2.2.5.2. Element of decoration

A. Calligraphy (inscription).

Writing possible that found independently or integrated with Decoration in most Islamic buildings. Usually used calligraphy Meticulously crafted, distinctive style and advanced technician. The most prominent of writing styles in Islamic architecture are (the Nusukh, the Third and Kufic Which is the famous one). Often exists more than one method of calligraphy in same building . And sometimes it employs a complex and sophisticated technical way that it can barely read it. Among

the most famous example of this is found in the Dome of the Rock and the Umayyad Mosque and Al-Musranseria Madrassa in Baghdad, see Fig. 25.



Figure 25: Detail of the main mihrab, Umayyad Mosque, Syria (showing calligraphy). Right- Islamic Architecture Moorish Calligraphy In Andalusia.

Calligraphy, like the rest of the Islamic kinds of decoration which is very close to engineering. Where referred to it as a geometric line. Because, the forms and proportions of letters governed by mathematical proportions.

“In the Islamic world, calligraphy is considered the most important of the arts because of its role in recording the word of God in the Quran. Despite stylistic differences and local variations in script, the use of calligraphy in architecture is the element of decoration that has at all times done most to unify different type of buildings throughout the Islamic world. There are very few Islamic buildings, or indeed object, which do not somewhere on their surface an inscription _ in Arabic if Quranic, or in the vernacular if meant to record the names of donors, foundation dates, repairs or additions, or lines of pottery”[36], p. 87..

B. Geometry pattern.

Can be considered the art of geometric decoration in islamic architecture is clear application to manipulate visual vision within rhythmic geometric governed by mathematical equations this is what later proved by some studies of that Islamic decoration adoption on mathematics ... we should refer her that this method in adoption mathematic in decoration is appear in Gothic architecture and this aproved by many studies such as Tiffany C. Inglis and Craig S. Kaplanin 2012 (Circle patterns in Gothic architecture) when they contact between star shape in islamic decoration pattern with circular shape in gothic architecture [55].

Abstract forms of geometric shape are found throughout Islamic architecture in a bewildering variety of combinations at all periods.” Islamic art inherited the geometric patterns common to the later Classical world, but developed these to the degree of complexity and sophistication previously unknown, transforming decorative geometry

into a major art form . these patterns clearly demonstrate the fascination of Islamic artists with visual principles of repetition, symmetry, and continuous generation of pattern. Clearly the art of geometry is related to the study of mathematics and other sciences (also derived from Classical source), which were keenly pursued by the scientists and philosophers of Islam[36], p. 88.

One of the most important and famous models geometric motifs in Islamic architecture is the star. Which found various kinds, ranging from six to sixteen head end. It's also existed with most types of termination materials, various measurements ,shapes and even colors. It has been present in the pierced windows which called (Mashrabiyya). that made by marble, plaster or wood also appeared in tile floors [36].

C. Floral patterns.

Due to the prohibition of the embodiment of people in Islamic Sharia. Muslim artist turn to use a new method in the ornamentation surface. This embody by using floral forms and decorative configurations basis of flowers and trees shapes where it Clear appeared in decorating books, textiles, as well as buildings. The emergence of Islamic decoration plant coincided with a trend in Europe to borrow this model and admitted to the European architecture, this came as a result of relationships and links between East and West.

The artist of Islamic world often observed nature faithfully, reproducing and interpreting it with a great deal of accuracy “ and he add “ Flowers and trees were depicted in manuscripts as botanical exemplars, or as motifs for the decoration of textiles, objects and buildings. Equally, the freely composed vine and scroll motifs of the Classical world had evolved by the beginning of Islam into the strictly confined, regular and symmetrical overall designs found in the stucco decoration of the Umayyad and Abbasids” [36], p. 88..

D. The arabesque.

The Ribbons of abstract floral decoration stimulated Muslim artist to produce decorative models more sophisticated and complex as he tried in this new model to move away from uniformity and symmetry on all surfaces covered as walls and domes.

“The possibility of scrolling and interlacing plant form, already found in naturalistic rendering in the Hellenistic of the near east.” The arabesque characterised by a continuous stem which splits regularly, producing a series of counterpoised, leafy, secondary stems which can in turn split again or return to be reintegrated into main stem”[36],p. 88.

Arabesque shapes used within decorative ribbon or some time separately or as background to other kind of decoration to production of a variety and different forms contribute to the unification of the overall composition [36].

Figures and animals: the iconography for the representation of Islamic rulers and the glorification of their princely life remains, on whole, predominantly figural.”.....” the Umayyad was the first Islamic imperial dynasty and as such adopted much op imperial iconography of the Christian and Sasanian dynasties that had immediately preceded it.it often expressed its role as a world powerby employing a sumptuous figural imagery, painted and sculpted, in its palaces. Umayyad wall-painting is best preserved in the bath of Qusayr Amra [36], p. 89 .

2.2.6. Architectural Elements and Interior Elements of Islamic Architecture.

2.2.6.1. Walls type, pillar column.

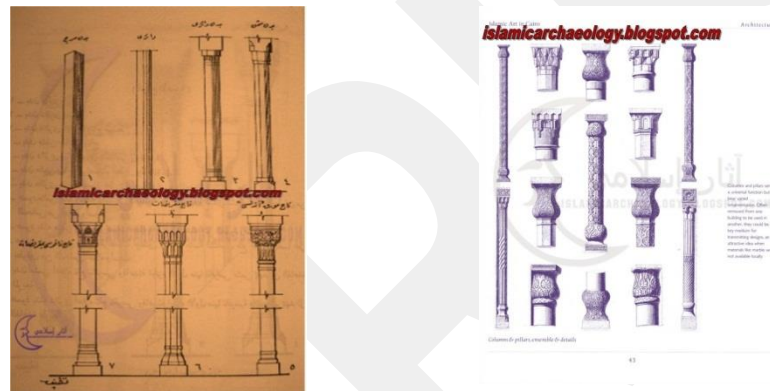


Figure 26: Type of column and crown in Islamic architecture .
Source:[57].

The column: constitutes one of the important architectural vocabularies in the Arab and Islamic architecture as a key element of both structural and aesthetic. Historical sources indicate that the Arabs before Islam used columns in religious and civic buildings individually or integrated into the wall. The palaces of Khurnq and Alasdair is obvious example [56]. in these palaces the dominant column was circular or square section. A brick and marbel was common material in construct columns [56].

In the early Islamic period, the column used for the first time in the mosque of the Prophet (P.A.B.H) in Medina. The material trunks of palm trees, where the Mosque was held in 622 is consider the first Islamic architectural event, has identified the initial plan for the future mosques [56]. At the beginning it was used different style of column which borne of churches and temples and buildings and columns in the

mosque of Amr in Al- Fustat examples of these columns. Muslims used crowns expropriated from antique buildings, which today constitute part of the models of first mosque architecture as the Umayyad Mosque in Damascus, Cordoba and Kairouan, where Gustav Le Bon says in this regard (The ancient temples columns that Arabs took in Cordoba was short and not valid for the support the high roof of Mosque (Mosque of Cordoba) they put each one on other and covered lack of validity by Apses that refer on their high-skill " Then the Muslims took the columns and crowns of their innovations, knew columns of cylindrical and polygon body , architect has replaced sometimes to establish ceilings by pillars are built instead of columns and the most beautiful models in Islam exists in the Grand Mosque of Samarra, which in turn imitated in the Mosque of Ibn Tulun [57].

The first Islamic column artistic creations appeared in the Umayyad period where the crown engraved Kufic inscription or plant or geometric decoration. also in the Abbasid era has spread the use of the bell crown and we find exemplified in the crowns of Grand Mosque in Samarra and arcade of Ibn Tulun Mosque. In the Ayyubid era began cornice crown appearance, and spread in subsequent covenants, then in Mamluk period graphics biblical inscription appeared in Umayyad Mosque columns. varied forms of the columns in the Islamic era was including cylindrical, spiral, polygon,appraiser,square and rectangle, and it what was covered in marble or plaster [57] see Fig.26.

Also appeared in Al-Andalus during the Almohad era kind of crowns applied then in North Africa and is found in the Grand Mosque in the Algerian city of Tlemcen. And Constructors created there depending on the luxurious marble to make masterpiece of Al-Hambra palace columns and especially in the arcade which surrounded lions courtyard. While appeared in the Seljuk period crowns differently from familiar oldest Islamic architecture [57].

Walls: one of the main structural elements of Islamic architecture in that it leads more than one job, it is the construction tool transfer loads resulting from the weight of the roof to the foundation, and that is so necessary Noted for stiffness and durability and strength as one of the most important elements of the structure. Therefore, the wall thickness commensurate with the magnitude of the weights as

well depending on the length and height of buildings. Since the thickness of the walls sometimes reached to more than two meters and an example of this are the walls of the Dar Al-emara in Kufa and palaces of Samarra and some buildings in the Mamluk period[57].

Some walls in Islamic architecture are characterized by contain buttresses that build some time from inside wall and another time from outside as a barrel vault as we can see in great Mosque of sammara. The method of supporting walls by buttresses is old structural system we can see the obvious exemplified in the ancient Egyptian architecture, old Iraqi architecture and other as Greek and Romanian and old Arab architecture. also considered the Umayyad palaces in the Levant and similar models in Iraq, is an example refer to continuation of method in Islamic architecture in that era influenced by Byzantine and Sassanian traditions. the Abbasid buildings at Ukhaydir palace and the great Mosque of Samarra from the obvious examples of the continuation of this construction method [57].

In terms of the function role of walls the concept of the surround space and give space a privacy. Through isolated internal space from the outside environment. As well as to isolate the inside from the outside in the case of residential buildings as well as public and religious. This feature is one of the most important features of Islamic architecture.as decorative role, its represents a free surface for decorative work.

“Enclosed space, defined by walls, arcades and vaults, is the most important element of Islamic architecture” writes E. Grube. Consequently, the emphasis of decorative work will be related to the articulation, embellishment and transformation of interior spaces. The aim will be, according to Grube, the “creation of non-tectonic values” , that is the “negation” of the of structural elements in their individual aspects, articulations and function. While the general aim of classical Western architecture was to “express” the structural elements and their relations, the relative interdependence of aesthetic and function, of form and structure, Islamic architecture wants to visually “do away with” weight, ostensive supporting elements, evident infrastructural articulations of individual parts, etc, in favor of a continuous, unfolding, limitless space, in the production of which the profusion or ornaments, the generative quality of decorative designs, wether painted forms, sculptural reliefs, or accessory elements (textiles, lamps, etc) play a very significant part”[58].

In this context Jeanan Shafiq state her vision in Islamic art:

“Throughout history, Islamic Ornamentation was the most characteristic to identify Islamic architecture. It used in mosques and other Islamic buildings”...” Nobody will deny the unity of Islamic art, despite the differences of time and place” [59], p. 62.

2.2.6.2. Arch, vault and ceiling types.

A. Islamic arch

Islamic architecture uses arches a lot in the design of entrances and wall pillars. Muslims mastered art of using the arch in construction more than any other cultural group. They inherited previous arch designs from the Romans and the Greeks and created new shapes of the arches such as the horseshoe arch and the pointed arch. It was used as a structural and decorative element in their buildings” [60].

Arches: the first use of the arches in Islamic architecture was a metaphor or a direct imitation of the arches that were dominant in Roman and Byzantine architecture. Which was semi-circular arch. But the architects of Muslims they have a great desire for change and create new effects. Therefore devised a new model known as pointed arch. it was the first appearance of this arch with its simple form in the first Umayyad architecture buildings as the Dome of the Rock and the Great Mosque in Damascus, although it appeared as slightly pointed arch. But the first clear appearance of the pointed arch is in Mushatta Palace in Jordan a year 744. then pointed arch became famous and widely used since the eighteenth century [36].

“Other shapes of arches that made an early appearance in Islamic architecture were trefoil, multifoil (or cusped), two-centered and four-centered arches. Ablind trefoil arch occurs in Qasr al-Hayr ash-Sharqi 727. Multifoil arches occurs in Abbasid architecture in the mid -8th century, at first as frames to pointed arches . Two-centered pointed arches appeared slowly at first, almost indistinguishable from round arches, then grew bolder until they reached their full form in the dome of Rock (688_91). Here they were used in a minor position, however, and it was another hundred years before the form became popular. Four-centred pointed arches appeared last, such as those in the Baghdad Gate of Raqqa 789 in northern Syria”.

"Corbelled stone arches were built in the earliest Islamic buildings of India, some with notched or ogee heads. It may be from these that ogee arches in the European architecture were derived. Corbelled arches with both notched and ogee heads were also characteristic of the east African coast, apparently having spread there from India on the monsoon trade routes [36], p. 89.

Horseshoe arch are expected appeared in the Byzantine architecture in Syria, specifically between the third and sixth century. It was first appearance in Islamic architecture in the Great Mosque of Damascus (705_715), as well as al_Aqsa Mosque in Jerusalem. It seems there it moved to North Africa as well as Spain and eventually became the most important features of Islamic architecture in that area.

where the architects evolution and used it frequently . Also, both horseshoe arches the pointed and semi-circular were commonly known in abundance in Egypt, Syria and the Arabian tractive"[36].

Parker , John Henry in a Glossary of term in history of architecture gave his viewpoint about origin of pointed arch and another type of arches and explain the probability of its originate ,when and where emerged also where is the first appearance for it.

“Very early in the style the peculiar impost which gives to their arches the form of a horse-shoe, stamps upon their works an original character, and it appears certain that we owe to them the introduction of the pointed arch into Christian architecture, if not also of the ogee arch, and the various forms of trefoil, quatrefoil, and other foil arches, for although it is impossible in the present state of our knowledge to say whether they invented these forms or derived them from earlier buildings, it appears pretty certain that the Christians derived them from the Mahomedan buildings. The pointed arch appeared in Christian structures for the first time during the twelfth century; but it occurs in Mohammedan buildings nearly three centuries earlier, as at Cairo, in the Nilometer, A.D. 848, and throughout the mosk of Teyloun, A.D. 876, the dates of which are established by inscriptions. It is also found in the Saracenic buildings of Sicily, erected probably during the tenth century, and in the mosk El Aksa at Jerusalem, rebuilt A.D. 780. The pointed arch on the other hand was not much employed by the Mohammedans in Spain, they preferred the horse-shoe semicircle to the very last, and the pointed arch is with them rare and late. But they made great use of the foil arch, which occurs in the mosk of Cordova in the tenth century, and spreads from thence throughout Barbary [61], pp.33.

B. Vaults:

Diaphragm arches: The issue of the use of the barrel vaults that based on structure component from arches (diaphragm) Islamic architecture in conflicting to some extent. But it is believed that it presented to the Levant from Persia in the Umayyad period. And the oldest examples of this type of roofing method is Taq Chosroes near Baghdad, as well as there are similar models may be the oldest dating back to the Hiri-style and the other to the Assyrian period in Iraq [62].

The Harran Palace in Jordan of the The most obvious models for use vault as a way of roofing in Umayyad period where every room in this palace used this method of roofing [63].

This system using barrel vaults over diaphragm arches, can be found in many other Umayyad buildings, like the audience halls from the baths at Qusayr Amra (figs. 1b&d) and Hammam aSarraj. In these cases the diaphragm arches are built with a technique demanding apparently a full span centering, but with a low springing line”[64] ,p.196, see Fig. 27 .

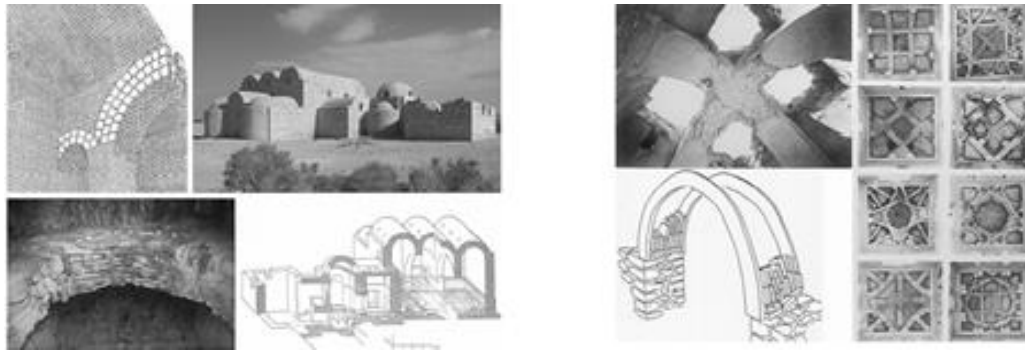


Figure 27: first models of vaults in Umayyad time. Source: [64].

“The setting and display of the diaphragm arches become increasingly complex, as arches can be multiplied and placed in parallel rows, defining regular subspaces or bays, each of them covered independently. This is for example the case of the prayer halls at Damascus, Cordoba and Hallabat mosques” [64], p.198.

Groin or cross vault that worked by stone masonry, obviously were not used on a large scale in the Umayyad period, but Commonly used wood bar or backed or curved with carved stone. While use thin brick and stone panels in the rest of the vault. this type of roofing used in small square rooms such as tepidaria of different baths, the oldest examples of this type of roofing in Islamic architecture are models of what exists in Amra Palace and Hammam as-Sarraaj (64). according to Hamilton, this design was common in most of the palaces of Levant desert that also used in Khirbet Al-Mafjar Palace [65] .

while Creswell says that these vaults have collapsed a long time ago but there are relics of what it asserts cross vaults of kind based on backing wood and stone. as, in the guard room at Qasr al-Hayr al-Sharqi there is another model of cross vaults made of bricks. This represents another model separately in the Umayyad period [37] p. 161, which promotes the idea of using it and growing up in the Levant.

1_ According to Hamilton, the advanced model of cross vaults found in one of Harran Palace room, where the system consists of the intersecting arches covering the ceiling rooms. (It is believed that arches are the kind of pre-made) either bays that resulted from the intersection of the square its covered by stone piece or square shaped brick paved 45 degree angle. Later this style of roofing appeared in the Mosque of Cordoba and Bab Almurdin Mosque in Toledo in the ninth and tenth centuries . but with simple different is that intersecting arches were repeated so that

the ceiling has become divided into nine boxes or long sections [64]. And he add to explain the sophistication form of first cross ribbed roofing.

" The most sophisticated application entailed the 'fractal' repetition of a secondary series of interlaced arches, covering the square sections defined by the first series (fig. 2). These pairs of arches could be rotated diagonally to the walls. Combinations led to increasing sophistication: eight arches, arranged into four pairs (two parallel and two rotated diagonally to the walls), would define an eight pointed star in plan. The remaining sections of the ceilings at Cordoba and Toledo were not covered by lintelled coffers, as in the earlier examples from Harane, but by true sections of vaults, thus creating the first ribbed vaults. Much latter this concept would be reproduced both in the mausoleum of Sultan Sanjar at Merv and in Gothic architecture"[64] p. 198.

2.2.6.3. Windows and Opening and other Interior Elements (Painting, Floor Finishing and Ceiling) .

Islamic architecture use the openings in its buildings for a number of purposes, the most important of which was the introduction of light and air to the buildings on the other hand used as a decorative treatment through treat this openings by tating alabaster plates or wooden work decorated with motifs Islamist whether they geometric or floral what was known as Mashrabiya.

one aspect of the use of these mashrabiyyas was as an ingredient in the decorative interior spaces by allow light to ennter to interior space and control it. As well as investment light and makes it as a decorative element, especially after discover glass and inlaid with Mashrabia slots [36].

"A mystical symbolism has been attributed by some authors to the careful control of the sources and plying of light in islamic architecture. For those writers light is the symbols of divine unity, and they believe that ' the Muslim artisy seek to transform the very stuff stuff he is fashioning into a vibration of light". In addition to having a religious dimation, light has in islamic architecture a decorative function which is twofold: it modifies other element of decoration and it originate patterns." [36], p.90.

The diversity that created by Islamic architecture in the form of windows and mashrabiyya is an extraordinary achievement. Where it seems that the development of this type of mashrabiyya have been in accordance Intentional approach. can be found first modeling in the Umayyad period. Where two types of windows presence in that period, one of them of carved stone and the other is stucco work. The most prominent and oldest of these models can be found in the Khirbat Al-Mafjar Palace and this model is one of the early models that have been used to control light [36].

Ernst points out that this model can be regarded as probably the first model who stimulate the production of windows with geometric pierced later, especially in the classical world. But he returns and confirms that the process of reception, projection and control light is the privilege of Islamic architecture. More sophisticated forms in the realization of perforated screens (mashrabiyya) in Islamic architecture can be found in Mughal architecture. Where proficient in the use of this type of art in the windows and walls as well in finishing surface using floral motifs with high technical [36]. Muslims used the walls as an element in design of the interior spaces. For decorations that appear on the roofs of the walls an important role in make great visual impact. This was done using surface decoration, whether geometric or floral. Or by filling voids walls Islamic calligraphy or even encapsulates the carpeted walls were rendered decorations mimic the decorations on the floors or ceilings,[66].

The evolution of termination techniques in different eras of Islamic architecture helped create surfaces are somewhat complex and continuity at the same time through the use of materials to make surfaces seems a brighter such as using such termination mosaic tiles as well as paints. This is achieved by using a duplicate, complex and different decorations in terms of texture to give smoothly impression to surfaces and easy visual move between parts of space [66].

Use the wood as main material in the interiors of secular buildings in Islamic architecture, as palaces. While, in the religious buildings stone and brick was the main building material [36]. Of the most famous examples of the use of wood in interior design in Islamic architecture was some palaces in Persia and Egypt as well as in some places in the Fatimid period like Bait al-Qadi Palace (901_1496) in Cairo, Egypt [35] p.436. another example for using wooden as element in Islamic architecture is some of professional work in Fatimid time like Panel with horse heads, Fatimid period 11th century see Fig. 28 that found in metropolitan museum,



Figure 28: Panel with horse heads [Egypt]".

Fountains were placed amid internal space was one of the main elements of interior decoration in Islamic architecture and used a lot in the palaces and courtyards of mosques and schools [66]. Another element is the use of the openings, whether they doors or windows its used as important element of interior decoration where they were decorating the windows openings with wood or stone material [67]. The openings covered by high precision ornamental motifs as is the case in the treatment of mashrabiyya or some type of abbassied wodden door that founded in samara.

Flooring is considered one of the main interior design elements in Islamic architecture, where covered by simple types of tiles and sometime with mosaic tiles or carpet [68]. As is the case in Seljuk-style tiles were used forms asterisk or octagonal tile shape made of ceramic.

Due characteristic of climate in Muslim region which represented by strong sun light it has been keen Islamic architect to address the holes in a manner that allows the entry of natural light into the space indirectly with the ability to control the temperature in case of external openings . While in case the internal openings they used large openings to attract the indirect sun light as is the case in most of the Islamic buildings containing internal courtyards such as palaces and schools.

2.2.7. Summary of Islamic Architecture.

A: Islamic architecture got its philosophy and conception from:

1. Architecture and architecture by the Quranic revelation (and this reflects the spirit of Islam).

2. The traditions that belong with the life of the Prophet (PBUH) and his ideas, Hadith and his thoughts.
3. The first Islamic buildings (house of the Prophet (PBUH) and his mosque in Al Madiena.
4. Arab Art & Pre-Islam architecture (and this reflects the time communication)
5. Architecture and art in neighboring countries (and this reflects the spatial communication) [68-69].

B: Islamic architecture represented by lots of styles and patterns appeared in some regional variations and has some of its own characteristics, but in general all of it carry a common feature of Islamic architecture.

C: There are a number of common characteristics that bring together all the Islamic styles of architecture and distinguish them from others such as focusing more on inside rather than outside, symbolism, abstraction, unity etc.

D: Islamic architecture invented an architectural and artistic elements that were not known previously, such as calligraphy and arabesques and developed and refined other elements such as the pointed arch, horseshoe arch and the square minaret etc.

E: Islamic architecture benefited at the beginning from previous civilizations and neighboring nations as the Sassanid and Byzantine. Islamic architecture established an unique architectural style that later affected European architecture for long periods.

2.3. Gothic Architecture.

In this part philosophy of Christianity and its effect on architecture and ornamentation will be discussed briefly_ after wards characteristics of gothic architecture and philosophy behind will be discussed.

2.3.1. Conception and philosophy of Christian architecture.

The concepts and ideas that came out of Christianity have had major implications and represented what we can call it cover or awning to form a Christian architectural thought. And that it had been translated this thought in different ways due different

regions and communities. Among the most prominent of these ideas and trends that came out of Christianity is that the Holy Synod space design which is a mix between two-ways, the first symbolizes the memorial symbolic and other symbolize to the spiritual symbolism. To achieve this goal, the structural system adopted in its composition on arrangement and order[70].

It is known that Christian traditions tie between Christ and the metaphysical possibilities of sun. According to the Christian doctrine of Christ and the sun assimilated and this was confirmed by more than one say of the words of Christ himself when he said (I am the light of the world) and says (true light who enlightens every man came into the world). So we note symbols and forms of the sun reflected in the Christian architecture through the use of wheel and Rose Windows and its symmetries in Christian architecture see Fig. 29.

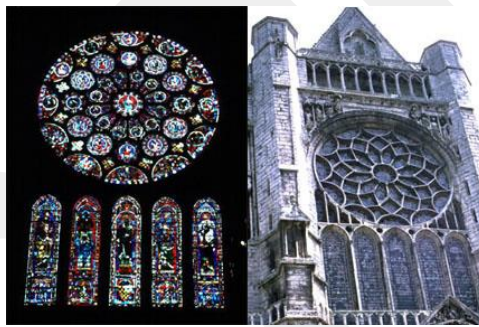


Figure 29: Philosophy of Christian architecture.

It stated in the Torah some geometric shapes that symbolize certain forms as examples square Symbolizes to the ground. The square symbolizes the Cross and the Cross symbolizes the center. Thus, these forms formed the church scheme. The cosmic significance of the Cross is a constant thing in Latin and Greek.

Cross represents the main direction, which implicitly represents the body of Christ. Since the church symbolized implicitly to the universe through its scheme as cross form, so the four walls of the parties to the confrontation Cross represent directions and ceiling represents heaven or paradise. So is the Church, according to Christian thinking it's the boundary between what is worldly (what is outside the church), and between what is religious (within the church).It works at the same time as if they were a bridge and at the same time the barrier between what is religious and what is secular. The bible quotes Christ, "I am the door, by me if any man enter in, he shall be saved", therefore to pass through the doorway of the church is to pass through time to eternity".

For example, in this context, the towers that frame the structure of the church is considered the gateway to the eternal[70]. See Fig.30.



Figure 30: The Cross represents body of Church.

These concepts and visions gave the church its identity Card. The Rose windows, central scheme, alignment between the East.

And the West, the vertical elements and the formation of cross which appear in interfaces. All of these concepts emphasize that the church is the second fact of existence. And it separates between what is sacred about what is defiled. And it rendered the place where the sky meets the ground. It Immortality Gate. In addition to the above concepts, in my opinion the stained glass is one of the most important elements of Avatar persuasion in the church and it became associated with the architecture of the church, including its role in providing the spiritual atmosphere which Contribute to enhanced theological church scheme[70].

Christian church at the beginning of its appearance focused on the function more than focus on other things. Where it is the place where people gather to perform religious rites and ceremonies. While formed the place of the altar and baptismal two of the most prominent elements of the Christian church it has varied positions depending on the type of the Church, whether Catholic or Protestant.

A. Symbolist features Ecclesiastical architecture. Historically, there is a permanent symbolic attributes characterized the church building. The first is to provide a religious environment, sense mood and atmosphere that evoke the high spirits of the worshiper. And stimulate the sense of high theology. The idea numinous a Latin word origin and means exaggerated religiosity interpreted by Rudolf Otto in his book (the idea of holiness), where he wrote.

"According to Rodolf the term implies an additional dimension over and above mere goodness. The object of the numinous is said to be Misterium Tremendum, a phrase with several facets of meaning. First of all there is the element of awfulness, that which evokes the 'fear of God'. It denotes an almost primitive reaction to the fearful majesty of God. There is also a dynamic connotation to the term, a sense of energy. Power, might, transcendence and mystery are some of the qualities of the numinous. They hold the individual in a grip of awe and fascination." [71].

The previous definition of the word numinous will be used as architectural expression terms for the atmosphere and mood offered by the ecclesiastical architecture. The numinous it possible to find in churches since ancient times. An issue linked in somewhat with scale, and are parts of the proportions of the human body and found in the sculpture were common in Christian religious buildings (called monoliths of Stonehenge) and also found in the pyramids and temples of Egypt. Western architecture included the numinous through negative presence of silence and darkness.

(Not an absolute darkness, as in Hindu temples, but more a kind of gloom as "the mysterious play of half-lights has always spoken eloquently to the soul, and the builders of temples, mosques and churches have made full use of it" [71].

Silence is one of the negative characteristics associated with churches and temples. "Yahweh is in his holy temple, let all Earth keep silence before him". So far, the noise is still considered one of the things is unacceptable in churches.

The idea of holiness as it is environmental feature of the worship and its relation to the atmosphere created by numinous which is an idea that has been active in the Indian religious atmosphere for the design of the church. Here it would be useful to know how the religious people invoked the idea numinous and mystery and the other as well as evoke God. To achieve this they gone to suppression light of both natural and synthetic. And this can evoke symbolic holy presence.

The second picture to understand the concept of Christian architecture was to absorb the concept of sacred space.

"The Christian church, a house of God, is a sacred place, filled with divine presence ... It is the 'basilica', the palace of the King ... the Christian church edifice is rightly regarded as the heavenly scion descended upon earth" [71].

Christian philosophy of architecture was the ability to give the impression that God exists in the church in the way that the cannot be found the secular world.

As a result, the church is the meeting place of the earth and the sky. This photo was founded ultimately to accept the theory of the Holy environment and Church is the model for the environment from the sky. To achieve this, the circle and the square

was considered to be the geometric shapes that are compatible and work closely with the divine pattern of things. Always, and in the holy patterns and environments there is a special area called holiness area which often enjoys special attention. It is a place rendered the ground met the sky, according to the Christian concept. Here, focus pictures on this spot are appeared in various forms, notably the concentration of light on a certain point. So that the light has a special place in the theology of Christian Architecture. These two images and the evocation of numinous, holy place and divine drawing played a crucial role in shaping the form and character of each church structure. It is these qualities, symbolist and conception of Christian religious for space Which became architectural constants. And then in fact this attributes will be the religious determinants of space or architecture Christianity as we mentioned earlier [71].

In each particular style there is a general frame collect the common features of participants together or give the general idea. Also, there are certain characteristics within this framework be distinct or different from one area to another. This is what we call different cultural norms, which in general have adapted to the general framework of the concept of divine space, or in Christian religious architecture, it has retained some of their privacy and this is what is known as a form of regionalization[71].

2.3.2. Characteristic of Gothic Architecture.

The Gothic Art of the most important types of Christian art in the medieval period. As represented by Gothic cathedral of excellence and ability to provide construction solutions, served structure design of churches and added esthetic and spiritual nature in it, especially in the field of interior spaces. We can be considering that the first appearance of Gothic architecture in Paris is in an area called San Donyo in the 1140. Over a century this pattern spread throughout Western Europe. Gothic architecture can be considered a revolution on the traditional style of Romanesque architecture [72] (although affected by some of its elements).

The old style of Romanesque architecture as it contained round ceilings, thick walls, small windows and weak dim lighting interior spaces. These properties represent a

catalyst for change, discover and use of new technologies. To give new spiritual to the interior space as well as for the church as a whole.

Therefore, came the use of the pointed arch with high altitudes and the use of thin walls and large windows, colored and stained glass, the use of columns, ribbed vaults and flying buttresses that have contributed to facilitate the process of transferring weights. For me all these elements came to give the Gothic architect possibility of radical transformation of the place from the inside and make space an exciting visual experience that gave the interior space Large capacity and an extension of the space submerge it with lighting and color which has increased its prestige and beauty.

At the level of the building from the outside came the use of statues that symbolize religious families, as well as the ruling. And use statues and various sculptures made of stone came to prove the technical feasibility of the Gothic artist. As the uses of flying buttresses which gave the building's more grandeur a large magnitude. This is also one of the most important means of structural solution to achieve a space amplitude capacity and make the walls thinner, through its effective function in the transfer of ceilings loads process. Also appeared in this model excessive use of statues of animals (mostly been stripped forms) and the most important forms of these statues is Gargoyle[73].

The main products of the Gothic can be seen in the Notre Dame Cathedral in Paris (1163-1345) and Chartres Cathedral 1194 _ 1250 and The Cologne Cathedral 1248 – 1880 see Fig. 31.

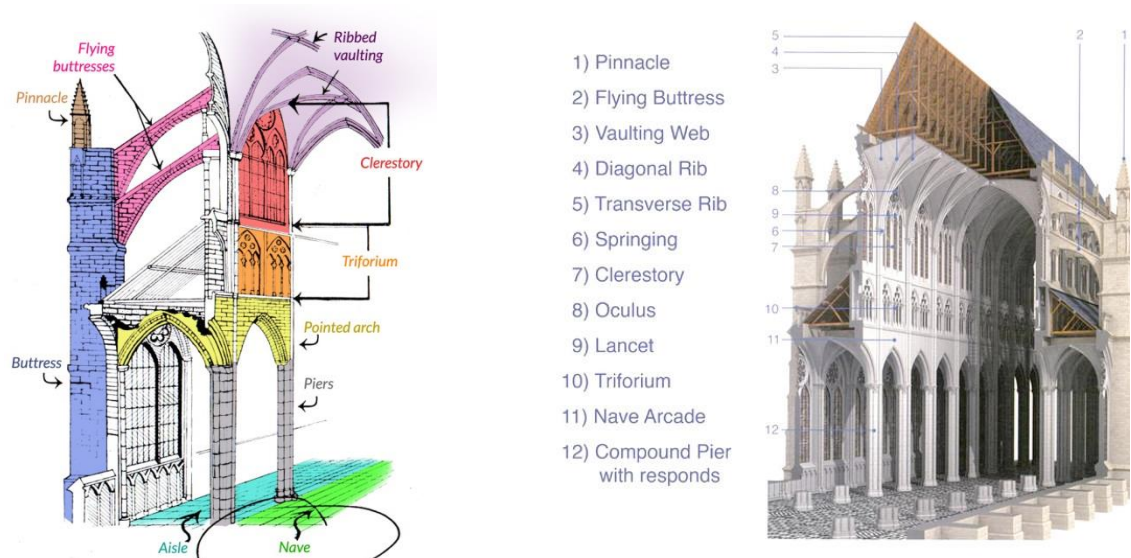


Figure 31: Element of gothic architecture .

2.3.3. Theories about Origins of Gothic Art and Architecture.

There are lot of theories discuss the origin of gothic architecture, and try to explained how emerged and start , they put numerous of theory and analytical methods to prof each opinion . here we are going to mention some of this theories as well put some says of scholar who deals with this subject.

A. Sir Christopher Wren Theory.

Harvey wrote an important article about the origin of Gothic architecture, referring to opinion one of the most important pioneers of architecture in the eighteenth century, Sir Christopher Wren. And as the Wren was of the most admirers Islamic architecture, he took the opportunity of the opening of Westminster abbey which designed by Wren according to the Gothic style. Then talked about his theory at the origin of Gothic architecture. In this context, Harvey wrote .

“In 1713 Sir Christopher Wren, then in his 81st year, reported on Westminster Abbey and took the opportunity to enunciate a theory of great importance in regard to the origins of Gothic architecture. Referring to the new church of Henry III he wrote: This we now call the Gothic manner of architecture ... I think it should with more reason be called the Saracen style, for these people wanted neither arts nor learning; and after we in the west lost both, we borrowed again from them, out of their Arabic books, what they with great diligence had translated from the Greeks.... The crusado gave us an idea of this form, after which King Henry built his church.... The Saracen mode of building, seen in the East, soon spread over Europe, and particularly in

France, the fashions of which nation we affected to imitate in all ages, even when we were at enmity with it" [74] p:87.

B. Erwin Panofsky: Gothic architecture and Scholasticism (Kenneth John, 1953).

"The brilliant historian and critic whose address is Wit's End in Princeton has given us a very interesting study-what he calls 'another diffident attempt' correlating Gothic architecture and Scholasticism. It is grounded in a vast knowledge of art and philosophy, and well justified at the beginning by the observation that distinguishable periods of history must each have a verifiable unity, with intrinsic analogies between 'such disparate phenomena as the arts, literature, philosophy, social and political, religious movements, and so forth.' The development of Gothic architecture can, in fact, be put in parallel with the development of Scholasticism, and this is done in an illuminating manner by the author" [75] p:605.

The great historian Erwin Panofsky presented his vision for the development of Gothic architecture life growing and linked to Alscostalzm and called it (try another a shy). Try to explain the way in which the evolution of Gothic architecture, and so when linked with Alscostalzm. According to Squit Who gave a review of the theory and Alscostalzm Gothic raised by Banowski. that Banowski founded in methodology to put the theory to the extensive knowledge and link between science and philosophy. And supported by observation of distinct historical periods which must be verifiable with substantial comparisons between these disparate phenomena as art, literature, philosophy and religious movements, and so on.

According to the theory, the evolution of Gothic architecture came in parallel with the development of Alscostalzm. And the theory of parallel and despite the fact that most philosophers questioned the theory of parallelism. Through cited that since the invention of architecture seven thousand years ago, there is a light and ingenious building and gave the example of the Mesopotamian in the other said there are heavy and primitive buildings and gave her an example of America[75].

Theoretical conclusion that any new model produces perhaps accidentally as a result of a defect or deficiency or weakness in the existing model originally, therefore he reasoned Gothic-style appearance (and despite effect of Gothic by Romanesque style) because of Romanesque buildings failed in the face of medieval fires. while the style characteristics are result from creative case by inelegant engineer in the production of a new structural system as well as the architect when choosing

construction and finishing materialism and add it may be the taste of financed and patron may have a role in the formation style.

Finally, John pointed out that the style,

“perhaps showing the new form coincidence based on intelligent engineer and architect taste in stage of what stages of the search for solutions to the problems of existing pattern which is what happened, according to his belief with the Gothic style”[75] p:606.

C. Crusaders affect theory:

Some researcher like The German art historian Otto von Simson claim in his theory about origin of gothic architecture, that the crusaders transfer the design of rose windows which is existing in Umayyad palace Khirbat al mafjar in 8th century and introducing to church [72] see Fig. 32.

There are another opinion that talk on role of crusaders in emerge and appeare gothic style:

“The Crusades also affected the development of the Gothic style. Crusaders returning from the Holy Land brought with them many relics, and church fathers wanted to display these holy objects prominently. Devout Christians often undertook several pilgrimages in a lifetime; because hordes of pilgrims paid homage to these relics the numbers of worshipers entering those churches increased intensifying the need for a greater amount of interior light and space.”[76].



Figure 32: Origin of Rose window.

D. Parisian origin of Gothic.

Urphane Pope in his article published in 1933 entitled *Gothic Architecture and Persian Origins*. Claimed that Gothic architecture probably descended from Persian architecture, citing that a number of architectural elements that appeared in Persian architecture, such as the pointed arches and vaults roof as well as what he claimed that the first model of flying buttresses of which appeared in the mosque in Isfahan in 9th and 10th centuries. But this theory has been the subject of research and doubts because of its intersection with some evidence and discoveries made by Croswell and other in documentation of the pointed arch appearance in Iraq before its appearance in Iran where they gave an example from AL-Ukhaidhr Palace. This is a discovery consider as a defect on theory as well as in the issue of the flying buttresses in the Juma mosque in Isfahan they were not relevant in the flying buttresses of Gothic architecture. Or at least do not like them greatly [77].

E. Another theories.

In early 1765 Stephen Riou Introduce his view about origin of gothic he refer to two ways that the gothic originated from. First, he claim Gothic as coming directly from Moorish Spain, rather than from the Middle East and to prove his side view the Moors wrote Stephen Riou in 1765 or what is the same thing....The Arabian or Saracen ,... have expressed in their Architecture the same test as their poetry both the on. And other falsely delicate, crowded with superfluous ornaments and often very unnatural and further he suggest that the contact of crusaders and Saracen in Holy land may be another way the effect pass through [78].

Although the writer suggested that origin of Gothic perhaps from Arab or Islamic roots. But his point of view on Islamic Architecture shows us a big Prejudice when he described it as crowded and unbalanced architecture This kind of prejudice we find clear, at many European historians who studied Islamic architecture.

2.3.4. Gothic Periods.

There are three stages of Gothic architecture can be distinguished by a period and place of their appearance as well as their characteristics. Called, Early, High, and late Gothic.

2.3.4.1. Early Gothic.

This stage is considered the first stages of emergence Gothic style. started from 1120 to about 1150 to 1200. Where, at this period they combined for the first time among all basic structural elements of Gothic style (the pointed arch, ribbed vault, and flying buttresses) in a coherent manner. First appearance of stage in the suburb near Paris, called Île-de-France. Where this area was a thriving architecturally and rich population enough to create massive cathedrals which summarized the Gothic style. The oldest buildings of this region stile standing are the Church of St. Denis (1120 to 1140). Where the church structure consists of a number of identical elaborate vaults and series of windows along the perimeter of the building. Buildings of this type continued to appear till established Church of Notre Dame in Paris in 1163 and were followed by Loan Cathedral of 1165. By that time, became a familiar treatment of the interior with columns and vault and each one of which consists of one or more groups of parallel thin elements. This period fashioned in its infancy and the high magnitude of the internal spaces, This is because the use of the possibility of new elements. Also tracery windows appeared which included its appearance and evolution with the use of stained glass in the windows. Large windows and pointed arches used in abundance in style and used at different levels. Cathedrals Characterized by massive entrances. Church building supported from outside by row of flying buttresses along the side walls of the church. The basic shape of the Gothic architecture finally spread all over Europe to Germany, Italy, England, Spain, and Portugal in England, the first phase of the Gothic style was the Salisbury Cathedral, which is the first appearance to English Gothic (1200-1300). While, main and the first mature example of Gothic style in England represent the dish nave and choir of Lincoln Cathedral, which began in 1192. According to Andrew Henry in his article on history of Gothic architecture he sumoraised the deference between French and English gothic,[79] he wrote:

“Early English Gothic churches differed in several respects from their French counterparts. They had thicker, heavier walls that were not much changed from Romanesque proportions; accentuated, repeated moldings on the edges of interior arches; a sparing use of tall, slender, pointed lancet windows; and nave piers consisting of a central column of light-colored stone surrounded by a number of slimmer attached columns made of black purbeck marble”. “Early English churches also established other stylistic features that were to distinguish all of English Gothic: great length and little attention to height; a nearly equal emphasis on horizontal and vertical lines in the stringcourses and elevations of the interior; a square termination of the building's eastern end rather than a semicircular eastern projection; scant use of flying buttresses; and a piecemeal, asymmetrical conception of the ground plan of the church. Other outstanding examples of the early English style are the nave and west front of Wells Cathedral (c. 1180-c. 1245) and the choirs and transept of Rochester Cathedral” [79].

2.3.4.2. High Gothic.

Between (1200-1280) the second face of gothic architecture was start in France, But on the Europe it appeared later in England. This pattern was characterized by the application of an elaborate geometric decoration especially in buildings that have established in the past century. In about 1230 architects became less interested in the size of the building and more attention to decor, the result was the emergence of what is known Rayonnant style (from the radiating character of the rose windows, which were one of its most prominent features). The first steps in this direction is the Church (Amiens). When (where the choir triforium and clerestory were begun after 1236, and at Saint-Denis, where transept and nave were begun after 1231).

Architects started to create holes in the walls as much as possible. This holes used as a windows extending from top of the main arcade to the apex of the vault . It has produced a new phase of sophisticated tracery of windows decoration and heavily relied on the fragmentation of the openings by the number of brackets[79].

Rayonnant model focused on the decoration of the old Gothic buildings among the most prominent applications transept façades, Church of Notre Dame in Paris. Decorative effect of this pattern was not limited to windows decoration only, but has spread to include stone areas and the rest of the architectural landmarks. In this context Andrew Henry wrote:

“after that date, they became more concerned with the creation of rich visual effects through decoration. This decoration took such forms as pinnacles (upright members, often spired, that capped piers, buttresses, or other exterior elements), moldings, and, especially, window tracery. The most characteristic and finest achievement of the Rayonnant style is the great circular rose window adorning the west facades of large French cathedrals; the typically radial patterns of the tracery inspired the designation Rayonnant for the new style. Another typical feature of Rayonnant architecture is the

thinning of vertical supporting members, the enlargement of windows, and the combination of the triforium gallery and the clerestory until walls are largely undifferentiated screens of tracery, mullions (vertical bars of tracery dividing windows into sections), and glass. Stained glass--formerly deeply colored--became lighter in color to increase the visibility of tracery silhouettes and to let more light into the interior. The most notable examples of the Rayonnant style are the cathedrals of Reims, Amiens, Bourges, Chartres, and Beauvais”[79].

In parallel with this model, Rayonnant style came in England in general using as framework of high workmanship stone decoration. Occupate windows openings. It has replaced by pointed Lancet windows which was used in early English Gothic style. And it divided the windows openings decorative fixtures adopted on the circle, arc and operated major subdivisions stained-glass and elaborate decoration (At first, this tracery was based on the trefoil and quatrefoil, the arch, and the circle, all of which were combined to form netlike patterns. Later, tracery was based on the ogee, or S-shaped curve, which creates flowing, flame like forms). Westminster Abbey (1245_69), Lincoln Cathedral(1256) and York Minster (c. 1260-1320), its most outstanding building in England that represent this style[79].

2.3.4.3. Late Gothic.

The third phase of the Gothic style is started in about the year 1280, known flamboyant Gothic style in France was more decoration of Rayonnant model. And it lasted until 1500. On the other hand it appeared in England(1375_1500) as equivalent in English Gothic architecture what knew "Perpendicular style". Flamboyant Gothic architecture feature by widespread use of flame shapes, and S-shaped curves carved from stone covering all of windows area, addition, the walls turned into a continuous glass forms supported by the tracery structure from front side.in this context Andrew Henry wrote.

“In the Flamboyant style wall space was reduced to the minimum of supporting vertical shafts to allow an almost continuous expanse of glass and tracery. Structural logic was obscured by the virtual covering of the exteriors of buildings with tracery, which often decorated masonry as well as windows. A profusion of pinnacles, gables, and other details such as subsidiary ribs in the vaults to form star patterns further complicated the total effect”[79].

This model appeared largely in secular buildings and housing more than its appearance in religious buildings. However, it appeared in a limited way in churches such as Notre-Dame d'Épine near Châlons-sur-Marne and Saint-Maclou in Rouen As

in England, the style of parallel and perpendicular Who called it characterized as follows.

“predominance of vertical lines in the stone tracery of windows, an enlargement of windows to great proportions, and the conversion of the interior stories into a single unified vertical expanse. The typical Gothic pointed vaults were replaced by fan vaults (fan-shaped clusters of tracery-like ribs springing from slender columns or from pendant knobs at the center of the ceiling”[79].

Most important example of Perpendicular Gothic pattern was Gloucester Cathedral (14th-15th centuries) and King's College Chapel, Cambridge (1446-1515).

2.3.5. Architectural Element and Interior Element of Gothic Architecture.

2.3.5.1. Pointed Arch.

The Gothic architecture is not only decorating architecture, but it is style of architecture able to employ many of the architectural elements to serve the general shape of its buildings. The most important of these elements is the pointed arch; where possible considering that the pointed arch is the most important architectural elements that contributed to the formation of Gothic pattern. Many historians of architecture tend to believe that the first appearance of the pointed arch is in Syria and Mesopotamia.

Likewise, the pointed arch has its origin in the Islamic architecture of the near East of the 8th century which then spread rapidly throughout Egypt and Tunisia into Moorish Spain and towards Italy. According to one theory [80], the pointed arch may have been used on the island of Sicily, which soon spread to France via the Norman Conquests of the island in the 1060s and 1070s [80].

The Gothic builder discover the high possibility for this arch which helped to give building an amazing high strength and stiffness, made them to adopt and develop it until it became the most important features of gothic style. According to famed engineer and architect Mario Salvadori the Practical experience has shown that the pointed arch has big ability from the semicircular arch to withstand the pressures resulting from the weight of the roof and moved pressures to the foundations. The ability to crying load for pointed arch increased more than 50 percent more than semicircular arch, where Salvadori state in his important essay:

"experience had shown them that pointed arches thrust out less than circular arches," and he add , "The main difference between Romanesque and Gothic arches lies in the pointed shape of the latter, which, besides introducing a new aesthetic dimension, has the important consequence of reducing the arch thrusts by as much as fifty percent."[81], p. 213.

The Gothic period is the early European architectural styles used pointed arch which later became most important Gothic style feature. The Gothic style benefited from the pointed arches of both decorative as an aesthetic as well as from the construction as a supportive to structure. Where proven high susceptibility to withstand and transfer of weightlifting[81] see Fig.33.



Figure 33: Pointed arch.

2.3.5.2. Flying Buttress.

We can consider flying buttresses one of the most important structural elements that appeared clearly and explicitly in the Gothic style, contributed significantly to develop and mature the final form of the buildings of that style. As most historians are likely to that Gothic architectural styles is more commonly used for this element, which contributed to the development it and reach to what it have reached in the form of that period. Although some historian indication that origin of flying buttresses due to the Byzantine and Romanian architecture. In other hand there are another historians who said that its assets in the Romanesque architecture and gave the Church of Durham as an example [82].

the flying buttresses consists of two parts, one of them a huge mass of vertical construction (buttresses), which is located outside the building The other part is the part or segment of the arc connecting buttresses with wall which conferred [82] p:367-372.

The great importance of this element is that it has contributed significantly to reducing the thickness of the walls and makes them lighter and thinner through the

ability to neutralize the thrust force on the walls and the forces resulting from vaults weight. Therefore, it is made possible to mitigate the thickness of the wall and allowing to creation of larger sizes openings for windows. Prototypes of flying buttresses were inclined to magnitude much more than what is required to cope with loads of static expected as for example in the Charter Church (1210) and around the apse in Saint Remy Church in Reims, which is believed to be one of the clearest examples of which still exist and to its original form and return to about the year 1170 [83-84] see fig 34.

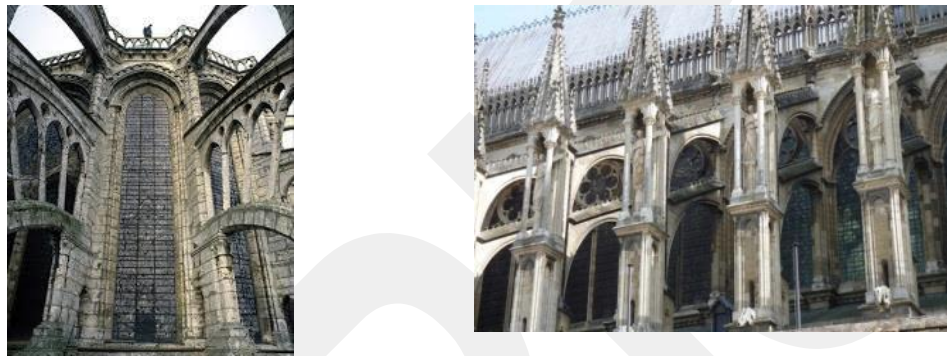


Figure 34: Flying buttresses in Charter & St Remi Cathedral . Source:[83].

William W.Clark wrote “**the flying buttresses are the last major structural device created in the period, first appeared in Noterdam cathedral in France between 1165-1175**”. And he add “**the function of buttresses was thought to be relieve the outward pressure (thrust) in a tall building that resulted from the sheer weight of stone vaults and from the distribution of resulting forces that would cause the arches of the vaults to spread outwards**” [85], p 64.

Flying buttresses are considered one of the most important elements that characterized the Gothic architecture. Its new and distinctive element it was unprecedented for any style before Gothic used in this way, or even function. Usually it appears in the exterior facade and basic function is to supplement and strengthen the structural system of the churches. It contributed transfer weight and distribution loads of heavy roof. Also, sources suggest it is used to support the broken walls in an existing building. It has significantly contributed to the liberation walls of bearing heavy weights of ceilings directly. It's also considered one of the most important elements that have enabled the Gothic architecture to makes such interior spaces and access to very high altitudes.

Buttresses which used in some previous style were large and grander so that it left no room for the work opening in the walls. Simply because it was a retaining wall of stone. While the flying buttresses is made up of struts pillar with part of pointed arch (that is, they are open and thin to give way to makes window openings) [86].

“The flying buttress is strongly associated with Gothic church architecture. The buttresses resist the force pushing a wall outward by redirecting it to the ground, resisting the outward push of the interior arches and vaulted ceiling. Flying buttresses “fly” because the buttress is not in contact with the wall all the way to the ground; the lateral forces are transmitted across an intervening space. Flying buttresses have two key parts: a massive vertical masonry block on the outside of the building and an arch bridging the gap between that buttress and the wall”[87].

2.3.5.3. Grand, Elongated structure, Which Swept Upwards With Height And Grandeur.

Gothic architecture characterized by massive and high raises buildings. Unlike previous style as Romanesque architectural. This feature was the result of taking advantage of new architectural elements introduced by the engineers, architect and masons of in the Gothic style. Since the use of flying buttresses led to the result of being able to rise building to quite high altitudes, up to tens of meters taking advantage of buttresses in transfer of loads from the roof as well as the weight of wall itself and turn it into a bases, which was not possible in the previous architecture model. In addition to benefiting from high susceptibility to feature in the pointed arch which is it bearing pressures and weights inflicted upon easily and transported to the walls or pillars where the pointed arches showed efficiency in this aspect outweigh the circular arcs by as much as 30-50% [88].

The production of huge buildings came to take advantage of the architectural elements that mentioned above, also contributed to the achievement of an important purpose of the purposes of architects, builders and sponsors of Gothic architecture to get space filled with light as well as good airy. This achieved through the use of large openings and wide space and the increasing rise. This in turn boosted the spiritual stature of the Church. This has strengthened the religious beliefs prevailing in that period. As the society member think. Of the high altitudes of the towers create a spiritual mixing or pointing to heaven, which promotes spiritual and religious side at the same time [88-89].

In periods of pre-Gothic appearance. Architects struggled to find practical solutions to the distribution and transfer weights to the foundation. This confirms or let us says Justifies that the building before the Gothic was smaller. And elevations less Contrary this it is possible that the buildings collapse.

But thanks to the architectural innovations of the basic elements of Gothic architecture became the magnitude and height of the most important features and qualities of Gothic architecture feature due to benefit from the potential of these elements in distribution and transfer process weights of Origin[87].

2.3.5.4. The Vaulted Ceiling.

The vaulting ceiling is one of the innovations that came with the appearance of the Gothic style. After the success of this pattern to employ the pointed arch, architects began to look at how to make the ceiling more efficient in the practical and aesthetic terms. Where the vaulted ceiling used the pointed arch technique for transmission force and weights from top to bottom through walls. The new design of the ceilings gave a very influential impression because it gave ceilings a view that it became more strength and beauty. This new concept of roof allowed to create new forms and sizes, in time Which was the vault in previous is either circular or rectangular[86].

“The use of ribbed vaults for cathedral ceilings complemented the pointed arch as an architectural element. By carrying the theme of slender stone members from the floor through the ceiling, ribbed vaults reinforced the sense of height and lightness in the building. In a visual and structural sense, these vaults connected several stone columns throughout the building, emphasizing the interconnected stone elements which produced a skeletal frame that was both visually dramatic and structurally elegant”[76]. See Fig 35.



Figure 35: Relation of ribbed vault and pillar, St Denis Chaple.

The vault ceiling is an important feature of Gothic architecture. This vault transport loads of roofs across the ribs to the grounds through the walls or through a huge stone pillars in turn transferred to the foundations of the building. Gothic architecture developed more than one type of vault and its range in type from simple cross, barrel, groin and fan vault . These elements enabled the Gothic cathedrals built of access to the highest levels, it's also made walls thinner and enabled the use of large windows inlaid with colored and stained glass [76] .

“The Romans, who were influenced by the techniques of the Etruscans, began the development of a mature vaulting system in the 1st century AD, which included both the barrel and the groined vault (fig.2_33), The groined vault is the intersection of two barrel vaults, producing a surface that has arched openings on its four sides, and thus divides the area to be vaulted into squares known as bays. Rediscovered by Romanesque architects, this type of vault became the basis for a more complex and varied type of vault construction in the Middle Ages [80]. The main shift of the Gothic era occurred from the older, heavier style of Romanesque architecture, based on a solid stone vault, to the lighter, elevated Gothic style based on both the Romanesque and Islamic use of the pointed arch and cross-ribbed vault[80], see Fig. 36.

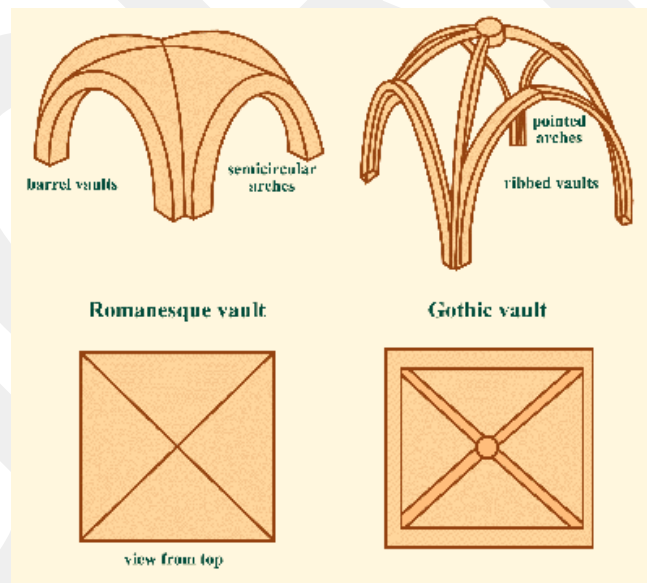


Figure 36: Romanesque vault VS Gothic Vault.

2.3.5.5. The Light and Airy Interior.

One of the main reasons that prompted the emergence of the Gothic style is to get the internal space of a spiritual influence. Contribute to lend an air of sanctity to the internal space of the church. In the previous models were the medieval buildings and its interior spaces characterized by darkness and poor lighting and ventilation and

that because of the huge walls and the inability to open the large windows in the walls for fear of collapse as a result of the inability to transfer loads. Which produced the dark spaces, a few ventilation and moldy sometimes [90].

When Gothic architecture appeared, great inventions in the field of the structure came with it. architect and engineers employ these structural and architectural elements as the pointed arch, flying buttresses and the ribbed vault in a broad and large space and high elevations production as well as able to work very wide opening in the thin walls enabling a comfortable space with good lighting and adequate ventilation, and thus possible to obtain comfort space even more enjoyable and prestige making this model contributes to enhance the value of internal space with spiritual influence contributes to lend a sanctity to atmosphere to the internal space of the church [80].

2.3.5.6. The Gargoyles of Gothic Architecture.

One of the most important characteristics and features of Gothic architecture. It is a shapes represented brutality creatures carved of stone were installed on the facades of Gothic buildings as part of the decor of the building as well as function as the discharge of water rain and keep it away from the foundations of the building (gargoyle) [91].

Gargoyles, truly are structures carved forms in abstract way, symbolize the different forms of animals with forms of ugly ones. Their functions are accumulated rain water drainage on the ceilings and push it away from the walls and the foundations of the building. Through a pipeline passing through the bodies of these ugly abstract shapes and fall through the mouth, nose or wing. Gargoyles are forms for ugly wild animals are sometimes used as a way of decoration and sometimes other used to drain rain water and push it away from the walls to protect them from the formation of unwanted stains on the stone. Another view says this forms came as heinous to scaring people and push them to enter into the churches [91].

According to Lester Burbank Bridaham, writing in *Gargoylaes, Chimeres and the Grotesque in French Gothic Sculpture*, "There is much symbolism in the sculpture of the Gothic period; but we must be wary of reading in too much meaning [92].

What are these fantastic monsters doing in the cloisters before the eyes of the brothers as they read? What is the meaning of these unclean monkeys, these strange savage lions, and monsters? To what purpose are here placed these creatures, half beast, half man, or these spotted tigers? I see several bodies with one head and several heads with one body. Here is a quadruped with a serpent's head, there a fish with a quadruped's head, then again an animal half horse, half goat... Surely if we do not blush for such absurdities, we should at least regret what we have spent on them [92],see fig.37.

This gargoyle head has a function - to shed water away from the building. It would also make a nice fountain.



Figure 37: Gargoyle.

2.3.5.7. The Emphasis upon the Decorative Style and the Ornamentation.

Since the Gothic style start in emerge, the architect began to show clear interest in decorating the exterior of the building. In previously pattern, the exterior of the buildings was simple, while money saves for development of the internal spaces and focus on. The architecture in the Gothic style is no longer functional, but starts to express on itself, features, philosophy and meanings. Constructors seemed to have ideas to produce an ambitious designs and new decorations using different techniques and methods. The most famous decorative styles in this model was flamboyant style that gave cathedrals look inflame It is important to note that the gothic architecture been handled differently in each of the Europe regions that have spread there. For example, Italian known not to love this style, despite the spread of that, came Gothic in Italy is completely different from all other parts of Europe. Their Cathedral tends to focus on use of color in interior and exterior, rather than over-the sculptural or decorative items[72].

Gothic architecture marked the first time that beauty and aesthetic values had been incorporated into building design. This revolutionized the way that medieval

architects began to think of buildings. Architecture was no longer just functional - it began to have merit and meaning in its own right.

Increasingly ambitious and ornate designs of church, cathedral and castle came to be built. Rivalry and competition drew different groups of builders to conceive and construct grander and more decorative designs, for the glory of the Christian region[91].

2.3.5.8. Arches.

In addition to the pointed arch, which has become clear feature for style, Gothic style invented new types of arches of which was used in previous pattern like Romanesque and other and some are created by builders and architects of gothic. The general shape of the new types of arches differ and varies depending on the area that shows where, as well as names that were fired at these arches are used to identify periods and sometimes certain models follow the Gothic style which usually vary from one country to another[61].

This diversity in the form of arches came as a useful tool and not as a principle of design. This means that the uses of arches are planned according to the requirements and wherever they need to be used. This can be seen in the Italian Gothic architecture, especially in Venice, where we find that the semi-circular arc can exist with a spire.

A. Lancet arch.

The Lancet arch one of the simplest types of arches, which is known in the Gothic style. It is a long opening with pointed arches known in England as Lancet. This type of openings consists of a set of openings three or five cluster openings. It is usually very narrow and sharp with pointed arch. Lancet arches usually defined as two-centered arches whose radii are larger than the arch's span [93].

Famous model of this type of arches are found in Salisbury Cathedral in England. It is the simplest and most beautiful models known in early English Gothic style. As

well as York Minster has a unique model for this type of arches or holes which still maintains to its old Glass, This model, known as the Five Sisters. Also, Chartres Cathedral and Loan cathedral have same type of arches but it was more simple and undecorated. And in Italy are used Widely too[76] see Fig. 38.



Figure 38: Lancel arch, Charter & Loan Cathedrals.

B. Equilateral arch.

One of the gothic arches types which are common used in the Gothic style. There are many openings that used this type of arches. It is formed when the radius of the circle that drawn from exactly equal the width of opening that arch occupy. therefore its seem the hight of arches more than its width [76].

This arch excelled in his ability to fill big wide slots. Therefore, we find that it used often in large doorways slots, ornate arches, as well as in the large windows. This type of arches are used with tracery, and showed remarkable influence in full of opening and harmony with geometric and floral motifs. Appeared In a number of France and England cathedrals . Such as York minster England Notre Dame and Lincoln Cathedral in Paris. There are some windows that its slots are designed by using two equilateral overlapping arches or more what produced a complex and sophisticated design [70] see Fig. 39.

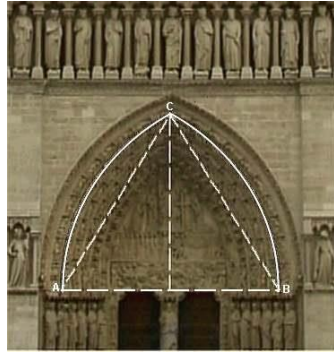


Figure 39: Gothic Architecture: Equilateral Arch Geometry & Equilateral.

C. Flamboyant arch

The Flamboyant “Arch is one that is drafted from four points, the upper part of each main arc turning upwards into a smaller arc and meeting at a sharp, flame-like point” [72].

Commonly used this type of arches to decorate the surfaces of the walls and as well windows tracery, it has a strong effect created a lively atmosphere when used as a decorative element. But in construction side this type is weak and arches are rarely used to fill large openings except in the case of its presence with bigger and more stable arches . also its not employ with vaults [72].

Use this type of arches in the famous and beautiful tracery types of windows in Europe. It can observe in St. Stephen's Church in Vienna, and St. chapelle in Paris, and the Cathedral of Limoges and Rouen in France and at Milan Cathedral in Italy. While In England the famous examples are the West Window of York Minster with its design based on the Sacred Heart, the extraordinarily rich nine-light East Window at Carlisle Cathedral and the exquisite East window of Selby Abbey and Limoges Cathedral, France [87-88] see Fig.40.



Figure 40: Flamboyant Arch East window of Selby Abbey. Source: [87], (also called tracery) Limoges Cathedral, France.

Commonly this kind of arches in abundance in the local and ecclesiastical architecture in France, where it was above the vents above the entrances while was very rarely as this use in England [70].

As in England was wider use in the walls of the corridors and niches It is the most exemplified by Lady Chapel at Ely, as well as in the external facade of the church of Lincoln. In Spain and Germany appeared in the openwork screens in the exterior of the buildings. Was this style of arches obvious effect in all countries, especially Cathedral in Vienna [10].

D. Depressed arch.

The Depressed arch or what we can called four-centered arch the general shape for this type its wide bigger than its height and visually seem of having been flattened under pressure. Depressed arch formed by drafting two arches which rise steeply from each springing point on a small radius and then turn into two arches with a wide radius and much lower springing point [72]. This kind of arches used in the window openings, giving wide openings. Also employ as a wall decoration in places that are arcades and windows openings part of the entire surface Décor

This model was known as the perpendicular arches. Spread and development, particularly in England. And greatest used and effect was in 15th and the first half of the 16th century, this arch appeared in Spain, France and Italy as well [76].

Such, model of arch can be noticed in Gloucester Cathedral where the East Window . There are many famous royal chapels, one of them-like Abbey which showed us the fine details of this model , and these Chapels are King's College Chapel, Cambridge; St George's Chapel, Windsor; Henry VII's Chapel at Westminster Abbey and Bath Abbey see Fig.41. As well as there are simpler buildings, especially churches built during the wool boom period in East Anglia, we can consider it as good example of this style [70].



Figure 41: Depressed arch King's College Chapel, Cambridge.

2.3.5.9. Stain Glass and Windows.

"The term „stained glass“ applies to colored glass made with metallic oxides as well as glass on which colors have been painted and then fused in a kiln"[89] p:11. In Europe, the art of stained glass reached its height between 1150 and 1500, when magnificent windows were created for great cathedrals (Department of Medieval Art and The Cloisters),The two most common styles of stained glass windows made for gothic cathedrals were the tall, spear-shaped lancet windows and circular rose windows [89].

Before the advent of Gothic churches and cathedrals were with small windows and thick walls, because the structure cannot afford the large holes in structure. After the invention of the pointed arch, flying buttresses and ribbed vault ceiling enabled the work of the large holes in the walls. And therefore this is what it easy for the Gothic architect to make and install large windows to achieve what they wanted to make the internal space is filled with lighting and ventilation. It is important to note that this invention came with the invention of the stained glass Who has become very common in buildings of churches and cathedrals in that period. Thus, a lot of the wishes of the clergy as well as the Gothic Sponsors achieved. By making the space is

full of color through the passage of light in the stained glass; stained glass was also used as a means to illustrate biblical stories which painted it on the stained glass. Rather than painted on the walls, as in the previous style like Romansque [89].

“The use of stained glass windows gained popularity during the mid-12th century. Abbot Suger of Saint Denis has been called the “Father of stained glass” as it was he who first conceptualized the use of stained glass windows to create a „heavenly light“ which was seen as the presence of God in the church. Suger oversaw the construction of the Abbey Church of Saint-Denis and, while trying to conceive a completely new church design, found inspiration in multiple texts he read by a follower of St. Paul named Dionysius (the Greek form of Denis), who considered radiant light to be a physical manifestation of God himself. Suger believed that Dionysius was in fact the patron saint of Saint-Denis, so he adapted the concept of divine light into his construction plans and designed the new cathedral around the use of stained glass windows. The Abbey Church of Saint Denis became the prototype for this new type of architecture based on light, openness, and increasingly taller spaces which later developed even further into what is known as the Rayonnant style” [94] .

There are a number of goals achieved by the use of stained glass in the middle Ages. first, is that embodied the idea of the divine light through the entry of light through windows and its implications within the space of the Church which enhances the spiritual aspects of the people. second goal , was using a stained glass window as a means to teach the Bible for the illiterate, through drawing stories on the big glass windows

Among the most famous stories that appeared on the medieval windows were “Tree of Jesse”, which was about a tree to symbolize Christ continued. Among the most prominent stained glass windows what we could see in the Chartres Cathedral where it’s the oldest Jesse window. There are another distinguished examples in Notre Dame Cathedral and Sainte-Chappelle, see Fig.42.



Figure 42: Stain glass window The upper section of the Jesse Tree window at & Paris: Sainte-Chapelle. 13th C. stained glass windows .

Several factors have combined to make the space of the Church in the middle Ages to play its role in spiritual and theological influence on people. The most important of these factors include:

First: the conscious use of architectural elements that were used in Gothic style, such as the pointed arch, which helped to invent new construction solutions contributed significantly to the production of high buildings with large spaces also contributed to the formed of the large window opening in the walls, The most prominent of these elements and innovations is the use of pointed arch, flying buttresses and cross ribbed vault, basements cross[94].

The second factor was the process of interaction between geometric and light , which resulted from the use of stained glass in the windows openings (which has established as a result of the use of new structural elements) as well as the light entering through the Rose windows by that contributed to the change the color tones and made the windows look like glowing through stained glass, this contribute to creating a great visual experience and move away of the viewer is new atmosphere differ from the environment outside the in the medieval period. Another factor is the use of sculptures, paintings and furnishings along with geometric patterns of the pillars and walls in addition to the educational environment that appeared on the stained glass by turning the holly stories duties on glass windows. All of these factors with the breadth and the skyrocketing spaces of church gave overwhelming influence of the Cathedral, what boosting its influence and authority at the time[94].

2.3.5.10. Symbolism and ornamentation.



Figure 43: Entrance of Charter Cathedral.

Gothic cathedral symbolize to universe in microcosm. And all the architectural concepts that campaign Gothic churches, such as the nobility and the magnitude of dimensional and take care of the internal space was a presumption carrying theological message: It is the glory of God Almighty. And the construction has become a miniature universe in two way, first two ways are geometrical and mathematical nature of the building which symbolizes the image of the organizer universe. Second, statues, sculptures, stained-glass and murals that include imaging theological stories. And stories of sacred history and the lives of the saints, in addition to the reference to the eternal life of the Virgin. Usually decoration works include Bible stories, emphasizing on the visual topographic symbols between the prophecies of the Old Testament and the New Testament [74].

Many churches decorated with rich ornament from inside and outside. Sculptures and architectural details appeared glory with used of bright colored paint which left a great impact as in Chartres Cathedral, see fig 43, wood ceilings with colorful panels in bright colors. Sometimes stone pillars of the nave were paint as well as the color panels on the walls of the arcade lists of saints and religious figures stories. This is what can we see in Westminster Abbey[70] see fig.44. In spite of the high interest in ornamentation and decoration in Gothic architecture, but we can find some churches that have remained simple and maintain the simplicity of the Romanesque traditions in architecture such as the Church of Mary Magdalene .



Figure 44: Westminster Abbey.

The main construction innovations in Gothic architecture as arches and ribbed vault led to a revolution in the conversion of internal space shaped like it's now. At the

beginning of the 12th Century. Architect realized the superiority of groin vault on barrel vault and has begun to add the ribs, which were used to support the weight of the cellar. The only difference between the groin vault and the ribbed vault that the ribbed vault supports by ribs. which maket vault more thin. Cross vault formed from intersection of two opposite arches basid on pillar, allowing makes large holes in walls where the windows are placed. . It also allows the vault to appreciate more. In Amiens Cathedral, for example, it added an extra ribs for the main structure helped make the space seem lighter and more spacious.in this context some researcher wrote;

“Such light, skeletal construction employing cross ribbed-vaults and other thin carrying structures (interior columns, exterior flying buttresses), replaced the massiveness of Romanesque vaults. This had the revolutionary effect of opening up the interior space of a large building such as a church. As the Gothic era progressed, vaulting became increasing complex and saw the development of more varied forms such as the quatri-partite vault and the sexpartite vault. Slender columns and stained glass windows also gave the church a more spacious and heightened effect”.[80] p: 20-21

By the early 12th century, prototypes of ribbed vaults and pointed arches had developed at the Rivolta d'Adda in Italy (1100), Durham cathedral in England (1093), and Jumièges in Normandy (ca.1120-1125). Some scholars also suggest that the ribbed vault may have first appeared at the Church of Sant' Ambrogio in Milan (1060). As noted, ribbed vaulting may have originated in Islamic Spain, where it had appeared as early as the second half of the 10th century [80].

2.3.6. Abbot Suger: and his Christian philosophy .

Suger, Abbot of the French abbey of Saint-Denis, lived from 1081 to 1151. States Panofsky an, historian and one of the earliest patrons of Gothic architecture.

“The rebuilding of the west façade seemed to especially conform to Abbot Suger's philosophy known as *anagogicus mos* or "the upward leading method." Influenced by the theological writings of Dionysius, the Syrian Pseudo-Areopagite (ca. 500), Suger believed that the universe consists of the "Father of Lights" (God) the "first radiance" (Christ) and the "smaller lights" (the people). Suger's rebuilding of the church exemplifies the desire to get closer to this "one true light" in his use of heightened architecture as well as by his passion for light in the church. The west façade served as a stepping-stone on the way to Heaven towards the light of God. The twelve columns in the choir, moreover, symbolized the twelve apostles, while the columns in the enlarged ambulatory represented the twelve prophets. Part of the original inscription of the west façade by Abbot Suger expresses this philosophy”[74] .

Suger's great ambition led to the thorough remodeling of the Abbey Church of Saint-Denis, thus making his name synonymous with the beginning of Gothic art and architecture in France. While it remains uncertain just how much Abbot Suger actually influenced the design plan of Saint-Denis, it is certain that he was an active participant. It is quite touching to read the description of a sleepless Suger who thought that he must go himself to search for those hard-to-find wooden beams for the new west part. Quickly disposing of other duties and hurrying up in the early morning, we hastened with our carpenters, and with measurements of the beams[74] p:95.

2.3.7. Summary of Gothic Architecture.

The use of construction engineers in the Middle Ages like the pointed arch, the ribbed vault, and the flying buttress led to the emergence of a new style known as Gothic style. As a result of the investment potential of these three elements, thin columns started to be used and the thickness of the walls and corridors of the establishments of high altitudes were reduced.

The use of new architectural elements like the pointed arch, cross vault as well as flying buttresses and their investment potential in distribution loads, supporting walls and transfer of the weight, resulted in wide spaces and high altitudes with a distinct investment of lighting depending on the availability of large holes and the invention of stained and color glass.

All these factors are met and merged with the philosophy of clerics as Abutt Suger stressed the importance of investment in light in religion. All these things allowed the church to bring innovative space within the new architectural style (Gothic style). Shortly, the combination of these elements offers a new concept of religion through investment in new technology.

By looking at the evolution of Gothic cathedrals over the 12th and 13th centuries, we can note that the original objectives of Abbott Sugar, in the end, are to create a completely different style of architecture. The development and use of stained glass in cathedrals in the large windows provided by the new construction techniques used

by Gothic architects in their churches has led to a radical change in the method of introducing religion to the people, and therefore, closer look on the Gothic cathedral. In my own opinion, that Gothic architecture and architectural space which we find now may not be present in the absence of the views of Abbot Suger to employ entering light to the internal space, to give spiritual and theological atmosphere to the internal space. Thus we can say that the evolution of the Gothic cathedral during the 12th century and the way we look at cathedrals today began with the unique concept of bringing God in the Church through the sky light which was created by a magnificent stained-glass windows.

CHAPTER 3

THE MUTUALS EFFECT BETWEEN ISLAMIC AND WESTREN ARCHITECTURE

The idea of a traditional Islamic Art and Architecture that began in the 7th century in Syria and grew to encompass the art and architecture of lands from the Atlantic to the Indian Oceans, wrote Blair and Bloom. Is a creation of late 19th and 20th centuries Western thought. According to Blair and Bloom, there is no evidence that early Muslim artists ever thought of their work as Islamic. Nor can it be said that there is a dominant style or influence that defines Islamic art. The Moorish Alhambra and the Indian Taj Mahal show that Islamic art and architecture has definite regional variations. However, scholars have devoted much effort to the identification of unifying principles in Islamic art -- geometric design and the arabesque, for example. It can be said, however, that the art and architecture of Islamic countries has long influenced on the West [95].

3.1. Effects of the Byzantine Architecture.

Annie Labatt and Charlotte Appleyard write in their article Byzantine Art under Islam". In Heilbrunn Timeline of Art History

“The Byzantine empire interaction with Islamic culture had a profound effect on its art. Islam's rise and military success were the greatest threat to the stability of the empire and its territories. Mirroring the political climate, art became a medium of confrontation and cooperation between the two sides. The exchange and adaptation of motifs and genres became a common expression of power and individuality in the face of constantly changing relations between the two groups” [96] pp:6

The Dome of the Rock (*Qubbat al-Sakhrah*) in Jerusalem (691) is one of the most important buildings in all of Islamic architecture[18].

Lot of study refers to the affected of Islamic architecture at the beginning of other architecture that islam entered to its urban areas, such as architecture Byzantine and

Roman in the Levant, which gave local features on the architecture of the Islamic structures in those areas like Umayyad Mosque in Damascus (method of roofing and carrier arches to the roof of the mosque which was with dual-height) [19]. P:35,186. and the Palace of Khirbat al- Mafjar, which include Byzantine elements as well Persian and Roman element, has been integrated in different places of the palace architecture as bath hall [19] p:188.

In Shafii study their are referring to the local feature is related to the planned mosque the Dome of the Rock influenced by circular and polygonal religious Christian and Byzantine building that which Originally influenced by the Romanian buildings that Affected by in turn by the Greek buildings [20] p:184.

in the same study reference also to ornamental phenomena used in the develop way within the Islamic architecture buildings, such as early mosques, which are the Stained cymbals with Roman and Byzantine assets that deployed in the Levant [20] p:180,208, 209.

3.2. Influence of Islam on Western Civilization.

In his book ‘Moorish Culture in Spain’ Titus Burckhardt is a great demonstration of just how brilliantly influential the Moorish reign of medieval Iberia was upon the nation:

‘The Arab contribution to human progress—astronomy, mathematics, cosmology, the variety and magnificent wealth of architectural form—is a remarkable legacy of a people who entered the land as conquerors and became peaceful masters. From the establishment of the first mosque in Cordova in 785 until the time of their expulsion by the Catholic kings in 1492, the Moors dominated the intellectual life of the area and had a profound impact on European civilization, which assimilated many of their ideas.’ Indeed, it seems that MacKay is more than justified in saying that ‘...the Islamic world improved a scientific tradition of which Latin Europe was largely ignorant.’ Therefore, it can be argued that without the Islamic conquest of Spain, Europe may have remained ignorant of a great many things” [20].

3.2.1. Effect of Mozarabic on Gothic Architecture.

The most striking examples of Christian art and architecture in Andalusia under Muslim rule is the art of mozarabic. The Mozarabic are Christians who lived under Islamic rule in Andalusia and stayed on the Christian religion did not convert to

Islam. The Mozarabic, who are known for their adaptation and acquired to the Islamic and Arab customs while retaining their religion and some Canon and judicial power in a period of coexistence at that time. their architecture buildings marked as follows.

“The principal characteristics that define Mozarabic architecture are the following; Absence or sobriety of exterior decoration; diversity in the floor plans; use of the horseshoe arch in the Islamic style - very tight and with the slope being two-thirds of the radius; use of the alfiz; use of the column as support, crowned by a Corinthian capital decorated with very stylized vegetable elements; and eaves that extend outwards” [21].

An example of Mozarabic art and architecture can be seen in the Sant Quirze de Pedret in Catalonia, Barcelona , see fig.45.



Figure 45: Mozarabic architecture-Horseshoe arches.

3.2.2. The Effects of the Crusades.

European architecture of the christian state established in Syria and Palestine during the middle Ages. Also architecture associated with those States in other parts of the middle east or Europe. The largest concentration of crusader architecture is to be found in Palestine. The main period of crusaders architecture beginning of the twelfth century to the end of thirteenth the period during which the crusaders occupied Palestine.

“Crusaders architecture is characterized by high quality ashlar masonry, Massive construction and the frequent use of masonry marks. Sculptural decoration and extensive use of vaulting is other characteristic feature. Although the Crusaders built a variety of buildings, including hospices, mills and harbors, their most distinctive work is castles and church. The Crusaders Castles developed from models of European Castle with Benefit from some architectural features of Islamic and Byzantine” [97] p:57.

3.2.3. Effect of Mudejar in western architecture.

Mudejar style: A special technique and way of understanding of architecture resulting from living a culture of Muslim and Christian side by side in the same region. Emerged in 12th century. Mudejar did not involve to creation any new shapes or elements or structure (unlike gothic) put what they make reinterpretations the western culture style with Islamic influences . This style is one of most important and strongest example styles which is influenced in architecture [98].

The architectural influence of the Moors remains perhaps the most recognisable in modern-day Spain, since it has remained largely untouched for several hundred years. MacKay argues that; ‘...the fact that the Mudejars virtually monopolised the crafts associated with building and ornamentation meant that they left their imprint on buildings all over Christian Spain.’ Indeed: ‘Moorish architecture can be found throughout Spain, with its slender columns, horseshoe arches, cupolas, and airy, colorful buildings.’ An example of a Moorish building (later altered after the Reconquista) is the Alcázar (palace) of Seville, which is believed to date back to the tenth century [84].

Oleg Graber says (influences and imitation are easiest to detect and most obvious in area where the two culture coexisted for any length of time or where Christian rule replaced Muslim hegemony) .the most prominent example of this style we can show in three cities , Zaragoza.Toledo,Shivle ,while the best example is three palaces which are the AL cazer and Casa de Pilato in Shivlle, another one in Zaragoza the AL-Jafria palace[3] p. 383.

Bell tour the most visible element in this style,which are characteristic by great richness in their decoration: a variety of geometric pattern of brick relief, different pattern of colored ceramic, element in gypsum, as well as various architectural form, niches, windows and buttresses[99].

This style is not abandoned the exterior decoration and still to develop it, this return for two causes as Oleg Grabber mention ” this occurred due to two factor, firstly, the Christian adored the Islamic decoration of geometric motifs and calligraphy, since it was change the traditional Christian ornament. Another reason that was masons were the Muslim, and decorated the monument in ways they had knew.

A hybrid Gothic mudejar style develop as well in Alentego province in southern of Portugal. During the 15-16th. The window of royal palace and palace of Count of Basto in Evora is a good example of style.

Mudejar style and Islamic architecture did not influenced in all aspect of western architecture but we can see this effect in detail and element like Dome, pointed arch, horseshoe arch and the four-center arch[100].

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CHAPTER 4

ANALYSIS OF INFLUENCES OF ISLAMIC ARCHITECTURE ELEMENT ON GOTHIC ARCHITECTURE.

4.1 Philosophy of Influences

Although many researchers have agreed that any impact of between two models or style are possible to occur across a number of ways such as cultural communication or communication among civilizations as well as possible to happen through trade or conquest and sometimes through the exchange of gifts between kings and princes of nations. The most important reasons of occurrence of influencing or emotion, is to discover certain advantages in certain elements can be utilized in the new environment. So attention is transported and drafting a new template commensurate with the new environment and sometimes keep it as it is without change and take advantage only of its artistic and construction capabilities[102-103]. This is what happened with most of the architectural styles as the influence and interaction between different civilizations have been through the neighbors or by either of the reasons set forth above. Many researchers said that the impact and emotion, in the field of architecture cannot happen unless one of three things happened the following. Oleg Graber also noted that when he wrote.

” Since its monuments are immobile, influence and impact can only take place if one of three types evenvt occurs (A) masons, architects or other technicians move from one area to another.(B)pattrons or pther influential taste-makers carry with them the impact of alien architecturel monument or effect and seek to translate their memories into local techniques; and(C) drawings,photographs,and at times literary descriptions transmit technical or aesthetic impressions which are then used or transformed by some recepective milieu”[3] p:384.

In previous chapters we have discussed the possible mechanisms of transmission of architectural elements of Islamic architecture to Gothic architecture. As well as the potential reason to this move and the benefits that resulted . Here we will try to

follow temporal and spatial framework for the possibility of occurs this transition, comparing the interval for the appearance of each of the elements under consideration in both the Islamic ad Gothic types.

4.2. Architectural and Decoration Elements_Analytical Method of Architectural Element.

Gothic architecture recorded the emergence of many architectural elements that previously appeared in the Islamic and other architectural style. Examples of these elements is different types of arches as the pointed arch , horseshoe arch , foil arch and many others, as well as the use of vaults in roofing as the barrel , ribbed and groin vault[104] . Columns and capitals also appeared. In addition, it has appeared many of decorative design elements in Gothic, including what has become one of the important Gothic architectural features such as Rose Windows. Some decorative architectural formations has also appeared in more than one building of Gothic period, which we believe it simulate or sometimes direct transliteration of the configurations previously appeared in Islamic architecture[105]. In the following, various architectural element types as arches, window type calligraphy , ornamentation element , structural element and ...etc. are put in a comparison table to found chronological order, for first appearance for each element in both Islamic, Christian and Gothic architecture. Compared Christian here mainly refers to Romanesque architecture. This table is to show if the influence is from Islam or previous Christian architecture, the dates demonstrate the influence without any doubt.

4.2.1. Arches (pointed, foil, lobed....., arches).




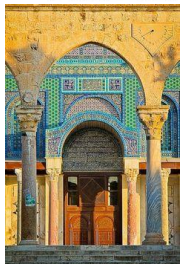






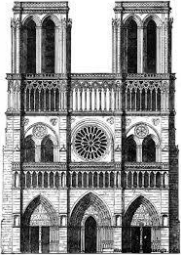

Pointed arch was transfer from east to west, fig.46 Explain the most important station of this transmitted.



Figure 46: Transfer of pointed arch from east to west.

4.2.1.1. Analysis of Early Pointed Arches Types in Different Styles (Islamic, Christian, Gothic).

Table 1: Analysis Of Early Pointed Arches.

NO	Item	Islamic	Christian	Gothic	
1	Arches_ pointed arches	     	  	  	
Name & Location	Dom of Rock_ Jersaleam	Qusair Amra_ Jordan & Qasir al-Hire al-Sharqi	Monreale Cathedral, Sicily	Autun Cathedral_ France	St.Denis Cathedral_France
Date	688_ 691	710_715	1174_ 1182	1120-46	1122_1144
Source	Slavik, Diane (2001). Creswell, 1924 Peter Draper, 2005	Markus, peter. 2000	Rodo, 1999.	van Boxtel,, 2012	Fletcher, 1905
Comment	<p>_ From sequence of dates above we can easily note that the first appearance of the pointed arch was in the Dome of the Rock. As we can say, that it was spread from there through one of the ways we are mentioned earlier, such as trade route or Islamic expansion or the Crusades. Slightly Pointed arch we can see also in Umayyad Mosque and Qusair Amra palace in Jordan.</p> <p>_ In Monreale cathedral we can note the Mudejar style Touches in building.</p> <p>_ “in the 12th century the Abbot Sugar rebuilt portions of the abbey church of St Denis, using new innovative structural features. Which consider the first truly Gothic building[106].</p>				




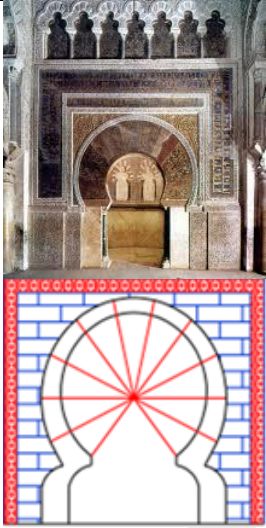


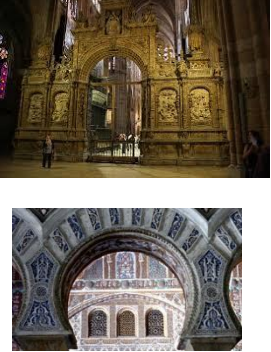
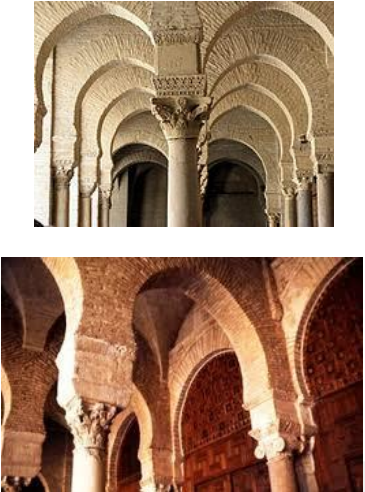


NO	Item	Islamic	Christian	Gothic
2	Arches_ lobed arches(Andalusia arch , triangular lobular forward)			
Name & Location		Telmusan Mosque – ALGERIA-	Barcelona, Sant Pau del Camp	Lichfield Cathedral_ England
Date		1136	13th	1195_ 1345
Source		Marcais, (1954).	Pladevall (1970)	Peter (2011)
Comment		First lobed arches used in Abbasid time in Baghdad Gate in Rifa and Sammara Mousque , but it became an important feature of Almoravid architecture, seen in many Moroccan and Andalusian buildings, like Al-Qarawiyyin mosque and, Al-Kasar at Seville	Five-lobed arch with Moorish influence, “The arches are composed of three or five lobes. The Moorish influence in western architecture are very notable, its flourished in Spain in time of AL- Muravid & Al-Mohid and used by Mozarabic	The Great West Door And Main Entrance in Lichfield Cathedral date about 1235, this kind of arch are not known in western architecture before, so it’s may be affected by Islamic architecture

Table (2). Analysis of horseshoe arches

NO	item	Islamic	Christian	Gothic	
1	Arches Horseshoe arches				
	Name & Location	Niche Mosque of Cordoba_ al-Andalusia _ Spain	The church of Santiago de Peñalba , Spain	Puerta del Perdón_Espain Main entrance	Leon Cathedral_ norh west Spain
	Date	987 AD	second half of 10 century	14 th century	1205_1255
	Source	Hani,2005, Markus,peter,2000	Richard Hitchcock. Ashgate 2008.	http://placeofworship.livejournal.com/45604.h	Juan, 1907
	Comment	Horseshoe arch is one of most prominent feature of Islamic architecture in Spain, and became a sign of architecture in this period	This building was built in the 10th century Mozarabic style. This style affected affected by Moorish style which is flourished in west side of Islamic land. So its normally to produce building with Islamic feature	This building built according to Mudejar style. Although this type of arches is rare appearing in Gothic architecture, but this model refers to the influence of Islamic architecture in the Gothic style	

NO	Item	Islamic	Christian	Gothic
2	Arches / pointed horseshoe arch	 <p data-bbox="510 783 976 869">slightly pointed, horseshoe arches common to the Islamic architecture of Morocco and southern Spain</p>	 <p data-bbox="1048 831 1406 853">THE NAVE AND NORTH AISLE.</p>	
Name & Location		the Mosque of Uqba, in Kairouan, Tunisia	GUTENBERG CATHEDRALS (Cathedral of Gloucester)_ THE NAVE AND NORTH AISLE.	Milan Cathedral
Date		9 th century	11 th century	1386_ 1965
Source		Néji Djelloul, 2000. Paul Sebag, 1965	The Project Gutenberg EBook of Bell's Cathedrals.	James (June 1949)
Comment		The pointed horse shoe in Uqba Mosque consider of one of oldest symbols in Islamic architecture it's found in area were Moorish architecture flourished	This Cathedral built as Romanesque style but after restoration it lost its feature and and they adding to building some of Gothic style feature .So mostly this pointed arches were added by restoration and it's not in origin building	Since this kind of arch is not famous in Europe, So That causes us to believe that origin of this kind may be came

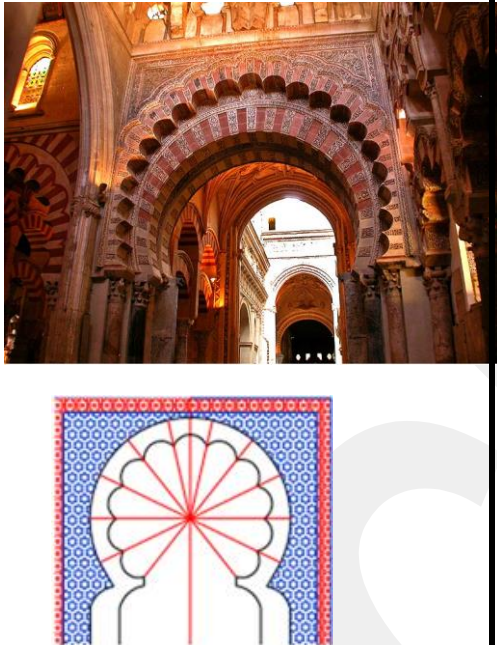

NO	Item	Islamic	Christian	Gothic
3	Horseshoe arch with lobes			
	Name & Location	Cordoba mosque		Spain. Penafiel Monastery of Saint Paul.
	Date	987AD		14 th century_ Gothic- Mudejar
	Source	The famous Mosque in the world		Passionist Historical Archives
	Comment	lobular horseshoe arch is unique feature of Islamic architecture in Al-Muravied and Al muahid period which is known as Moorish architecture	This type of arches is not appear in any time in Christian architecture except gothic style because of Islamic effect	Lobed horseshoe arches, mudejar style. Detail in spire. This building built as Mudejar style, the style what was known by using Islamic feature with respecting Christianity traditions

Table 3 Analysis of Foil arch.

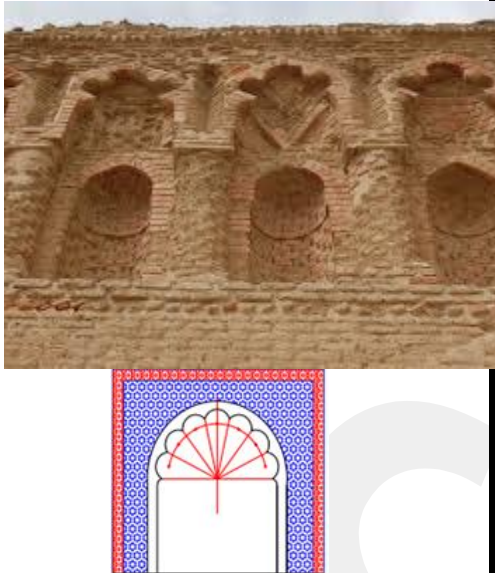

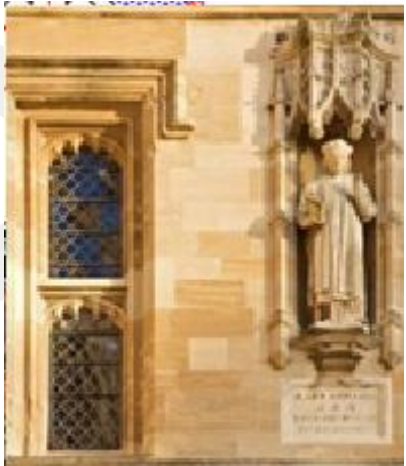
NO	Item	Islamic	Christian	Gothic
1	Foil(lobed) arch			
	Name & Location	Baghdad Gate Al-Raqqah_ Syria	Benedictine Monastery of Rates_ Portugal	Christ Church
	Date	771_809	\096_1100	1524
	Source	discoverislamicart.org. web page	Rates Monastery in the Portuguese Institute of Architectural Heritage (<i>in Portuguese</i>)	Judith Curthoys, 2012, History of Christ church.
	Comment	The gate decorated by three lobed arch upper of niche in Baghdad Gate in Al_Riqa ,Syria.This foil arch is earlier foil arch	A side portal in the church of the Benedictine Monastery of Rates. We can notice its after Baghdad Gate in hundreds years . so it's a sign to who is follow other	Foil arch are used many time in Gothic architecture, but when we compare the dates of built we can notice its appeared after many hundreds year after its appearance in Islamic architecture.

Table 4 Analysis of Foil arch

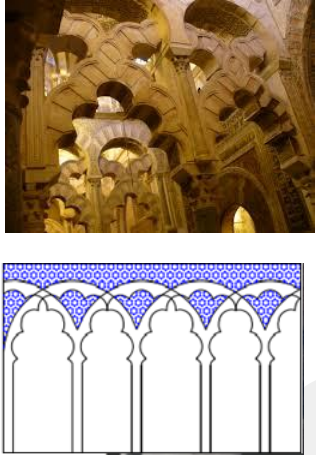



NO	Item	Islamic	Christian	Gothic	
1	Overlapping arches				
	Name & Location	The arch with overlapping arches_ the mihrab in the Mosque Cordoba - Alandulus	Palermo Cathedral_Italy	Canterbury, Kent_England	Hospital of St Cross
	Date	987	1185	Romansque_Gothic, 1070_1834 AD	1133_1136
	Source	Hani, 2005	Jules Gailhabaud,2002	Willis, Robert (1845).	John Sidney Hawkins, 1813
	Comment	We can say that this formation of the arches is a milestone for the Mosque of Cordoba. It dates installed with every architectural style in this table we can say for sure it was an Islamic origin	Architectural style: Norman,Moorish, Gothic. And we can note the touch of Mudejar in this Cathedral. It was one of the best model reflect the size of Islamic architecture in western architecture	We refer that some element moved directly from Islamic to gothic style. While other is appeared in previous style.in this case I think its moved to gothic across Romanesque	This building was built after 2 hundred years after Cordoba mosque on Norman & Gothic Style ,

Table 5 Analysis of steep pointed arch




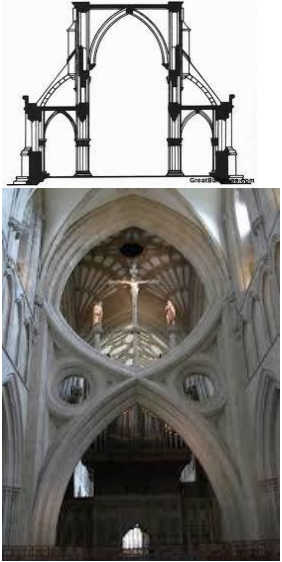
No	Item	Islamic	Christian	Gothic	
1	Arch drawing from two center				
	Name & Location	Ibn Tulon Mosque_ cairo.	The north transept of Ripon Cathedral	Cathedral of Reims-France	Wells Cathedral
	Date	876	652 Rome_ 9 th romanesque	1210_1241	in 1175 _ 1190 AD
	Source	(wijdan ali ,1999),(Hani,2005)	("Ripon Cathedral history architecture images photos pictures things to see visitor information," n.d.)	Jean Bony,1983	Swaan, Wim (1984).
	Comment	The historian al-Maqrizi lists the mosque's construction start date as 876 AD, this kind of pointed arch is little bit differ from other types, and Nevertheless, we can find it in western architecture in many time.	Reformation in 1539 which greatly affected Ripon . This has resulted in a combination of earlier rounded Romanesque arches and rebuilt pointed arches with fine columns supporting them. The north transept is a good example of Norman Transitional style.	Gothic Cathedrals used and features with many Islamic architectural elements like two centers arch	Part from interior of wells cathedral showing using two centered pointed arch

Table 6 Analysis of Blind arches.




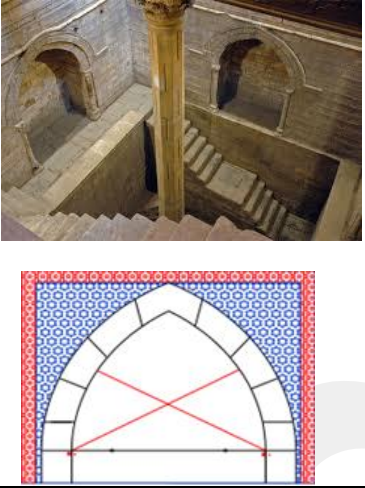

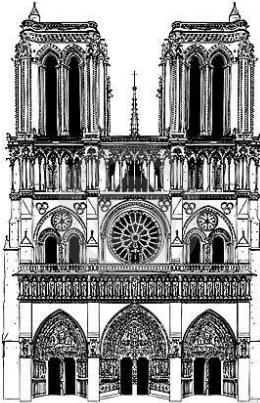
NO	Item	Islamic	Christian	Gothic
1	Overlapping blind arches			
	Name & Location	Blind Arch in Cordoba Mosque	Much Wenlock	Norman blind-arcading at Canterbury Cathedral
	Date	987 AD	Norman 1070_ 1180	1174 AD
	Source	wijdan ali ,1999	Bony,1983, P 93	Eric Fernie, 2002
	Comment	<p>Detail of the Upper Zones of the East Gate of the Mezquita (Great Mosque), Cordoba, Spain, 961-965.</p> <p>This stunning combination of overlapping blind arches with overlapping arches in my opinion reflect the high heel of Islamic architecture and make it a fertile source that the other civilization quotes from</p>	<p>Much Wenlock Priory Shropshire: overlapping arches in the chapter house.</p> <p>The general formation gave as an impression it's just copy from Cordoba Mosque</p>	<p>The east end was greatly enlarged at the beginning of the twelfth century, and largely rebuilt in the Gothic style following a fire in 1174.</p> <p>Again it seem just copy from a previous one, and by comparing dates of built we can enhanced our idea about Islamic influences.</p>

Table 7 Analysis of Typical of poited arch

NO	Item	Islamic	Christian	Gothic	
1	Pointed arch drawn from two centers located in surrounding		<p>As we have said previously. In my opinion that in the pointed arch did not explicitly and commonly appear in Europe until after the emergence of the Gothic style. and its shy emergence in some churches and Romanesque buildings may be came through the restoration and rehabilitation of some buildings later.</p>		
	Name & Location	The main lobby in the building of measure level Nile River . wijdan ali ,1999		Notre-Dame de Reims Cathedral	
	Date	861 AD		1211	
	Source	Parker, John Henry. (2013). wijdan ali ,1999		Jean Bony,1983	
	Comment	<p>Doris Behrens refer to creswel point out: “ On the wall of Nilometer are four recesses with pointed arches are the same type as those used in Gothic architecture , but they preceded the gothic arch by four hnadred years.” [37], p:51). _ I agree with this view. This also can be seen with many types of arches discussed above, as well as the rest of the architectural elements which remind later. Since all these models increase and strengthen our conviction about the influence of Islamic architecture on Gothic architecture.</p>			

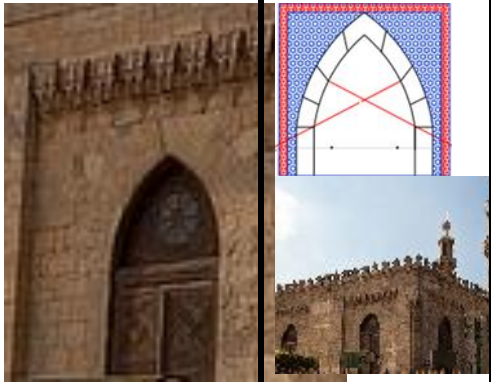
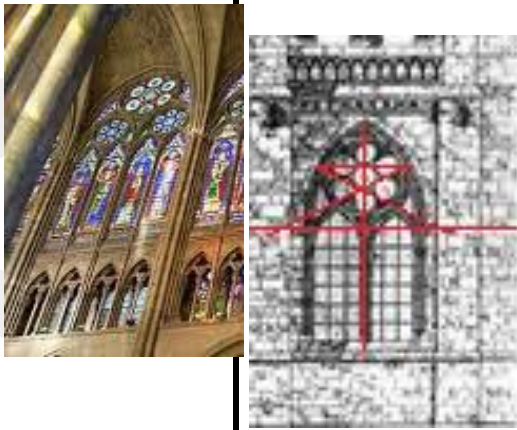
NO	Item	Islamic	Christian	Gothic
2	Two center arch located outside		<p>It is well known and common that the Christianity architecture in general and Romanesque in particular did not know the broad use of the pointed arch. But commonly used when the Gothic-style appearance and became one of the most important style properties..... And my personal opinion that the limited appearance of the pointed arches before Gothic came because this form of arches was not linked in any way with Christian styles of architecture and that it may have appeared as a result of restoration work to buildings occurred after the spread of the pointed arch in Gothic style. There are plenty of examples of this case, and the most prominent one is a pointed arch of Hagia Sophia, which may be added by Mimar Sinan when conducted for the restoration operations after the collapse of parts of the Church.</p>	
	Name & Location	Azhar mosque - Egypt Cairo		St Denis Cathedral , France_
	Date	972 AD		1120_1144 AD
	Source	(Hani,2005) wijdan ali ,1999		Jean Bony,1983
	Comment	<p>The arch drawing from two center located outside it.</p> <p>_ It's clear to decide that this arch are precede that on in St Denis. Not only this we can notice the general formation to window elevation its seem just copy.(we can note the decoration above arch head and the circular combination inside the arch.</p>		<p>The North Transept of the Cathedral Basilica of St. Denis, as its choir completed in 1144 is considered to be the first Gothic church</p> <p>From drawing we can conclude that arches drawin from two centers like that one in Al – Azhar Mosque but after abot 140 years</p>

Table 8 Analysis of Tracery Blind arch


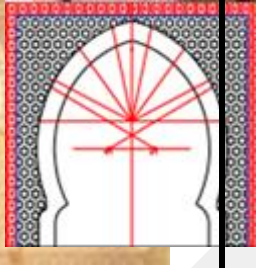


NO	Item	Islamic		Christian	Gothic
1	Blind arch tracery				
	Name & Location	blind horseshoe- cordoba mosque		Ely Cathedral_ England	Lincoln Cathedral_ England
	Date	987 AD		Romanesque, Gothic (1083–1375)	1185_1310
	Source	Hani,2005 wijdan ali ,1999		Benjamin Winkles, Hablot Knight Browne,1851	Benjamin Winkles, Hablot Knight Browne,1851
	Comment	The horseshoe pointed arch drawing from two centers. With tracery as inscriptions. Again its previous than other in many years So here we are again in front of another evidence		Romanesque blind arches and carving decorate the exterior of the south-west transept at Ely Cathedral. This cathedral is combination from two styles	Architectural styles: English Gothic . Early English Period, Gothic architecture Gothic blind tracery, Lincoln Minster _ using trefoil and four foil as a tracery.

Table 9 Analysis of Pointed lobed arch

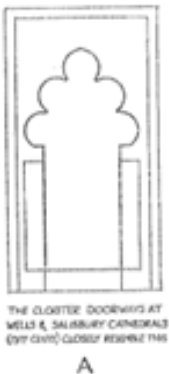
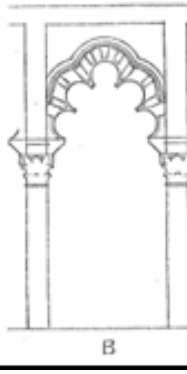

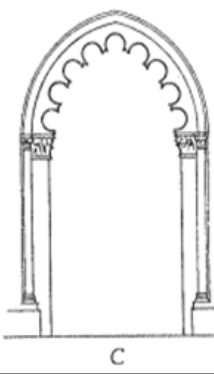

NO	Item	Islamic		Christian	Gothic	
1	Pointed Foil(lobed) arches supported by column					
Name & Location		A_ Samarra Great Mosque (846-852)	B_Cordoba, Sanctuary of great Mosque (961-76)	Abbey of sant pau del camp	C_ Church of La Souterraine,France (1200).	D. Cley Church,Norfolk(XIV cenntury)
Date		846_852	961_976	977_ 1117_ 13 th century	1200	
Source		wijdan ali ,1999 Arnold,Guillaume.1931)		Paul Freedman, Archivum Historiae Pontificiae , Vol. 31 (1993) _ (Peter Garwood, n.d., p. 44)		Source: (Arnold,Guillaume.1931
Comment		By comparing the dates of built, it's clear that started in Islamic buildings.		This Abbey is Romanesque style but the foil arches add by moor between 12 th _13 th century when new cloister built.		The repetition of shape in this way (foil arch stand on the columns) in three models different from each other in time and space confirms that there is a mutual influence of these different models.

Table 10 Analysis of Ogee arch


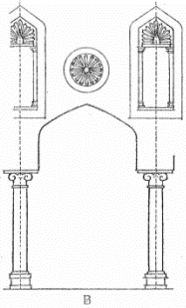
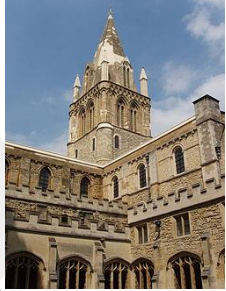
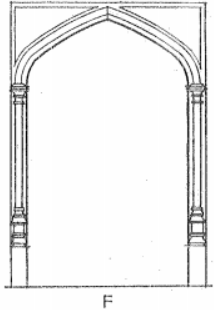
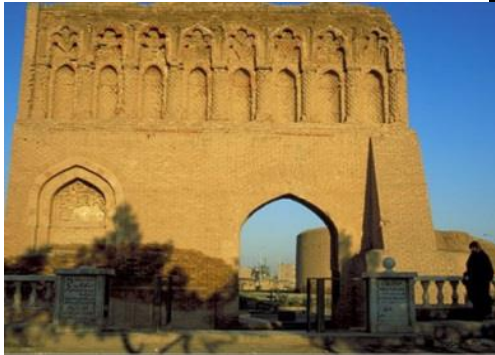

NO	Item	Islamic	Christian	Gothic
1	Fatimid Pointed arch	 	<p>As we said before Christian architecture did not use pointed arch before the advent of Gothic style.</p> <p>The Fatimids used Abbasid arches in their buildings. As they used stone instead of bricks in construction, they have benefited from the stone by carving decorations on the stone directly without having to use stucco.</p> <p>Gothic architecture used arches similar to Fatimid arches were called (Tudor arch) and was used extensively in England Gothic. It is also sometimes called the ogee arch. By watching the arches scheme we can see the amount of similarities between two models. But the Fatimid arch preceded it in a long period. Here we have become further evidence to support our point of view about the influence of Islamic architecture on Gothic architecture.</p>	 
	Name & L	Al_Azhar Mosque_ Cairo		Christ Church Hall, Oxford
	Date	970 AD		Romanesque- GOTHIC 1160-1200
	Source	Arnold, Guillaume. 1931 Wijdan Ali, 1999		Arnold, Guillaume. 1931
	Comment	Abbasid arch		Christ Church Hall, Oxford, Tudor arch.

Table 11 Analysis of Multi_lobed arch.

NO	Item	Islamic	Christian	Gothic
1	Multi_Lobed Arches			
	Name & Location	AL-Riqa gate Syria .the hight 13 m	<p>This type of arches does not appear in the European architecture before the Gothic style. also does not appear clearly in gothic. _By compare dates we can know the effect , and which one before, Al-Riqa Gate is early than wels palace about 400 years</p>	Wels palace_England
	Date	772 AD		1210_ 1230
	Source	wijdan ali ,1999		Medieval art and architecture at Wells and Glastonbury,
	Comment	Earliest foil arch appeared in Abbasid style in Al_Riqa gat in syria		First appear for foil arches in Europe in 12_13 th century because of moor effects



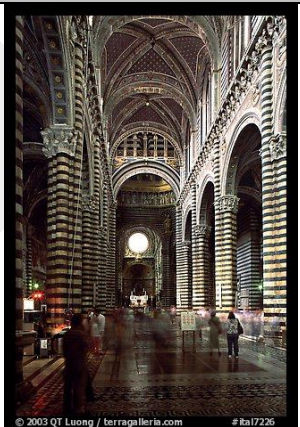
Through the statement of the chronology of the emergence of the pointed arch, as well as all other types of arches. And from study of possibility of the mechanism of transition and intersection between architectural styles, in addition from study the historical development of each element of Islamic architecture. By comparison table in the above which rendered the date, place and source of appearance of each type of arches, we can conclude that Islamic architecture influenced sometimes directly on the Gothic style, other times indirectly through Christian (Norman or Romanesque,...) Architecture. Here there are some examples to support our point of view, and to discuss possible way for this transfer. By Comparison of schedules can conclude that all types of arches, which appeared in the table was the first appearance in the Islamic architecture, and then moved to Europe due one of the methods that have been discussed in second chapter. For example, in the Dome of the Rock it is likely, according to Peter Draper, the transition has been through the Crusades (Draper, 2005). The other example like pointed foil arch, probably moved to Europe via Moor (Pladevall, 1970), where the architecture of Moorish had an impact, great significant and influential on Christian architecture in general by Mozarabic and on Gothic architecture directly by Mudéjar. This is true in my estimation on most forms of Islamic arches that famed in Andalusia, such as horseshoe arch. As for some types of pointed arches such as the Fatimid arch rendered important example exist at Al-Azhar mosque, as well as in Al-Mahdia Mosque, As I think moved because of the strong trade relations between the Fatimids and the island of Amalfi in Italy as suggested by (71) In this context we cite what was written by John Harvey[61]. pp. 32-33) when he wrote.

“Very early in the style the peculiar impost which gives to their arches the form of a horse-shoe, stamps upon their works an original character, and it appears certain that we owe to them the introduction of the pointed arch into Christian architecture, if not also of the ogee arch, and the various forms of trefoil, quatrefoil, and other foil arches, for although it is impossible in the present state of our knowledge to say whether they invented these forms or derived them from earlier buildings, it appears pretty certain that the Christians derived them from the Mahomedan buildings. The pointed arch appeared in Christian structures for the first time during the twelfth century; but it occurs in Mohammedan buildings nearly three centuries earlier, as at Cairo, in the Nilometer, A.D. 848, and throughout the mosk of Teyloun, A.D. 876, the dates of which are established by inscriptions. It is also found in the Saracenic buildings of Sicily, erected probably during the tenth century, and in the mosk El Aksa at Jerusalem, rebuilt A.D. 780. The pointed arch on the other hand was not much employed by the Mohammedans in Spain, they preferred the horse-shoe semicircle to the very last, and the pointed arch is with them rare and late. But they made great use of the foil arch, which occurs in the mosk of Cordova in the tenth century, and spreads from thence throughout Barbary” (61). pp. 32-33.

4.2.2. Analysis of Architectural and Decoration Element.

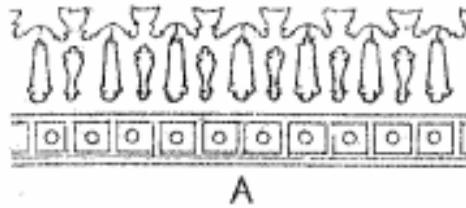
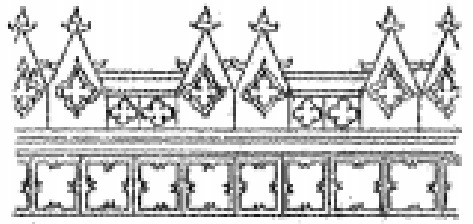
4.2.2.1. Analysis for Finishing Material (Ablaq).


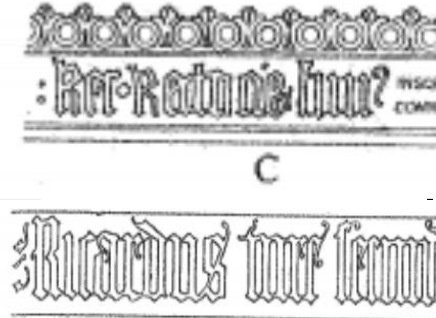
Tables (12) Analysis for Finishing Material (Ablaq).

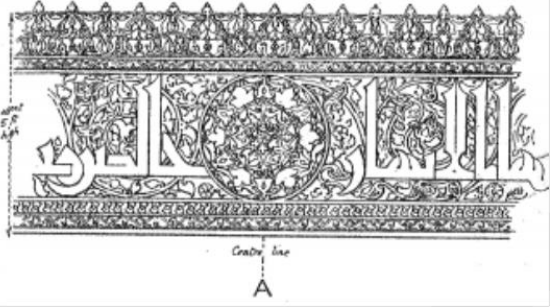
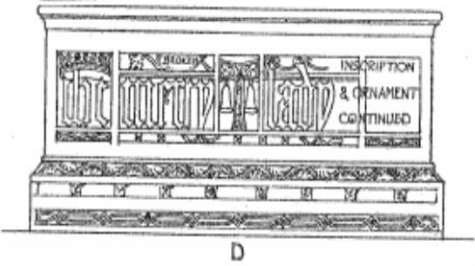
NO	Item	Islamic	Christian	Gothic
1	Ablaq technique			
	Name & location	Cordoba Mosque	According to pile Siena cathedral built in Romanesque style using Ablaq in finishing and continuous to use ablaq even when addition some part in Gothic period ,this was as a respect to Arab tradition in architecture	Siena Cathedral_ finishing in ablaq
	Date	987		1245_1380
	Source	Andrew Petersen, 2002		Pile ,2005
<p>Ablaq is an architectural style involving alternating or fluctuating rows of light and dark stone [114]. From text in previous chapters Ablaq commonly used for the first time in the south of Syria as a construction and decoration way, the first use in Islamic architecture in the Great Umayyad Mosque in Damascus(Andrew,2007). The finest uses were in the Great Mosque of Cordoba. Also Ablaq used in Siena Cathedral its appeared in both of its periods Romanesque and Gothic[114]. Ablaq technique as mean of finishing is considered as a finest feature for Arabic and Islamic architecture.</p>				

4.2.2.2. Analysis of Decorations Motifs and Calligraphy.

Tables (13) Analysis for Decoration Motifs and Calligraphy.

NO	Item	Islamic	Christian	Gothic
1	Decoration of parapet		<p>In my opinion, this type of treatment does not appear in Christian architecture (before gothic), especially in the Romanesque due to the different treatment ceilings way (because the ceilings slanted like the gable and there is no need to use for parapet) as well as the architecture Romanesque were less inclined to the direction of decorative compared to the architecture Gothic.</p>	
	Name & location	Mosque of Ibn Tulun,Cairo(868)		Cromer Church,Norfolk (XV)
	Date	868		1422
	Source	Arnold,Guillaume.1931		Arnold,Guillaume.1931) Norfolk churches
	Comment	<p>The first appearance of this detail appeared in Mesopotamia and used as a means to enhance defense capabilities. also used as ornamental. Then used clearly in Islamic architecture and spread through it. While the European architecture Use this attribute only to decorate, this was very clear in the orientation period to decorative in the Gothic style. In Gothic, it's not appearing only on castles, but emerged over the windows and chimneys in the form of decorative element.</p> <p>_ From dates that fixed above its easy to explore the similarity in shape and general combination. Also, from dates we cane noticed that Islamic one is perceived the other in many hundred years and that refer to the origin of parapet is Islamic.</p>		

NO	Item	Islamic	Christian	Gothic
3	Calligraphy	 <p style="text-align: center;">B</p>		 <p style="text-align: center;">C</p> <p style="text-align: center;">E</p>
	Name & location	Arab Museum, Cairo(XII th century).		C_ South Acre Church,, Norfolk E_ Tomb of Richard II, Westminster(1399).
	Date	12 th century		1550
	Source	(Legacy of Arabic and Persian calligraphy) book.by(Arnold,Guillaume.1931)		Arnold,Guillaume.1931).
	comment	<p>It can be considered that the Islamic calligraphy is one of the most important types of art that evolved in the light of Islamic Art. Which excelled using the letters in an artistic way and that by integrating it along with geometric and floral shapes [73]. In my opinion calligraphy is an Islamic feature and no other ancient use it in architecture. Even if somebody argue that kind of writing appeared in ancient Egypt, that's write .but its appeared as a documentary means and not for ornamentation purposes[107-108].</p>		



NO	Item	Islamic	Christian	Gothic
4	Calligraphy			
	Name & location	Mosque of sultanHasan,Cairo)1356-63),stucco		Fishlake,Yorkshire,tomb(1505)
	Date	1356_ 63		1505
	Source	Arnold,Guillaume.1931).		Source:(Arnold,Guillaume.1931).
	Comment	<p>According to Christie, Kufic inscriptions in the Ibn Tulun Mosque, built in Cairo in 879, were reproduced in Gothic art first in France, then in the rest of Europe [73]. We can note there are no any style of architecture before Islamic style was employed calligraphy as a decoration and sometime documentary in its buildings. Even in calligraphy appeared in many styles before Islam like Egyptian and other architecture but they are not used it as a decoration[109].</p>		

According to the tables above, the curtain appearance in Gothic architecture and its transition might be happen. Firstly, it may be because of the Crusades, especially as it can be seen that the details of parapets carry a defensive function in addition to its aesthetic function that's what Wedh referred that Europeans have benefited a lot from the details of defense elements in Islamic architecture and passed it to the defense castles that built in medieval Europe [1].

As in the case of the calligraphy. It is in my opinion that there is more than one way to move. For example, via the Crusades is a very real prospect, especially if we consider that on some tomp of Crusades leaders as Ritchard found the inscription in Gothic typical to Kufic script which widely rendered used in Islamic architecture [71]. The other possibility is to exchange some gifts and antiques among the kings and princes of the Islamic countries and the European where noted [35]. that many of the antiques and gifts engraved Islamic calligraphy found in the cabinets of the Christian churches in Europe. last possibility for this type of transfer may have been by the effect of the presence of two styles in the Iberian Peninsula for a long time, especially since the Islamic calligraphy was commonly used in Andalusian-style.




4.2.2.3. Decoration and Ornamentation Element_ Trefoil and Four-foil.

Tables (14) Analysis for Ornamentation elements _ Trifoil and Four-foil.

NO	Item	Islamic	Christian	Gothic
1	Decorative and ornamentation_ Trefoil and fourfoil		<p>Very little is definitively known about how the quatrefoil came to signify fancy. Hardly anyone has written about it specifically—though it’s probable that it has roots in Islamic architecture.</p> <p>The quatrefoil and similar arabesque shapes appear in Moorish and Islamic structures in Spain</p> <p>_ Trefoil or fourfold did not appear in the Romanesque architecture. While clearly it appeared in Gothic architecture. This reinforces our view that some elements of Islamic architecture moved to the Gothic directly while there are other elements moved through Christian Architecture</p>	
	Name & location	Umayyad mosque (above) Ibn tulone Mosque(below)		(above) west door of the Croyland Abbey (Below): Salisbury church 1220 - 1380
	Date	706_715 AD 876_ 879 AD		13 th Century 1220_ 1380
	Source	: Nicholas Warner. <i>The Monuments of Historic Cairo: a map and descriptive catalogue</i> . Cairo: American University in Cairo		
	Comment	<p>Many scholar refer that the origin of trefoil is from Islamic architecture as Marcais said:“In addition, it is widely held that Gothic geometrical medallions such as polyfoil, quatrefoil or the foliated square were also of Islamic origin” [118].</p> <p>_ In addition, it is widely held that Gothic geometrical medallions such as polyfoil, quatrefoil or the foliated square were also of Islamic origin [118].</p> <p>_ By compare the general combination of Ibn tulun with Salisbury church above, can easily noticed the similarity in combination and formation of the elevation. And that gave as an idea that there are mutual effect between Islamic and Gothic style.</p>		

4.2.2.4. Analysis of Rose Windows.



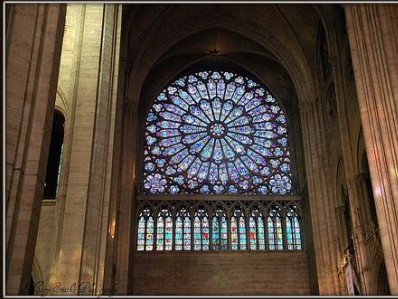
Tables (15) Analysis of Rose windows.

NO	Item	Islamic	Christian	Gothic
1	Rose Window			
	Name & location	Hisham's Palace Khirbat al-Mafjar or Qaṣr Hishām	Cathedral of St Peter (Worms Cathedral)	Chartres Cathedral_Rose window
	Date	724_743 AD	1110	1134_1220 AD
	Source	Hamilton, Robert W. (1959) Khirbat al-Mafjar: An Arabian Mansion in the Jordan Valley Oxford: Oxford UP. (Von Simson, Otto. 1956) Stollreiter, 2000),(Whitcomb,2012).	Chisholm, Hugh, ed. (1911)	Burckhardt,1996
	Comment	<p>Many scholar and historian claimed that the origin of rose window is from Islamic architecture. The rose window appeared in many style of architecture as Romanesque and Gothic, but it is become a prominent feature of gothic architecture. Although there are many specialist refer that Rose widow return back to circular oculi that used in Byzantine and Roman but in my opinion it's not possible because the occulpts top in above of domes and it's just circular openings without any details. While a one in Khirbat al_mafjar is found in entrance of palace what make as a very near to accept that's the origin of Rose windows return back to that one founded in Khirbat Al-mafjar.</p>		

The German art historian Otto von Simson considered that the origin of the rose window lay in a window with the six-lobed rosettes and octagon which adorned the external wall of the Umayyad palace Khirbat al-Mafjar built in Jordan between 740 and 750 CE. This theory suggests that crusaders brought the design of this attractive window to Europe, introducing it to churches.



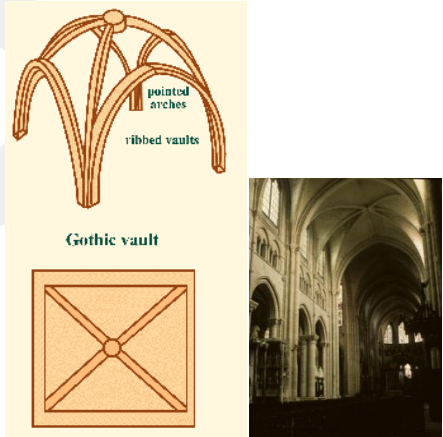
Oleg Grabar refers to unspecified speculation that the Rose window may have Islamic origins as unlikely. "While not excluded on purely chronological grounds since its earliest known instance is in the Umayyad palace at Khirbat al-Mafjar, this conclusion seems highly suspect to me... that both cultures were frequently operating on practically the same kind of 'track' is further suggested by the visual and aesthetic similarities between the ornamental values of flamboyant vaults and Islamic architectural decoration. It is not very likely that a direct impact of one on the other can be demonstrated, and we are certainly dealing with parallel growth." (3) , p. 387).



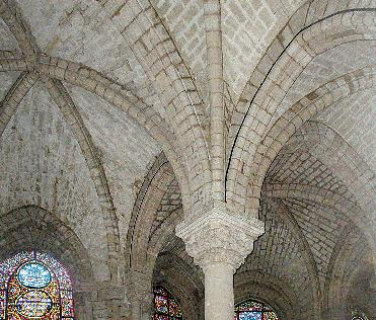
Here am agree with Otto von Simson for causes that I wrote it in a comment in schedule above. While I have notice on Grabar opinion for many reasons. First ,he suppose there are parallel growth between the two styles, while the Rose window in Kirbat Al-Mafjar dated to many hundred years before appeared of gothic style , other reason is, by comparing dates of appeared of each item that he was mentioned above we can easily find that each element that he refer it like ornamentation, vaults, arches....etc are appeared in Islamic before Christian or Gothic architecture at least in tens of years . finally, in my opinion Grabber's estimate sometimes seem to me is bias of Islamic architecture.

NO	Item	Islamic	Christian	Gothic
2				
	Name & location	Al_ Aqmar Mosque	The Abbey of Santa Maria de Pomposa	Notre-Dame Cathedral 1163_1345
	Date	1125	11 th century	1163_1345.
	Source	Williams, Caroline. 1983 Markus, Peter. 2000	Pomposa 11thC Brickwork (c)2015 R.D.Bosch	Von Simson, Otto. 1956
<p>“Faced of mosque marks the change at the beginning of 12th century, from brick masonry to the stone in the construction of scard building”[35]. From the general shape it can be seen that there is a great similarity between the window above the Mosque entrance and Rose window in the Notre Dame Cathedral, which is the most popular in Gothic architecture Henry Adams claim in his book Mont-Saint-Michel and Chartres “the rose windows is not gothic but romanesque and needed a great deal of coaxing to feel at home within pointed arch. at first the architect felt awkwardness so strongly that they avoided wherever they could, in the beautiful facade of loan on of the chief beauties is the setting of the rose under deep round arch the western roses of Mantes and Paris are treated in the same way although a captious critic might complain that their treatment is not so effective and logical”[100-101].</p>				

4.2.2.5. Analysis of Structure Element_ Vaults .

Table (16) Analysis of structure element_ Vaults.



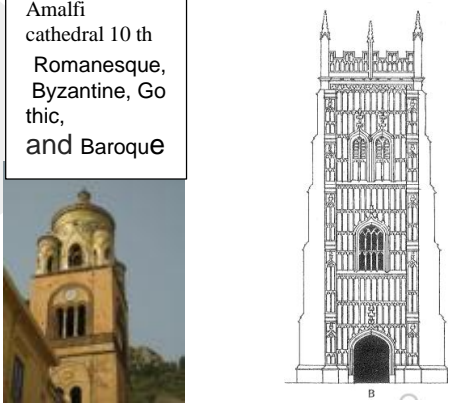
NO	Item	Islamic	Christian	Gothic
1	Structure element_ ribbed vault			
	Name & location	Mosque of Córdoba _ Spain_	Durham Cathedral in northern England	Nave of Sens Cathedral with a sexpartite rib vault_
	Date	785_ 987AD	1128	1140_1600
	Source	Oleg Graber,2006 Alejandro Lapunzina,2005	Banister Fletcher, p.307	Klein, Bruno (2010)
		The ribs that used in dom of Cordoba mosque can be considered as most important foundations which followed later in roofing manner by rib vault in other pattern of architecture	Because Romanesque arches are nearly always semi-circular, the structural and design problem inherent in the ribbed vault is that the diagonal span is larger and therefore higher than the transverse span	Sense is the first Gothic churches that have been used the sexpartite vaulting way

NO	Item	Islamic	Christian	Gothic
2	Vault and supporter column			
	Name & location Date	Ukhaidir Palace 720_800 Iraq Amr Mosque 641_642 add 827(pic) Cordoba mosque : 785_987	Gloucester Cathedral, nave, 1089	Saint Denis ambulatory 1140_1144
	Source	Creswell, K.A.C. 1940),(Oleg Graber,2006), (Alejandro Lapunzina,2005)	Michael D. Beckwith	http://www.bluffton.edu/~sullivanm/france/paris/stdenis/stdenischoir.html
		Examples above give us a timeline on the relationship between the vault and supporter column which is one of the oldest examples in Islamic architecture. Such processors appeared later in the European architecture	Gothic vaults usually have more thinly vaulted webs between the arches than earlier Romanesque vaults	Showing ribbed vaults supported by a slender column. This example be consider one of oldest in gothic architecture

The biggest possibilities that can be accepted in transfer of ribbed vault is that moved from Spain to Europe and what causes us to believe such possibility is the way of roofing main dome in Cordoba mosque 987. Which is the oldest example of roofing by ribbed vault in Europe. According to the Graber vision (3), there is potential for transmission technicians and manpower within Europe or with the Islamic expansion in Europe has led to the deployment of this technology in the roofing to the rest of the Europe. Especially since a lot of Islamist elements moved to Europe in this way, such as transmission foil arch by Moorish architecture as well as arch horseshoe arch by Mudéjar or perhaps moved by large commercial relationship between the city of Amalfi and Al- Mahdia, due to virtue of geographical proximity. As a way of processing ceilings in Mahdia mosque so close to the way roofing by ribbed vault (12). A final possibility that he might this technology have moved to Europe after the Norman conquest of Sicily.




4.2.2.6. Analysis of Separate Minaret with Tracery.

Tables (17) Analysis of separate minaret with tracery.

NO	Item	Islamic	Christian	Gothic
1	Rectangular minaret with tracery ornamentation	 <p>Left: Giralda, sevil Rigt: Minaret Great mousque of Almahdia 916 AD(Hadda 2008, p. 72).</p>	 <p>has openings that graduate in number, typical of Italian and Spanish Romanesque campanile.</p>	<p>Amalfi cathedral 10 th Romanesque, Byzantine, Gothic, and Baroque</p> 
	Name & location	Giralda Minaret,Seville Minaret Great mousque of Almahdia	The tower of the Basilica of San Frediano, Lucca	The Bell Tower,Evesham Bell tower of Amalfi cathedral
	Date	(1172_1195 AD g	Built in 1147 and restoration in13th century	1533 Bell Tower,Evesham and Amalfi cathedral 10 th
	Source	(Arnold,Guillaume.1931 Alejandro Lapunzina,2005	(Ebert, 2014)	Arnold,Guillaume.1931
		The tower began to be built under architect Ahmad Ben Baso in 1184, one of the largest churches in the world and an outstanding example of the Gothic and Baroque architectural styles. Andy Symington 2003: Seville	Nobody knows how Christian bell-towers are related to Islamic minarets, but Christian bell-towers of the 800s and 900s AD looked very different from Romanesque bell-towers, and Romanesque bell-towers look a lot like minarets, so it's possible that the Romanesque builders got the idea from Islamic minarets.	Remnant of Evesham Abbey and masterpiece of Perpendicular Gothic architecture. Built by Abbot Lichfield . this minarets is very similar with Al_Giralda, especially in using tracery as ornamentation for windows and ady of minaret





4.2.2.7. Analysis of Mix Combination Décor (Foil and Geometrical Ornamentation).

Tables (18) Analysis of Mix combination décor (foil and geometrical ornamentation).

NO	Item	Islamic	Christian	Gothic
1	Combination of ornamentation	  <p>Source: AGA KHAN PROGRAM FOR ISLAMIC ARCHITECTURE</p>		
	Name & location	Mshatta Palace	Romanesque architecture did not bother to the ornamental aspect significantly compared with the Gothic style	cathedral of York Minster, England
	Date	743_744		741_1472 Gothic style start with mid of 12 th century
	Source	Enderlein, Volkmar, 1996 Raad Al-Shawabca, 1990		Brown, S. (2003)
		<p>Artistically and technically, the most beautiful in Mushatta Palace is carved decoration in the limestone in the Qibla interface that is entrance located. in Mushatta Palace some technical elements that resemble decorations Dome of the Rock.</p> <p>The facade of Qasr Mushatta now located in Berlin at the Pergamon Museum and part from elevation of yurk minister By comparing the two images can be seen that there is a great convergence between the cladding form</p> <p>“ Two pair of narrow light enclosed under steeply pointed arches surmounted by encircled quatrefoil and pointed trilobe, the head of tracery contain a sixfoil enclosed within a circle and more pointed trilobes fill the interspaces[70].</p>		

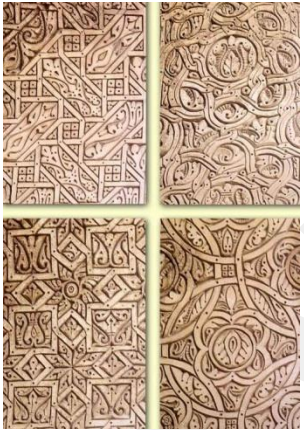
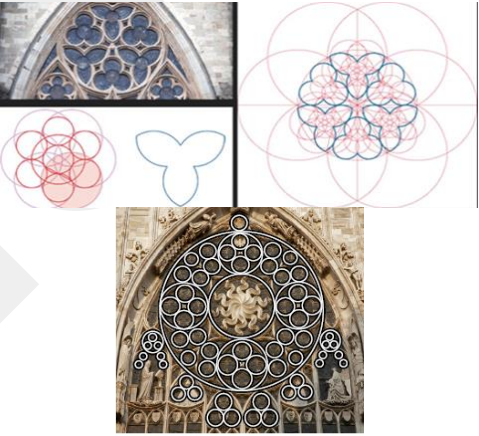
4.2.2.8. Analysis of Stalactites (Moqarnas).

Tables (19) Analysis of Stalactites (Moqarnas).

NO	Item	Islamic	Christian	Gothic
1	Stalactites (Moqarnas)	 <p>Azhar Mosque</p>  <p>the tomb of the Samanids at Bukhara</p>	 <p>Some historian assert that chapel built by Muslim craftsman in Islamic style</p>	
	Name & location	Al-Azhar Mosque(above) Samanids at Bukhara.(below)	Palatine Chapel _ Norman_Sicily	Batalha monastery- is one of the most important gothic site in portuegu
	Date	970 AD Azhar & 819-1005Samanuds	1080_1143	1383_ 1385
	Source	Doris,1992 (Sheila Blair, 2011)	William,1997	<i>Monastery of Batalha: English guide, July 2005</i>
	Comment	<p>By Compared formalities between cladding seems that there are similarities or maybe we can say simulation for the use stalactites in the Church of Batalha Monastery.</p> <p>Where we find in the Al-Azhar mosque there is clear use for stalactites at one of entrances, which it consider unique feature of Islamic architecture. And no any simulation show in tradition of European architecture, except in the Baroque period.</p> <p>From this we have to wonder whether the architect of this church may be follow Mudejar style.</p>		

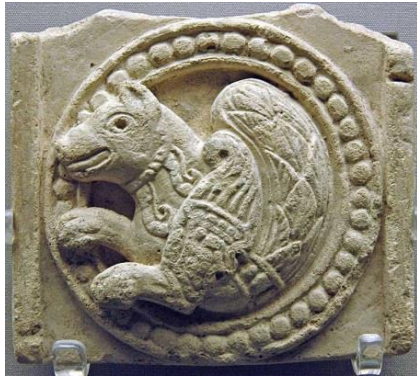

4.2.2.9 Analysis of Geometrical pattern in decoration.

Table(20) Analysis of Geometrical pattern in decoration.

NO	Item	Islamic	Gothic
1	Geometrical pattern in decoration	 <p data-bbox="663 874 965 986">From picture we can notice that Islamic geometrical decoration based on circle and mathematical relations</p>	 <p data-bbox="1384 906 1995 962">Gothic traceries based on mathematical relationships and relation between circles</p>
	Name &Location	Geometrical pattern_ Ibn- Tulun Mousque 9 th century	Gothic tracery, 13 th century.
	Date & Source	("Islamic geometry and patterns Explore Islam Cambridge," n.d.)	(Tiffany C. Inglis and Craig S. Kaplan David R., 2012)
	Comment	When looked into traditional Islamic art and found that many designs contain circular structures [55].	Gothic architecture draws elements from the elaborate ornamental designs of Islamic art [75].



4.2.2.10. Analysis of Gargoyle.

Table (21) Analysis of Gargoyle.

No	Item	Islamic	Gothic
1	Gargoyle and sculpture		
	Name & location	Moulded stucco plaque_ From Chal Tarkhan, northern Iran	Melrose Abbey _ Scotland_ King David I
	Date	7 th _8 th Century AD	1136_1146.
	Source	http://www.britishmuseum.org/explore/highlights/highlight_objects/me/m/moulded_stucco_plaque.aspx	("BBC – History – Scottish History," n.d.)
	Comment	This plaque originally formed part of the decoration of an early Islamic building dating to the period of the Umayyad dynasty (AD 661-750). It is made of stucco, a fine plaster, and represents a legendary dog-headed bird known as a <i>senmurw</i>	The Gargoyle one of the most important characteristics of Gothic architecture. Even if we assume that it moved and affected from other architectural style . But it has evolved dramatically and became a prominent characteristic of Gothic architecture. Which a characteristic that has not seen any earlier or later model for the emergence of the use of Gothic Gargoyle this way


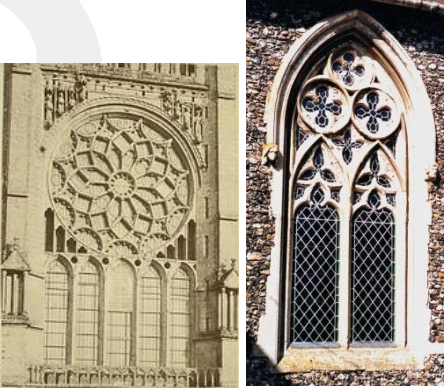
4.2.2.11 Analysis of Glass Work.

Table (22) Analysis of Glass Work

NO	Item	Islamic	Christian	Gothic
1	Glass work		<p>Goblet with incised designs, Abbasid period (750–1258), 8th–9th century Probably Iraq or Syria Glass, bluish green; blown, applied solid stem and blown foot; scratch-engraved; _ The pot in right is one of the St Denis church treasury ,this thing refer to many fact, first,its assert that the mutual effect is real fact, second, the abbot of church is appreciate the Islamic architecture and art work. Finally in my opinion this treasuries came to European churches by crusaders or may be by mutual gifts between pricec and kings</p>	
	Name & location	Goblet with incised designs, Abbasid period, Probably Iraq or Syria		Rock crystal water ewer
	Date	Abbasid period (750–1258), 8th–9th century		late 10 th -early 11 th century
	Source	Carboni, Stefano, and Qamar Adamjee Jenkins, Marilyn,1986		Markus, Delius. 2000
	comment	<p>“ Any number of European church treasuries bear witness to the esteem in which the glass of the Muslim world was held in the West. One of the most popular types was the enamel-painted variety, which was often not only mounted in precious metal, but also protected in beautiful leather cases. The so-called Goblet of Charlemagne at Chartres Cathedral the Goblet of the Eight Priests at Douai Cathedral and the beaker known as the Luck of Edenhall now at the Victoria and Albert Museum, London, are three well known testaments to the prestige of this enameled glass, much of which found its way to Europe at the time of the Crusades”[117].</p>		

4.2.2.12. A nalysis of Openings and Windows (Tracery, Mashrabiya).

Table (23) Analysis of Openings and windows (tracery, Mashrabiya).

NO	Item	Islamic	Christian	Gothic
1	Tracery And Mashrabiya			
	Name & location	Restored mashrabiya from the Aljafería palace(right)_ Al-Aqmar Mosque tracery(east)		Early French Gothic_ Charter & St Mary Cathedral
	Date	10 th century (right) 1125(left)		1290_1300
	Source	Cabañero Subiza (1998).		("Rickinghall Inferior," 2007)
	Comment	One of the main characteristics of Islamic architecture. They create an Islamist to express in the privacy inside the building and to control entry of light.		Early French Gothic Pointed Arches, Geometric Traceries. As in the Chartres Cathedral in Notre Dame and Amiens Cathedral

from comparisons in the tables above can assert that many elements of Islamic architecture as well as elements of decoration and calligraphy moved and used in Gothic architecture as follows

1_ that these elements are moved directly from Islamic architecture to the Gothic and without any passage in any style before Gothic architectural, as in the case of the pointed arch and ribbed vault.

2_ some of the elements that go indirectly through the presence it in pattern already exist before gothic such as Gothic wheel window which has resulted in later Rose Windows, as well as a foil arches.

3_ many sculptures exist in Islamic models like the Seljuk-style, even if the statues were previously appeared in many ancient architectural pattern. But what let to wonder about the impact of the Seljuk-style on Gothic style is what William John Hamilton commented in the Seljuk monuments in Konya” the more I saw this peculiar style, the more I become convinced that the gothic was derived from it, with a certain mixture of Byzantine) “[3].

4_ when we show the schedules of compressive above we can notice there are many architectural and decoration element used in Islamic style and gothic style. And it’s easy to say this similarities or effect not happened as coincidences or according theory of parallel. Because as we refer before there are some element transfer directly from Islamic to gothic style while other element moved normally from styles perceived Gothic style.

Since, if we accept the parallel theory that means that all element most transfer or existed in the same way.

CHAPTER 5

THE CONCLUSION:

Through what I've done in study and from comparisons of specific periods in different regions between a numbers of different architectural elements such as arches, Rose windows, ribbed vault, openings and lots of other elements that it was appeared in Islamic and Gothic architecture. From finding of comparisons tables, I found that many of these elements, which have been compared the first its appearance was in Islamic architecture.

As we mention above that Islamic art and architecture has been influenced by previous and neighbor civilizations that preceded the advent of Islam. After the emergence of Islamic art and architecture, Islamic civilization was ready to return its debt to those civilizations, so the influence of Islamic architecture appeared clearly in the Middle Ages in many ways, as the Western rulers and artists were impressed by Islamic civilization, and affected the architecture and decoration. like this artistic exchange not stranger in anyway, because, the contact of east Islamic with Europe in the Middle Ages, through the Islamic civilization in Andalusia and especially trade with Sisley Island, it was to this contact great credit on Europe in art and other various technical fields. another way to contact may be by the observations of Christian pilgrims to the Holy Land, and what they carry it with them to Europe from Islamic artifacts and Luxury goods , then through the Crusades wars between East and West, where transfer many ideas and goods from East to West, with developed to suit the local environment.

Islamic civilization provided much to Europe on various levels. But still there are some researchers and specialists from Western does not want to acknowledging these

advantages, while others was more equitable and express grateful for the great beholden rendered to them by the Islamic civilization.

The succession of civilizations on humanity has led to the development of knowledge through the amendments and the increase in coordination and regulation kept up with various factors such as customs, traditions, surrounding environment and existing tools. I believe that every civilization has taken from its predecessor by matching and adding to the dye which forms its character in the end. Then, it gains attributes different from other previous civilizations. Hence came the relations of these civilizations such as Egyptian civilization, Mesopotamia, Hellenistic, Greek, Romanian, Byzantine and Islamic.

With the emergence of Islamic Art with unique characteristics that was able to set a clear personal and easily distinguishable feature which was differ the rest of architectural styles. At this particular time significant changes to the architecture level occurred in Europe. The period that two models - Romanesque and Gothic - prevailed can be called medieval architecture as it is more representative and inclusive and it started in ninth century and continued until the fifteenth century.

The architectural elements that were used in buildings during the medieval architecture period show us a clear influence of Islamic and Arabic architecture that were taken by the Europeans during the Crusades period. This can be divided into the following elements:

- **First:** Defensive architectural elements like balconies, broken doorways, ratchets and towers. There are many examples of such in Romanesque and Gothic architecture in Europe (for this point does not discuss it in detail [1]).
- **Second:** Architectural, construction and decorative elements. There are many Islamic architectural elements such as mashrabiyya, plant decorations, geometric decorations, Kufic calligraphy, arches, ribbed vault etc. It is apparent that these elements clearly have an impact on medieval architecture in Europe [1].

From the text we have provided above, the content in the study chapters and the subsequent analysis and chronological comparative methods of the architectural elements that have emerged in the Islamic architecture as well as the Gothic architecture and the supporting views of the researchers, specialists and archaeologists in the history of architecture can be understood. It is compared to the overall shape of each architectural element, whether structural as, arches, columns, ceiling structures (ribbed vault) and the decorative such as floral or geometry or calligraphy and then it is compared to the date when it appears in Islamic architecture with the time of its appearance in Gothic architecture. Lastly, a way of the arrival of these elements and their transition from east to west can be analyzed, as in the case of the pointed arch. And the same case is valid for the rest of the other elements. As a result, we can conclude the following

1. Transmission of elements of Islamic architecture to Gothic architecture was the result of a number of important factors:

A. The advent of Islam, as religious, political and economic power and its rapid spread across the major conquests of non-Muslim countries and its extension to those places made it influential. The buildings where Muslim caliphs keen to emphasize the specificity of this religion and its uniqueness distinguished it from other cultures and religions (table 1_ item (1,2),(table 2). As is the case in the Dome of the Rock mosque in Palestine.

B. The transition was possible through trade between Muslim countries and the European continent, especially with regard to trade in the Mediterranean basin. Through the movement of traders and their move, these architectural elements probably moved as in Amalfi Italian Island where the imprint of Islamic architecture is clear, that may happened through the business relationships with the port of Mahdia in Tunisia in the State of the Fatimid period , see table 17 _item 1.

C. Part of the transmission of these elements may have come through the Crusades, after they conquered Jerusalem and set up their kingdom for a long

period, resulting in close contact with the developing Islamic civilization, especially if we know that many of the kings and princes who led the Crusades returned to their home countries and had built great cathedrals as is the case with Louis II [72], who led the second Crusade. After returning, he witnessed the reconstruction of the Church of St. Denis, which embodied the first appearance of the Gothic style benefited from the advantages of the pointed arch, see table 1_ item 1.

D. Through the exchange of gifts and precious artifacts between the Muslim kings, princes and the kings, princes of Europe. There are many researches which confirm that the cabinets and the treasures of European Churches are filled with valuables and high quality Islamic collectibles such as stained-glass works that carved and decorated with Arabic calligraphy as in the St. Denis Cathedral case, where cruet made in Fustat in the 9th century AD see table 22_ item 1.

2. Effect of Mozarabic and Mudejar.

A. The large part of the Islamic architecture that affect Western architecture generally and Gothic architecture in particular, came through Mozarabic who are Christians remained on Christianity when the Muslims conquered Andalusia. They remained under the Islamic rule while being conservative on their religious convictions in a coexistence period between religions in Spain. But they produced architecture compatible with Islamic thought and religion, despite keeping their Christianity.

B. The other influential is Mudéjar. They are Muslims and stayed on their religion, under the Christian rule after the wars of regaining Spain from Islamic rule by the Christians Kings. Mudejar style is characterized by using architectural elements with Islamist character and flavor it with brick work using pointed and foils arches. Among the most prominent of their work is Al Cazar Palace in Seville and the Moneral Church, see table 1_ item 1

C. In my personal opinion that the most important effect of Mudjar on Gothic is the emergence of foil arch in Gothic architecture. It is an important proof of the direct influence of Islamic architecture to Gothic. As this type of arches is considered a hallmark of Moorish architecture in Al moravid and Al mouahid era. And it continued use in architectural work of Mudejar style for example in Penafiel Monastery of Saint Paul see table 2_item 3. Especially as it's never appears in the Romanesque architecture as specified by the comparison table as well as the text of chapters of study.

3. We can note that the effect came at the level of architectural elements and not on the planned level. And I believe that happens because of ideological difference between the Islamic religion and Christianity. Because of that the influence was limited to architectural and decorative elements as well as the termination materials. Although, with existing of this ideological difference, but we can consider that there is a common vision of the importance of the entry of light to interior spaces.

4.In my personal opinion that the emergence of different types of arches in the Gothic style, especially ones that were not known or widely used in European architecture, such as a different types of pointed arches and foil arch and its compatibility in terms of shape with the Islamic models. Such, these arches is clear evidence of gothic influenced by Islamic architecture, . Especially since some types of these arches have never appearing in the European architecture, as illustrated by comparison tables, see tables 1 to 11.

5. Many scholars and historians claimed that the origin of rose window it may be appeared before Islamic architecture. The rose window appeared in many styles of architecture as Romanesque and Gothic, but it has become a prominent feature of gothic architecture. Although there are many specialists who argue that Rose window looks like circular oculi that was used in Byzantine and Roman. But in my opinion, it's not possible because the occults are at the top of domes and they are just circular openings without any details. While one in Khirbat al Mafjar was found in the

entrance of a palace that make us almost accept that's the origin of Rose windows, see table 15_ item 1,2.

It's easy to note that assessments of European researchers such as Oleg Graber as well as some historians of the 18th and 19th centuries often try to reduce the influence of Islamic architecture in the Gothic style like in case of rose windows when Graber commented on Simms's theory as we explained chapters text of this study above.

6. Effect of structural and architectural element in interior space.

As a result of the use of structural and architectural elements as well as the discovery about its potential, the pointed arch has a very significant impact on the European architecture, especially when architect knew and discovered possibilities of the pointed arch and used it in a form as it's showed in Gothic architecture. It has a very significant impact on formation of the internal space of the church and it carries capacities, weak lighting and poor ventilation of the Romanesque architecture to new phase, to get adequate bright, natural lighting and good ventilation, which in turn is a big influential factor on helping to create a spiritual and faith environment to in the church that helps people to support their awareness and increase their thinking. And this is what Abbot Sugar referred to in his writings found on the west door of the St Denis Church in France. These writings were mainly talking about the importance of light in the evaluation of cognition and supporting the mind.

A. By looking at the evolution of Gothic cathedrals over the 12th and 13th centuries, we can note that the original objectives of Abbott Sugar, in the end, are to create a completely different style of architecture. The development and use of stained glass in cathedrals in the large windows provided by the new construction techniques used by Goths architects in their churches has led to a radical change in the method of introducing religion to the people, and therefore, closer look on the Gothic cathedral. In my own opinion, that Gothic architecture and architectural space which we find now may not be present in the absence of the views of Abbot Sugar to employ entering light

to the internal space, to give spiritual and theological atmosphere to the internal space. Thus we can say that the evolution of the Gothic cathedral during the 12th century and the way we look at cathedrals today began with the unique concept of bringing God (light) in the Church through the sky light which was created by a magnificent stained-glass windows.

B. Resistance to weight or the weightlifting ability of pointed arch is more than three times from semicircular arch which was used in the European and especially Romanesque architecture. This is what helped to make the walls thinner through the mechanism of the transfer of loads and distributed the weight between the columns and walls, also this was important to increase the possibility of creating large openings in the walls and install huge windows which helped the entry of greater light volumes and air into the interior space. Thus the argument was made that the Gothic architecture is airy and light. In contrast, the spaces in Romanesque architecture was dark and dim with little ventilation because of the inability to make great openings due to the heavy weight of ceilings and an inability to make slimmer walls for matters concerning the transfer of large weights of constructor.

C. The use of the ribbed vault was the result of the potential of the pointed arch. The use of ribbed vault helped to distribute loads from the roof more easily and safely. This, in turn, has helped to reduce the dead loads to the weight of the ceilings which helped to make the walls thinner and therefore it was possible to make large openings for the windows inside the walls, which contributed to the increase in the amount of light entering into the internal spaces of the Church and then contributed to the enhanced spiritual meaning for space.

7. In my opinion, one of the most important evidence on the Islamic influence in Gothic architecture is the emergence of islamic calligraphy for ornamental purposes in some buildings of Gothic architecture . And that's where the Islamic art is the first to introduce the calligraphy as a means of decoration, and in my opinion this is due as a result of trying a Muslim artist to invent new ways of decoration, because of

restrictions imposed by Islamic Shreiaa on many kinds of decorating styles that prevailed in the run-up to which Islam. Such as the embodiment of human or animal. Although there are many researchers argue that there is an arts patterns oldest than Islamic style they used this kind of writing in their buildings, refering to Egyptian civilization. But in my opinion that the use of calligraphy in the Egyptian architecture was a kind of documentary tool and not for ornamental purposes as in Islamic Architecture. and I want to add , this kind of calligraphy appeared in Gothic period in tombs of some european leaders which believed they participant in crusaders war and this enhanced our claims, see table 13_ item 3- 4.

A. Discussion.

There are many researchers and scholars who are interested in the influence of Islamic architecture in western architecture as whole and Gothic architecture in particular. Some of them put forward their own opinions as a theory like Sir Christopher Wren who announced his theory in 1713 from Westminster Abbey about origin of Gothic architecture. John Harvey reports in his article that;

“We now call this the Gothic manner of architecture. I think it should be called the Saracen style for more reasons. As these people wanted neither arts nor learning and after we in the west both lost, we borrowed again from them, out of their Arabic books, what they with great diligence had translated from the Greeks. The crusades gave us an idea of this form, after which King Henry built his church. The Saracen mode of building, seen in the East, soon spread over Europe, and particularly in France [74] p:87 .

Some of the studies which dealt with this subject partially focusing on one or two of the elements that moved from Islamic architecture to Gothic architecture. One of the researchers who is in the mode of transmission of this component in this context, Peter Draper did a research in 2014 about the first use of pointed arch. He discussed the mechanism of transmission of the pointed arch from east to west and how it moved from Iraq or Syria to Europe and suggested that the mechanism of the transition emanated from trade which happened between Islamic countries and Europe through trading route across the Mediterranean, which was active in the islands of Sicily in Spain and Amalfi in Italy. Moreover, he stated that the first pointed arch that appeared in Europe was in third church of Cluny in 1120 which

means it was used only after Islamic architecture had used it for many centuries. In my opinion, this possibility is one of the important possibilities for the transition of the pointed arch from east to west but the thing that is missing in Peter Draper's research is that he left the research with an open end about the way of move and did not give us final convictions.

According to Graber (2005), the architectural effect between East and the West should not be limited to identification and impact assessment and direct and indirect tradition. He pays particular attention to the phenomenon of civilizations that benefited both directly and indirectly from the Roman architectural heritage. Here, he is in favor of the idea of influence and parallelism between both models rather than the penchant for Islamic influence on Western architecture. Garber (2005) suggested that the effect between the two civilizations or two models cannot be understood unless verification on one of the following objects has been done.

“Since the monuments are immobile, influence and impact can only take place if one of three types of those events occurs. Firstly, masons, architects or other technicians move them from one area to another. Secondly, patrons or other influential taste-makers carry with them the impact of foreign architectural monuments and seek to interpret their memories into local techniques and thirdly, drawings, photographs, and at times literary descriptions transmit technical or aesthetic impressions which are then used or transformed by some respective milieu”. Generally, Grabar tends to parallel more than influences, as I show that's back to His desire not to recognize the thanks to the Islamic architecture on Gothic architecture[110].

Many architectural scholars wrote on Islamic influence in European and Gothic architecture. Some of these writings talk about regional impact and that effect was clear and large. Some others suggest that the influence was different from one place to another and it is subject to the traditions and customs of construction from region to region. We can notice that in following text. Here the author talks about the regional effect and the traditional construction in North Africa which affected Cappella of Sicily.

“Christian buildings such as the Cappella Palatina in Palermo, Sicily, incorporated Islamic elements, probably created by local Muslim craftsmen working in their own traditions. The ceiling at the Cappella, with its wooden vault arches and gilded figurines, has close parallels with Islamic buildings in Fez and Fustat, and reflect the *Muquarnas* (stalactite) technique of emphasizing three-dimensional elements” [108], p. 835).

Bony states that “The diaphragm arch, of Late Antique in origin, was widely used in Islamic architecture and may have spread from Spain to France”[80],p. 306. In my opinion, Bony’s claim has a point since the diaphragm appeared in Nabatian style in Iraq before Islam. And then it was used in many Umayyad places in Levant [80].

As I said in the previous paragraphs, some Western scholars in Islamic architecture acknowledged the importance and impact of Islamic architecture on Gothic architecture implicitly, but they are trying in a way and their tendency to bias is underestimated. We can note that in the writings of a number of researchers and theorists of architecture in the 18th - 19th centuries, they described the Gothic architecture as chaotic and disordered, and then tied this to the Islamic assets. This is what I consider as a biased or unfair assessment of Islamic architecture. In this context Graber wrote:

“Scholars of 18th and 19th century, who generally preferred Classical art, disliked what they saw as the "disorder" of Gothic art and perceived similarities between Gothic and Islamic architecture. They often overstated the case that Gothic art fully originated in the Islamic art of the Mosque, to the point of calling it "Saracenic"[111], p. 141.

Furthermore, Thomas Warton summarized in the same direction:

"The marks which constitute the character of Gothic or Saracenic architecture are its numerous and prominent buttresses, its lofty spires and pinnacles, its large and ramified windows, its ornamental niches or canopies, its sculptured saints, the delicate lace-work of its fretted roofs, and the profusion of ornaments lavished indiscriminately over the whole building. But its peculiar distinguishing characteristics are the small cluttered pillars and pointed arches formed by the segments of two interfering circles" [111], pp.14.

William John Hamilton commented on the Seljuk monuments in Konya:

"The more I saw of this peculiar style, the more I became convinced that the Gothic was derived from it, with a certain mixture of Byzantine, the origin of this Gotho-Saracenic style may be traced to the manners and habits of the Saracens" [65], p.141.

In my opinion, the quotations from Warton, Hamilton and Schiffer carry two signals. The first one is an implicit recognition that the Gothic art is derived from or inspired by Islamic art. The second reference, tuck as well as they are prejudiced and biased. It is signaled that Islamic art is the art of unbalanced and has some disorder, and we can see the same trend in the following phrase as Oleg Grabar refers to unspecified speculation that the Rose window may have Islamic origins as unlikely:

"While not excluded on purely chronological grounds since its earliest known instance is in the Ummayyad palace at Khirbat al-Mafjar, this conclusion seems highly suspicious to me that both cultures were frequently operating on practically the same kind of 'track' is further suggested by the visual and aesthetic similarities between the ornamental values of flamboyant vaults and Islamic architectural decoration. It is not very likely that a direct impact of one on the other can be demonstrated and we are certainly dealing with parallel growth" [3], pp.387.

Unlike Graber, the German art historian Otto von Simson considered that the origin of the rose window lay in a window with the six-lobed rosettes and octagon which adorned the external wall of the Umayyad palace at Khirbat al-Mafjar built in Jordan between 740 and 750 CE. This theory suggests that crusaders brought the design of this attractive window to Europe, introducing it to churches[98].

In his book, *Palace and Mosque at Ukhaidir*, G.L.Bell states that the palace at Ukhaidir admirably describes a vital interest to us because one of the most important findings there is the embryo of the pointed arch which afterwards became distinctive feature of western Gothic architecture [69]. Although the pointed arch in Ukhaidir Palace 720-800 AD is one of the early bows pointed explicitly in Islamic architecture, there is one more example of the one of the oldest pointed arches in Ukhaidir like the one that appeared in the Dome of the Rock 691 AD as well as the pointed arches in Lake arches in the Ramle area that it had been established in the same period for the establishment of Ukhaidir Palace or perhaps a little earlier [112].

As Havell suggests the multifoil heads and windows opening with cusped arches in Sammara Mosque must be credited with all implications in western art to the Muslim

architecture. Furthermore, the brick piers that carry the arcades used in Cordoba and elsewhere had bell-shaped capitals. Here we have another feature that passes into western architecture [71].

In a book, *Mohammadian architecture* (1924), the author wrote about IbnTulun mosque. The external walls are very massive and are grounded with ornamental battlements – a feature that we have met before- that appear later may be regarded as the prototype of gothic pierced in the crested parapet.

According to Bloom and Blair the traditional Islamic thought which started in the seventh century has grown and evolved to include art and architecture from the Atlantic to the Indian Ocean and have a major impact for a long time on the Western architecture (1994).

Rabah Saoud refers to clear facts about the effects of Islamic architecture on gothic style when he was citing Fletcher [75], stated that **“it is now generally admitted that European gothic architecture owes a substantial debt to Islamic prototypes, many of which became familiar to the crusaders in Egypt, Palestine and Syria”** (p. 1250).

“The Notre-Dame de Paris gothic masterpiece for example integrates these numerous Islamic innovations” [100], p.74. “Despite these Romanesque and Islamic precedents, Gothic architecture was called "French Work" in the Middle Ages and born in the area Ile-de-France around Paris in the 1130s, and it still represents a significant architectural breakthrough in itself, which succeeded in bringing astounding lightness to religious structures” [115].

According to Bony, “the pointed arch has spread from Islamic lands, possibly through Sicily, then under Islamic rule, and from there to Amalfi in Italy, before the end of the 11th century.”[80]. And further states that:

The main shift of the Gothic era occurred from the older, heavier style of Romanesque architecture, based on a solid stone vault, to the lighter, elevated Gothic

style based on both the Romanesque and Islamic use of the pointed arch and cross-ribbed vault. The different phases of Gothic architectures in northern France progressed from the Early Gothic to the High Gothic and Rayonnant styles and the eventual Flamboyant style. By the early 12th century, prototypes of ribbed vaults and pointed arches had developed at the Rivolta d'Adda in Italy in 1100s, Durham cathedral in England in 1093, and Jumièges in Normandy ca.1120-1125. Some scholars also suggest that the ribbed vault may have first appeared at the Church of Sant' Ambrogio in Milan in 1060. As noted, ribbed vaulting may have originated in Islamic Spain, where it had appeared as early as the second half of the 10th century [80].

Likewise, the pointed arch has its origin in the Islamic architecture of the near East of the 8th century which then spread rapidly throughout Egypt and Tunisia into Moorish Spain and towards Italy. According to one theory, the pointed arch may have been used on the island of Sicily, which soon spread to France via the Norman Conquests of the island in the 1060s and 1070s [80].

The remaining sections of the ceilings at Cordoba and Toledo were not covered by lintel coffers, as in the earlier examples from Harane, but by true sections of vaults, thus creating the first ribbed vaults. Much later, this concept would be reproduced both in the mausoleum of Sultan Sanjar at Merv and in Gothic architecture (64). W. R. Lethaby, the author of *Medieval Art* (1904) which is one of the first art-history textbooks to be used on college campuses states that "There is much more of the East in Gothic, in its structure and fiber, than is outwardly visible" and "It is not generally realized in how large a degree the Persian, Egypto-Sarcenic and Moorish forms are members of one common art with Gothic" [113],p:7.

In addition, some Western scholars purport that Islamic architecture is a product of imitations from other forms of architecture and borrows heavily from Byzantine and Romanesque architecture[105]. They argue that the concept of Islamic designs in architecture only served to distinguish their structures from those of other cultures. They support these claims by arguing that Muslims were reluctant to build permanent shelters due to their nomadic lifestyle. In my opinion, such

misconceptions often serve to trivialize the contributions of Islamic designs to mainstream architecture.

B. Final Words.

This study with its analysis of element of Gothic architecture demonstrates the high possibility of influences of Islamic architecture in Gothic. There are many studies, opinions of writers and researchers are support my opinion and had indicated that perhaps there is influence of Islamic architecture on Gothic architecture, but it was not afford results or definitive answers, but merely the views and theories debatable. As it is the case with Peter Draper study (2014) on the origins of the pointed arch, as well as of the famous researcher Otto Van Simpson and his theory about the origin Rose and Windows. While there are other theories and opinions contrasted with my findings and claimed that what we consider it as a possible impact of Islamic architecture in the Gothic style, was happened as a result of natural parallel evolution for the emergence of civilizations, as stated in the vision of Oleg Graber (3) about the effect and the parallelism between Islamic Architecture and European. While, with clear chronological fact that appeared by comparison table I think there is no doubt belongs with origin of appearance of each architectural element appeared in tables.

Through the study, I can say that these findings will be considered as preliminary, but can be built upon to reach wider and more accurate results in the future.

5.2. Future Work.

The subject of the impact of Islamic architecture on the Western architecture is broad and complex topic. In our study, We dealt with partial and one of this effects, it's the effect elements of Islamic architecture on European architecture, especially Gothic style. According to findings of the study that proved the existence of a large and important impact of the elements of Islamic architecture such as pointed arch and the ribbed vault, as well as invention stained glass, and its role on formation the internal

space of Gothic Churches which led to the drastically change if compare with what it was in the period of Romanesque architecture. This happened by taking advantage of technical and construction possibilities of these elements. So these results will be a stimulating dramatically in future to explore more effects of Islamic architecture on Gothic architecture, and the most prominent is the study of the influence of Islamic architecture on the Architectural scheme layout of the Europe buildings and Gothic architecture in particular, in addition to studying the extent of the impact of architect, constructor and Islamic thought on European Architecture scheme in all types, whether religious or secular architecture and this subject is one of the threads that have not been researched and studied extensively and comprehensively.

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APPENDICES A

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: AL_RUBAYE , Mohammed Ahmad

Date and Place of Birth: 16 October 1977, Iraq

Marital Status: Married

Phone: 00905352730396

Email: eng_ahmedsami@yahoo.com



EDUCATION

Degree	Institution	Year of Graduation
M.Sc.	Çankaya Unoversity., College of /Engineering/ Interior Architecture Department	2015
B.Sc.	University of Baghdad/ College of /Engineering/ Architecture Department	2001
High School	Al-Hadi High School	1996

WORK EXPERIENCE

Year	Place	Enrollment
2001- Present	Ministry of Education Department of Engineering	Designer and Site engineer

FOREIN LANGUAGES

Arabic Mother Language Advanced English, Beginner Turkish.

HOBBIES

Football, Reading Books, Travels.