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## The influence of cosmic architecture on architectural Islamic thought

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**Abstract.** When cosmic architecture began and developed in early times, the building was an integral part of the universe, as it was difficult to separate it. For example, the first humans lived in caves, believing that they resided in the womb of the earth. From the third century onward, with the advent of Euclidean and Ptolemaic geometry, astronomy prevailed in the world. (1) A scientific understanding of the framework of engineering fiction that began to explain the universe was necessary. (2)

Global societies, especially Arab societies, have witnessed a division and duality between heritage and identity, influenced by technology and modern-day developments. As a result, architecture lost its soul and became a lifeless body. This led to what is known as globalization, which has made buildings resemble each other around the world, prioritizing materials over soul. The importance of studying cosmic architecture lies in the deep examination of architectural texts and the discovery of the idea behind them in the Islamic era. Is the Islamic era one of the most important periods that presented cosmic architecture in a distinctive way?

The main objective of the research is to extract the impact of cosmic architecture on the foundations of design in the Islamic era and how religious beliefs influenced the formation and establishment of concepts of cosmic architecture. The research came up with a clear conceptual framework for cosmic architecture in accordance with the principles of design of the Islamic era, which are clearly based on religious beliefs.

**Keywords:** Cosmic Architecture - Islamic Era - Religious Belief - Cosmic Code

## **1-Introduction**

In this introduction, the problem definition, the study objectives, and the research methodology will be presented.

### **1-1 The research problem:**

The issue of this study lies in attempting to explore how the principles of Islam influence the conceptual framework of cosmic architecture. It was essential to seek a clear answer to the pressing question: is it Islamic architecture or cosmic architecture, given the diversity of styles during those eras, including Umayyad, Abbasid, Seljuk, Ottoman, Fatimid, and Andalusian? This leads to the notion that labeling and describing a particular architecture as cosmic architecture is, in fact, a broader expression.

### **The aim of the study in this research is to achieve the following:**

1. Reading and interpreting the impact of religious factors in establishing a conceptual framework for buildings throughout different eras, and from this, deriving principles and concepts of cosmic architecture.

2. Formulating a conceptual framework based on the elements and principles of Islamic religion to interpret the vocabulary and sentences of the visual texts of cosmic architecture.

### **1-2 Research Methodology:**

The study adopted a narrative historical approach and an analytical method that helped us gather the material related to the research, analyze it, interpret it, and draw conclusions from it. Therefore, the following methodological steps have been defined as a methodological basis for the study:

### **Research in the theoretical framework:**

The cosmic architecture and its concepts within the theoretical framework serve as a basis for understanding the relationship between architectural output and the concepts of this architecture.

Identifying the principles of Islam that have shaped the main design determinants that cannot be overlooked in establishing the foundations of cosmic architecture, in order to create a knowledge base that serves as an entry point for the study of cosmic architecture thereafter.

**Analysis and Inference:** Through analyzing examples of architectural buildings across Islamic eras with the aim of reaching the foundations of universal architectural design.

**The theoretical thesis:** It includes the discussion and interpretation of the sources of cosmic architecture and the reasons and influences in the design process within the framework of the Islamic era, which introduced new architectural concepts.

**Research findings:** This includes the most important research results that the study has achieved, along with a set of suggestions for recommendations.

## **2- The Cosmology and architecture:**

### **2-1 What is the Cosmology?**

The concept of the cosmic refers to the total existence of everything that is material and present in space and time.

- **The universe or cosmology:** is the science that studies the universe as a whole, including all its matter and energy, as a place where humans live and interact.

- **The cosmic is :** a comprehensive study of actual, material, and somewhat spiritual existence. It is a subject that combines physics, philosophy, and religion in an attempt to gain a deeper understanding of life and existence itself<sup>(3)</sup>

### **2-2 Islamic Thought on the Origin of the cosmic:**

The Islamic conception of the cosmic beginning is built on a transcendent, abstract, and monotheistic understanding that Muslim thinkers have arrived at, drawing on previous studies of the divine essence and the examination of Quranic texts.

Ibn Rushd says, "The divine essence is pure intellect in the sense that it is neither matter nor spirit, but rather the intellect of this existence, meaning the order of this existence, that is, the organizing laws of it."<sup>(4)</sup>

**2-3 Architecture and Cosmic Creation:**

Translating the cosmic origin into architecture has presented some difficulties, particularly in how to translate and describe it, as well as in addressing self-organization, evolution, and cosmic origin in place of modern ideas. Consequently, fundamental laws have evolved, leading to leaps referred to as cosmic leaps that have clearly influenced architecture, prompting architects to view architecture as part of the cosmic system, which should express boldness and the laws of the cosmic.<sup>(5)</sup>

**2-4 The universe is matter and spirit:**

ALLAH, who created this universe and fashioned it, organizing it from nothing with the power of "Be, and it is."

This means "that God created the universe from tangible matter and infused it with thought and consciousness, that is, spirituality."

**Table (1):** The definition of the universe is explained both materially and spiritually, along with the material elements of the universe. (researcher)

universe (matter)		universe (spirit)
The material cosmic focuses on the physical and tangible aspects of the visible and measurable reality, forming an important foundation for the scientific understanding of the cosmic and its complex interactions.		The cosmic is spiritual, transcending the physical dimension and encompassing the spiritual and moral aspects that connect humans to the world they inhabit, making it a subject for contemplation and exploration in... All existence comes from one being, and it must also have a spirit. The spirit of this assumed multiple universe, which has been envisioned majestically and mysteriously in some ancient religious texts, is currently beyond the scope of science. Konstulin said, "We must overcome rigid forms and new distorted shapes and reveal cosmic truths."
Types of matter		
<b>Ordinary matter (protons and neutrons)</b>	The material from which we and the visible bodies in the universe are made.	
<b>Dark matter</b>	It represents about 27% of the total matter and energy in the universe, and it is a type of matter that does not emit light and cannot be seen by conventional means.	
<b>Dark energy</b>	It represents about 68% of the total energy and matter in the universe. It is a term that refers to forces that accelerate the expansion of the universe.	
<b>Photons and cosmic background radiation.</b>	Photons are the light particles that make up the light of the universe, while cosmic background radiation is the residual radiation from the Big Bang that fills space in all directions.	

<b>(CMB)</b>	
<p><b>. The main elements of matter in the universe.</b>                  The physical world, according to the principles of Vastu, is composed of five essential elements:                  Space - air - fire - water - earth.</p>	

**2-5Definition of cosmic architecture:**

Cosmic architecture is considered one of the important concepts in the field of architecture, as it seeks to design buildings in accordance with the concept of harmony and balance with the entire universe. Cosmic architecture relies on philosophical and spiritual concepts, where the building is considered a living entity in continuous interaction with its external environment and the universe.

- **The cosmic architecture is** a concept that refers to inferring the principles and orientations of the universe in the architectural design process. It combines the principles of beauty, balance, harmony, interconnection, and integration among the different parts of the building to create unique and inspiring spaces.
- **Cosmic architecture aims to** utilize natural elements, external spaces, and surrounding influences to create an interactive structure that reflects universal laws. It relies on durability, balance, comprehensiveness, and continuity in its design.

And it creates spaces that enhance spirit and positive energy, providing a comfortable and balanced environment for users. She seeks to achieve harmony between humanity and the universe.

**3- Formulating cosmic architecture in the Islamic era:**

Ancient Muslims believed that the universe had defined astronomical boundaries, and they understood the cosmos through geometry and numbers.

"The conception of the universe is that of concentric circles, with humans residing at the center and the divine throne standing at the outermost edge." The place and time "the outer limit of the universe."

The universe was also envisioned as "quadrangular" in shape, and the throne was seen as participating in both the physical and metaphysical worlds.

**3-1The impact of Islamic principles on cosmic architecture:**

Architecture is closely linked to Islam, which shaped the fundamental ideas and principles of universal architecture.

Where the architectural thought of Islam coincides with the preference of the holy book "for text instead of image."

It evolved over time and was influenced by architectural styles such as the architecture of "Mesopotamia and Roman architecture," and later by Chinese and Mongolian architecture.

Islamic architecture is characterized by distinctive architectural patterns and geometric harmony, adhering to the correct use of mass assembly to achieve a final form that embodies Islamic principles.

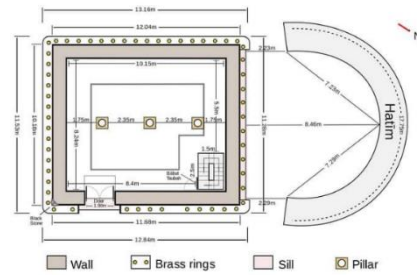
The most important principles and foundations that shaped architecture in the Islamic era:

1. The Quran, the prophetic hadith, and Islamic prayer.
2. The relative system of the human body developed by the "Ikhwan al-Safa" \*2.
3. The Kaaba: It is the first house that Allah commanded the angels to build. As in Figure

4. Arabic calligraphy: where architects adorned their buildings using Arabic script in its various forms. As in shape.



**Figure(1):** Ornaments and inscriptions of Quranic verses in gilded Arabic calligraphy in the Prophet's Mosque.



**Figure (2):** Horizontal projections of the Kaaba






**Table (2):** Religious principles and their impact on the formulation of architectural thought(researcher) <sup>(7/8)</sup>


<b>The principles of religious belief that shaped the concepts of cosmic architecture</b>	
<b>Totality</b>	Including buildings and constructions on all benefits needed by humans daily.
<b>Privacy</b>	It pays attention to privacy, as it considers the privacy of both women and men in its design, unlike Western architecture, which relies on a single design pattern. For example, the design of balconies, mashrabiya, and harems.
<b>Environmental</b>	Islamic-style buildings rely on materials that can be reused through recycling in order to protect the environment.
<b>The functional</b>	The design is based on the religious principle "no harm and no harassment," where it is tailored to the individual's needs without excess or deficiency.
<b>Aesthetic</b>	Decorating buildings in accordance with the principles of Islam, where architects avoided depicting living beings on the walls of mosques and courts.
<b>Asceticism</b>	I refrained from exaggerating in decorations and embellishments, as it is based on balance; it neither leans towards stinginess nor extravagance.

### 3-2 The development of ideas of cosmic architecture in Islamic times:

The basic meaning of the building is expressed on the roof and not the solid body of its architecture, and is often stripped of the load-bearing structure of the building that supports the building, as the building becomes a "book" on which external elements (non-architectural, often textual are written). Table (3) presents the development of architecture throughout the Islamic eras

**Table (3):** The development of architecture throughout the Islamic eras(researcher)

Age	Manifestations of the development of Islamic architecture	
<b>Covenant Prophet And Caliphs Adults</b>	There weren't many types of buildings besides the asceticism that was prevalent at the time, as buildings were limited to the construction of mosques, and this situation continued until the era of the Rightly Guided Caliphs.	 <p>A rough picture of the Prophet's Mosque in the era of the Prophet, may God's prayers and peace be upon him Source: Marz Al-Iman Museum - Medina</p>
<b>Age Umayyad</b>	The beginning of the Umayyad period saw the development of its influence in Islamic architecture. This is because the caliphs of Banu Umayyah were inclined towards entertainment and enjoyment in the life of the world.	 <p><b>Umayyad Mosque (Damascus)</b></p>
<b>Age Abbasi</b>	Stability, prosperity, and diversity of decorative styles in them, Mosaics and carved wood were used, and the shapes of the arches varied from semi-cylindrical and pointed lobed unitary.	 <p><b>Al-Mustansiriya School in Baghdad</b></p>
<b>Age Fatimid</b>	The Ewan became a permanent architectural element in public buildings/minaret towers isolated from the mosque building block	 <p><b>Al Azhar Mosque</b></p>
<b>Age Al-Ayyubi</b>	It mixed influences of Greek Tunisian architecture with the local school, muqarnas, and the minarets are decorated.	 <p><b>A side of the Cairo wall built by Salah Al-Deen Al-Ayoubi</b></p>

<p><b>Age Mamluk</b></p>	<p>In Madamik stones, colors alternate between white and black, sometimes with yellow or red, and it seems that the alternation of colors continues throughout the façade, or in some parts of it.</p>	 <p><b>Khanqah School Ashraf Barsbay</b></p>
<p>The cylindrical shape of minarets and new forms of arches first appeared, and the use of domes with necks evolved..</p>		

**4- The cosmic code:**

Humans have tried to interpret cosmic phenomena and read the cosmic code, but this did not follow a scientific path. However, some ancient civilizations were able to study the workings of the universe throughout history. Consequently, many prominent thinkers became convinced that the world we perceive with our senses is merely a superficial manifestation of a deeper hidden reality, in which we are supposed to find answers to the great questions of existence. Researchers in search of truth have resorted to rituals and ceremonies, employed meditation, and consulted priests, mystics, and religious leaders in their attempt to unveil the mysterious world that lies beyond what we perceive. <sup>(11)</sup>.

**4-1 The definition of the cosmic code** is a concept used to refer to a set of laws and principles that are believed to govern the universe and influence life, nature, and existence in general. This concept can integrate natural sciences, philosophy, and spirituality to understand how the universe is organized and how things work within it.

**4-2 Rules of the cosmic code:**

Contemporary modern philosophy (the cosmic code) is based on six principles classified as follows.

(Philosophical logic - Laws of the universe - Physics - Chemistry - Mathematics - Natural sciences)

Through the summaries of these six specialized sciences, the modern philosophical theory about the universe and existence has been formed from its very origins, that is, from the realms of universes, time, and existence, the secret rules by which the world operates.

Newton, Galileo, and other early scientists approached this research as a form of religious pursuit; they believed that by uncovering the patterns woven into the processes of nature, they would gain a deeper understanding of the Creator's mindset. <sup>(12)</sup>.

**5- The main axes of Cosmic Architecture:**

According to Charles Jenks' classification, a system consists of four main elements "Allah/man/nature/science" to study that system. Table (4) and Figure (5) show the main axes of cosmic architecture.

**Table (4):** The main axes of Cosmic Architecture(researcher)<sup>(32)</sup>

<p><b>allah</b></p>	<p>In Islam, Allah is a term that signifies the necessary existence deserving of all praises. It is the name of the Most High Being, the Creator of the universes and existence itself. He is the true God for all creatures, and there is no deity worthy of worship except Him.</p>
<p><b>Human</b></p>	<p>Francesco di Giorgio (1439-1501) emphasized that the body should be a model not only for architecture but for urban planning and comparing the eye to the castle, both of which must be in a prominent place.</p>

<b>Nature</b>	Nature is the physical world with all its plants, animals, and natural phenomena that are not man-made, it represents the phenomenon of the physical world surrounding man and nature as a reference, source, and rich in architectural visions with different time, places and ruling thought, old or new.
<b>Science</b>	Science is one of the most important components of civilization because it is characterized by its ability to correct its mistakes and its present is healthier than its past and society that does not take the prevailing scientific vision in its time becomes calculated on a previous era that has no knowledge of cognitive progress.

### 6- Cosmic Architecture Metrics:

The measures of cosmic architecture express the ways in which buildings are designed to reflect the relationship between humans and the universe.

These measures usually include elements and concepts that symbolize the cosmic and spiritual system in religious beliefs or spiritual philosophies<sup>(31)</sup>

**A- Cosmic Structure:** An expression of the organization of the natural universe in architectural design, such as the use of geometric harmony that reflects a pattern or structural system similar to the one found in the universe.

**B- Symbolic dimensions:** The use of symbols in design to express supernatural realms or spiritual dimensions, reflecting the relationship between humans and the universe in symbolic ways.

**C-Astronomical sites:** Choosing locations and orienting buildings based on alignment with astronomical events, which gives the design cosmic dimensions.

**D- Natural Harmony:** The use of elements from nature and natural materials in design to achieve harmony with the universe and strengthen the connection to the cosmic and spiritual.

And the hierarchical structure: the use of hierarchical structures as a design that expresses the structure of the universe and spiritual dimensions, where conical buildings symbolize the connection between the earth and the sky and the supernatural dimensions.

#### 6-1 The scales of cosmic architecture derived from Islamic religion:

When studying cosmic architecture, a set of criteria emerges from the principles of the Islamic religion, the most important of which are:

##### 6-1-1 The Trilogy

The trinity corresponds to the three dimensions (length, width, and depth), which is considered by "Ibn Arabi" a manifestation of the trinity.

Ibn Arabi expresses his concept of the two models through detailing the way in which the threefold and fourfold patterns of the divine presence are reflected in the formation of man. Here, he defines man through three essential elements: nature, body, and form.

The triangle resulted from half of the circle, that is, half of the universe. The intersection of two triangles forms a hexagram, representing the union of heaven and earth in Islamic thought.

The Sufi concept of "human existence" is based on three principles:

First: Man, as an idea, was the first to be conceived by God in the act of creation.

Secondly: Man, as a physical form, was the last creature to be brought into existence.

Third: The human being, in both the ideal form and the embodied form.<sup>(13)</sup>

##### 6-1-2 The Squared:

The square symbolizes the four directions, and others see it as representing the four elements of the universe believed in by Sufis. It is a term that refers to the use of square or rectangular



shapes and designs in building architecture. Historically, square and rectangular shapes were commonly used in architecture for several reasons: effective use of space, strong structural integrity, simplicity, low cost, and classic appeal.

According to Ibn Arabi, this is the fundamental "structure" of being: "God has established existence on the square and made it for Himself as a house built on four pillars. He is the First, the Last, the Outward." These four attributes formed the primary square, which necessitated the creation of the "house" on four columns, within the structure where the world of spirits and the world of bodies manifest. <sup>(14)</sup>.

### 6-1-3 The Trilogy and the Quadrature:

The integration of the triad, which is a shape composed of three points (such as a triangle, semicircle, or arrow...). With a shape consisting of four points.

Ibn Arabi says that there was a divine secret that "God made His house consist of four corners, even though in reality it only had three, to describe the original shape of the Kaaba. Although the Arabic term for the Kaaba refers to the idea of being cube-like, it does not literally mean that, as is generally understood, nor does the Arabic term for cube used today refer to the original meaning of the word." "Where cosmology and architecture in ancient Islam"

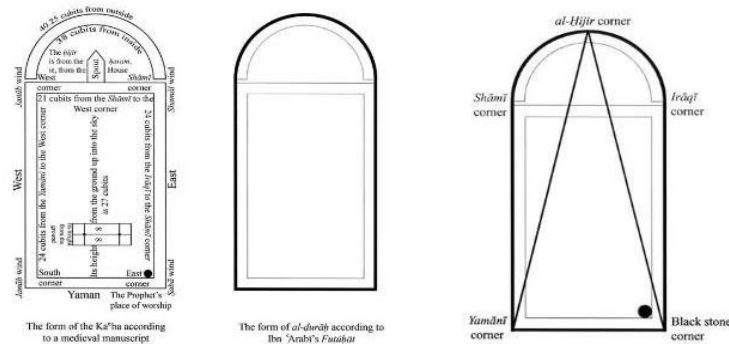
### 6-1-4 The Circle:

The circle as a human can show the three levels, as a man by nature has three levels: body - soul - soul in oneself is said to be (human).

Since Islamic architecture is based on the circle system, it necessarily contained this trilogy and all its manifestations came to reveal these facts.

### 6-1-5 Combining the square and the semicircular shape:

**Al-Farahidi** says the house is (upper square) Each square house is (**Kaaba**) This refers to the term (**Kaaba**) originally refers to the shape of the house, i.e. squared, and its end is semicircular instead of the shape of the cube, which nevertheless bears a secondary relationship. **Ibn Arabi** is considered the original divine model of the **Kaaba**, as shown in Figure (6).



**Figure(6):** Plan of the Kaaba Hijri (eighteenth-century Ottoman source quoted in al-Mulk 1993 - 8: 308) according to Ibn Arabi

### 6-1-6 The hexagrams:

The hexagonal shape in many civilizations symbolizes the complete human being or the Prophet who completed his conditions, so it was apparent as his interior, so the length of the sides of the triangle is equal to the ray of the center in it.

As for its manifestation in existence, it is apparent and known, as many flowers have a hexagonal shape, as well as the wonder of the beehive how its forms are regular.

The six-pointed star bears the symbol (Hebron), as the two triangles that permeate each other, but it was developed mainly to alert the issue of ways to God, where it must end from the human triangle at a point: It is the head heading up to be pervaded by mercy or

divine giving represented in the second triangle, whose base is open to the sky and its lower head is heading to the point, which is like roots and like the eye in the human being who achieves annihilation (the point of the human triangle). Table (6) presents the Characteristics of cosmic architecture derived from the Islamic religion.

**Table (6):** Characteristics of cosmic architecture derived from the Islamic religion(researcher)

<b>Characteristics of cosmic architecture</b>				
<b>The hub Universal</b>	<b>Symbolism</b>	<b>Guidance</b>	<b>The spirit</b>	<b>The Design includes Engineering</b>
<p>It is the concept that reflects the deep communication and spiritual interaction between buildings, spaces, and the universe as a whole.</p> <p>Symbolism is the prevailing way to read cosmic ideas in architectural forms. Symbols are used to express supernatural or spiritual realms, reflecting respect and appreciation for the entire universe and the forces of nature. The symbols used in cosmic urban design include spiritual and religious symbols that express the relationship between humans and the universe, such as stars, the sun, the moon, and sacred geometric shapes.</p> <p>The meaning goes far beyond what is understood by the direction of the building turning its face. In Islam before modernity, guidance took on a cosmic significance, as it was directed towards the sacred</p> <p>It is the feeling towards something. Architecture is the vessel that contains the reflections of society, its values, and its culture; it is a repository of events throughout history. Architecture is based on constants and variables; the former relates to spiritual aspects (content), while the latter pertains to material aspects (form).</p>		<p>Locations are chosen and buildings are oriented based on alignment with astronomical or stellar events, such as the directions of the sun and stars at specific times of the year, adding</p>		<b>Dimensions</b>
		<b>Building orientation</b>		<p>It is about manipulating dimensions and scales according to what the architect envisions and imagines, in accordance with the principles of geometry.</p>
				<b>Concentric configuration</b>
				<p>Concentric installation in all architectural designs placed around a fixed center.</p>
				<b>Line Installation</b>
		<p>It is a variation of the concentric structure that includes repetition. Duplicating a centrally ordered unit results in a linear configuration.</p>		

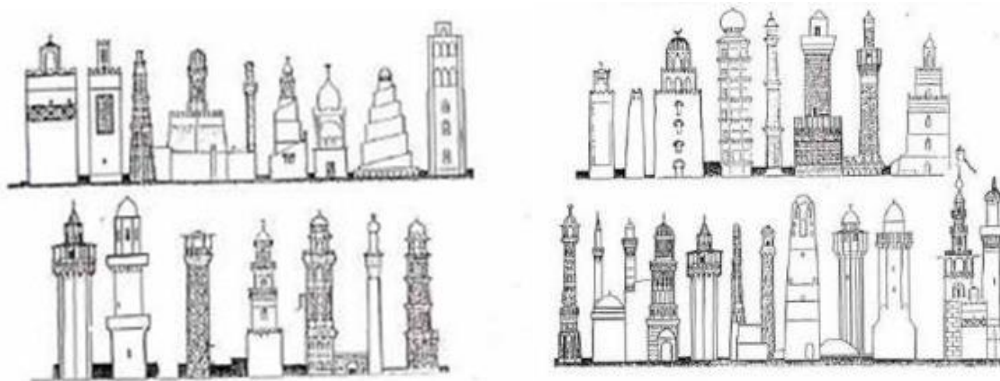
**7- Studying the main elements (characteristics) of Islamic architecture from the concept of cosmic architecture:**

**7-1 Minarets:**

The minaret is one of the oldest elements of Islamic architecture. It is a tiered structure or tower with small windows and a closed staircase.

Since the eleventh century, the primary function of the minaret has been to call the muezzin to prayer for Muslims from a high point five times a day. Later, it was used as a lighthouse to illuminate the mosque at night, which is why it is also referred to as a lighthouse. Some mosques are equipped with more than one minaret, indicating a tradition established by the ruling sultan.

If we look at it in general, we find it ascending in a progressive manner, and it itself points to the sky upwards towards the absolute, which is a faith-based discourse directed towards God. It is also "ascending spiritual signals from the sky to the center of the universe."



**Figure (7):** Various models The use of minarets in the Islamic world expresses the unity of the One God

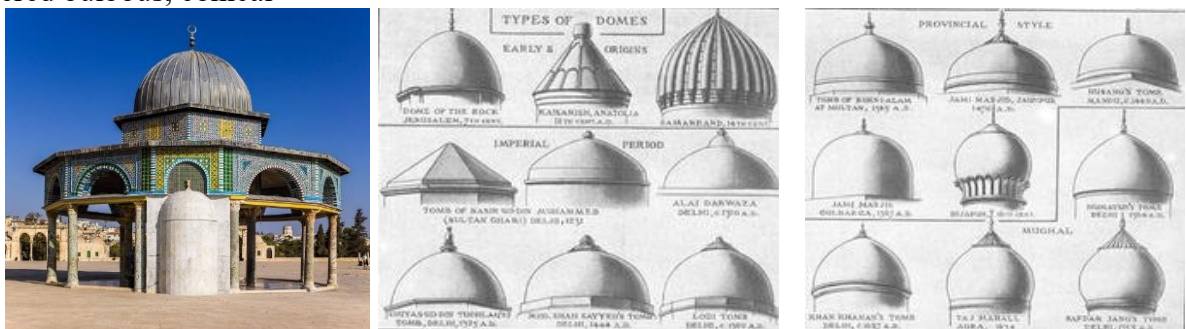
### 7-2 Dome:

The dome symbolizes the sky.

The Muslim architect was able to create a beautiful unity between these two elements, which differ in form, distinguishing the mosque and providing a balance that is pleasing to the eye. Both rise above the building and contribute to shaping the image of the mosque imprinted on the sky.

The dome symbolizes half of the universe, which is the sky, complemented by the mosque's sanctuary that represents the other half of the cosmic sphere. The Dome of the Rock, a place of worship in Jerusalem dating back to the seventh century, is considered the first Islamic structure to feature this architectural element.

Inspired by Byzantine designs, the octagonal-shaped building rises during the sixteenth century. as shown in Figure (8). It is a round or spherical shape, and the height of its space increases from the inside, and the domes are built of bricks, mud, stone, reinforced concrete, or iron, and the domes take multiple forms, including Complete spherical. Tapered bulbous, conical



**Figure (8):** Sleep Various examples of domes in the Islamic world symbolize the sky(19)

### 7-3 Mashrabiyas:

Mashrabiya is: windows made of woodturning, behind them, can see the street and not vice versa, and the screens were not only overlooking the street, but were located in the house from the inside, to enable the owners of the house to cover up while the guests were present, and this indicates the keenness of those in the house to adhere to the limits of Islamic law, and to protect the privacy and sanctity of the family, and the mashrabiya is the air conditioners of old houses. <sup>(18)</sup>

The climatic function is a remedy for the hot climate environment in Islamic countries; it reduces the amount of sunlight that passes through, causing it to refract. Light enters through the existing openings, allowing for control over its passage. The mashrabiya also regulate the quantity of air flow, its humidity, and its speed inside the home.

. Figure (9) shows the mashrabiya in the Islamic world.



Figure(9): The mashrabiya in the Islamic world symbolizes privacy

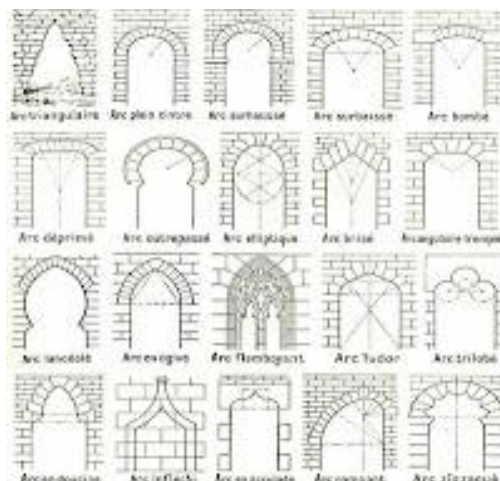
### 7-4 Contracts:

Contracts: It is the built arch that connects two parties and tightens them.

The types of contracts. The contracts have several types, including The oak: a semicircle with two centers as the signifier of the contract, and there are several types of contracts.

Forms of contracts, contracts took several forms, including: First: semicircular. Second: sharp head from two arcs centered inside the nodes, from which several forms of nodes branch out

The importance of the contract lies in the fact that it has liberated the architecture from the constraints represented by the measurements of wood and the weights of stones and put an end to the breadth and height of the entrances and openings in addition to the aesthetic and splendor it <sup>(20)</sup>. Figure (10) shows Contracts in the Islamic world.

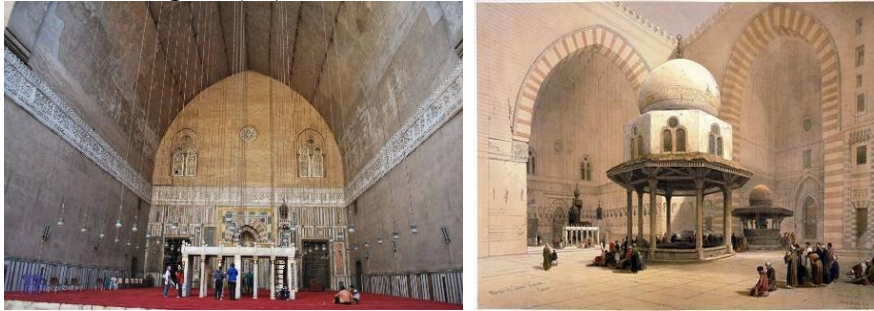


**Figure (10):** Contracts in the world Islamic / contracts of the Prophet's Mosque

### 7-5 Iwan:

It is a hall with only three walls and a ceiling above it, while the fourth side is open to allow fresh air and sunlight to enter. The hall features many columns and other elements of Islamic architecture. The Arabs were familiar with the iwān before the advent of Islam, and it was later used in many Islamic buildings.

as shown in Figure (11).

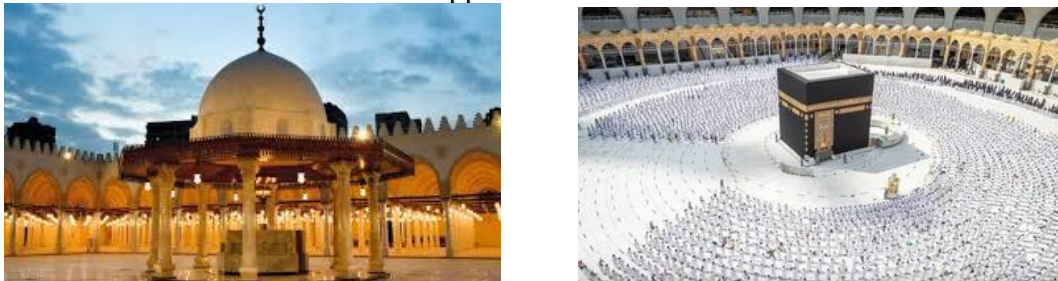


**Figure (11):** "Iwan al-Qibla" at A School Sultan Hassan Ali

### 7-6 The courtyard:

The courtyard is the open area that is in the middle of some buildings, and one of the most famous examples of it is the courtyard of the Kaaba, which contains the honored Kaaba in the Sacred Mosque.

It is widely used in many buildings across many Arab and Islamic countries. This element adds a distinctive beauty to the structure and provides suitable spaces for rest, relaxation, and direct communication for worshippers with ALLAH. <sup>(21)</sup>

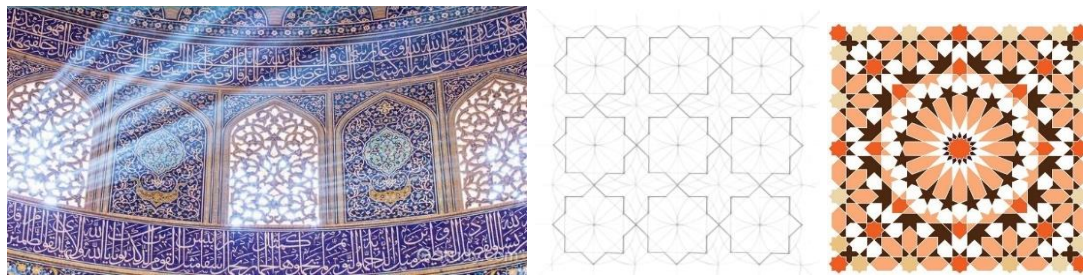


**Figure (12):** Courtyard of Amr Ibn Al-Aas Mosque / Kaaba courtyard

### 7-7 The Motifs:

The types of decorations varied, including decorative art, which depended on engraving and decoration. Plant or foliar art, which depends on drawing the leaves of plants and flowers in an elaborate creative style. The art of engineering drawing, which depends on drawing circles, triangles, and stars overlapping with each other in a sophisticated aesthetic style. The art of Arabic calligraphy Arabs and Muslims were distinguished by calligraphic art, as Arabic calligraphy varied in many types, including Naskh, Ruq'a, Kufic, and others

It is subject to strict laws controlled by the straightness of lines and the refraction of angles in different proportions. This type reflects the issue of actions in the world of beauty, in the sense that they manifest the law of divine action into existence so that it follows: the divine "command" in the world of existence, which is strict and direct laws concerned with establishing the cosmic Sunnah as a cause, or in Qur'anic expression. <sup>(22)</sup>



**Figure (13):** Dome from the inside combines floral motifs and Arabic calligraphy / geometric motifs

**8- Study examples that illustrate the concepts of cosmic architecture in Islamic times and their influence on the principles of the Islamic religion. Case study (mosques):**

The architecture of mosques in Islam was simple, without much cost, and without elements that lead to awe, but tranquility and tranquility, and this expresses the nature of Islam as a religion that does not endorse a mediation between the slave and his God. The spirituality of architecture in the mosque was demonstrated "through the movement brought about by the movement of the square into an octagon and then into a sphere, which, according to Ibn Sina, expresses the divine perfection and the world".

Afif Al-Bahnasi says: "The believer in the mosque is an object observed to aspire to divine transcendence, interacting with the escalation of the verses of the mosque's architecture, from the minaret to the dome, and to the puppets of heaven and decorations, and the believer reaches his integration with architectural signs to visualize connotations that go beyond signs and drawings" <sup>(16)</sup>.

In the beginning, the mosque was not covered; there was nothing to obstruct the worshippers' view of the sky. Then it evolved, and the mosque acquired a roof to protect the worshippers from the heat of the sun and the changing weather conditions. <sup>(17)</sup>

But the architect was careful not to completely block the sky from the eyes of the worshippers, so he divided the space into two halves: one half is covered, which is the prayer area, and the other is the open courtyard that is exposed to the sky. He tried to compensate the worshippers for this separation by placing a dome on the ceiling near the qibla, symbolizing the sky. And the edges of the walls surrounding the courtyard are adorned with small windows or niches, which are adjacent shapes with their heads pointing upwards, suggesting a connection between the earth and the sky. <sup>(23)</sup>

**8-1 The era of the Messenger of God:**

The Prophet Muhammad, peace be upon him, built the Prophet's Mosque in Medina. This mosque was simple, in line with the spirit of Islam and the principles and foundations of construction in Islam.

The mosque was square, and its central courtyard was open, with no roof over it. Its four sides were covered, and the covered area of the wall adjacent to the qibla was larger than the others.

The importance of having an open courtyard in the center of the mosque for lighting and ventilation. . Figure (14) shows the old/modern plan of the Prophet's Mosque.



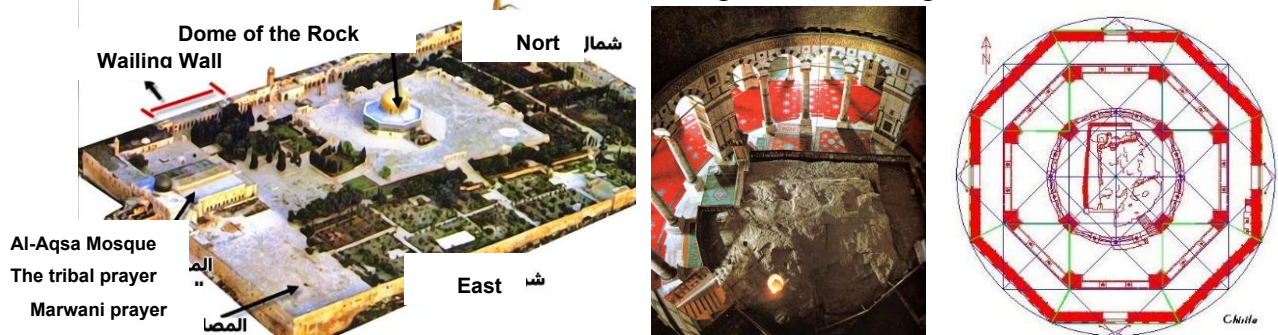
**Figure (14):** The old/modern plan of the Prophet's Mosque

### 8-2 The era of the Umayyad Caliphate:

**Dome of the Rock Mosque:** It is considered one of the most important and creative monuments of the Umayyads, and it is a verse in beauty and architectural prowess, and it was built by Abdul Malik bin Marwan in the year (72 AH).

The Dome of the Rock is an octagonal structure with four doors, and inside it is another valuation based on cylindrical supports and columns, inside which is a circle with the "honorable rock" in the middle from which the Prophet Muhammad limped to heaven on the journey of Isra and Mi'raj<sup>(24)</sup> as shown in Figure (15).

It is noted for its exaggeration in decoration, and elegance in drawing aesthetic forms.



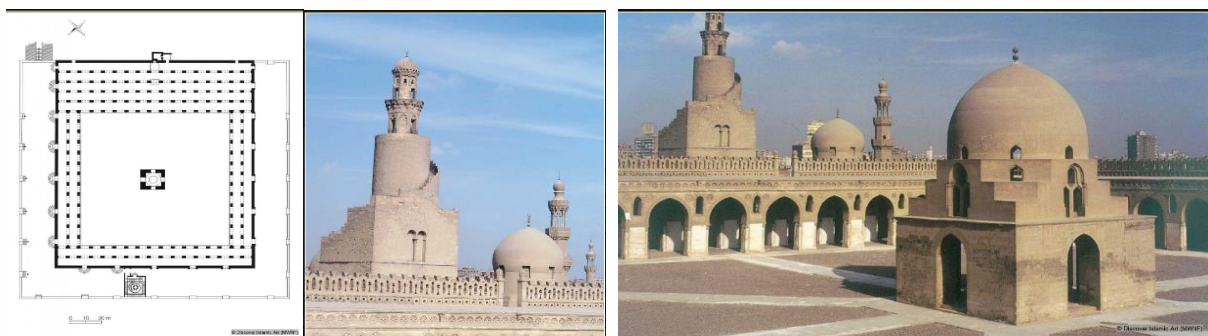
**Figure (15):** The plan of Al-Aqsa Mosque and the Dome of the Rock / the honorable rock to which the Prophet Muhammad (peace and blessings of God be upon him) ascended.

### 8-3 The era of the Abbasid Caliphate:

**Ibn Tulun Mosque:** was built by Ibn Tulun in the city of Al-Qata'i, which he constructed on the plateau of Jabal Yashkur.

The mosque consists of a minaret, around which there is a square courtyard in the center measuring 92 meters on each side, with a fountain in the middle. It is an open courtyard surrounded by four covered porticoes supported by a network of columns. On three sides, there are extensions surrounding it from the outside, except for the qibla wall, which was adjacent to the governor's house established by Ibn Tulun.<sup>(25)</sup>

Figure (16) Shows the horizontal projection plan of Ibn Tulun Mosque / internal courtyard/minaret.



**Figure (16):** The horizontal projection plan of Ibn Tulun Mosque / internal courtyard/minaret

### 8-4 Architecture in Andalusia and the Maghreb:

The ascetics and Sufis who were with interdepends and reunites in Morocco had their views on extravagance and luxury in construction, which led to moderation in construction after it had reached a great degree of extravagance and luxury in construction and decoration.

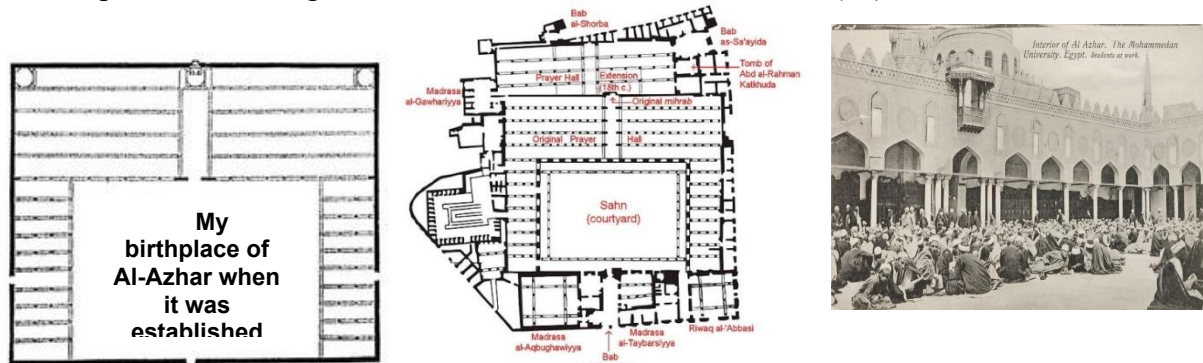
**The Great Mosque of Cordoba:** It was built by Abdul Rahman Al-Dakhil in Cordoba at the time of its settlement, and then many modifications were made to it, and the total area of the building - including the walls - includes an almost quadrilateral shape, and is

divided into two sectors from north to south that are approximately equal to each other, and the height of the mosque is nine meters, based on thin columns, carrying others smaller than them, linked by overlapping arches above each other <sup>(26)</sup>. Figure (17) shows The horizontal projection plan of a mosque Cordoba / 3D model of the mosque.



Figure(17): The horizontal projection plan of a mosque Cordoba / 3D model of the mosque  
**8-5 Fatimid era:**

**Al-Azhar Mosque:** The area of the first Al-Azhar Mosque, which was built by the Fatimid leader Jawhar Al-Sicilian by order of the Fatimid Caliph Al-Mu'izz Li-Din Allah, is close to half of its current area, and many increases have been added to it at different times until it reached its current design, and in the middle of it is an open courtyard surrounded by four arcades, the largest of which is the qibla portico, and the mosque does not have a minaret dating back to the Fatimid era, the current minarets are attributed to Sultan Qaitbay and Sultan Al-Ghoury, and Prince Abdul Rahman Katkhuda Al-Othmani, one of the princes of the eighteenth century AD as shown in Figure (18),<sup>(27)</sup>.



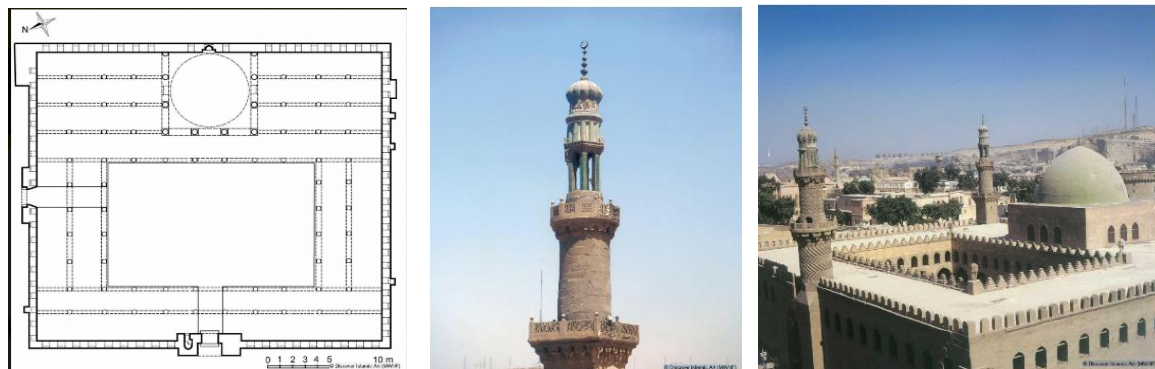
Figure(18): The horizontal projection plan of Al-Azhar Mosque at its inception / current horizontal projection / internal courtyard of the mosque

**8-6 Mamluk era:**

The era of the Mamluk state is divided into two eras, the Bahri Mamluk state and the Circassian Mamluk state.

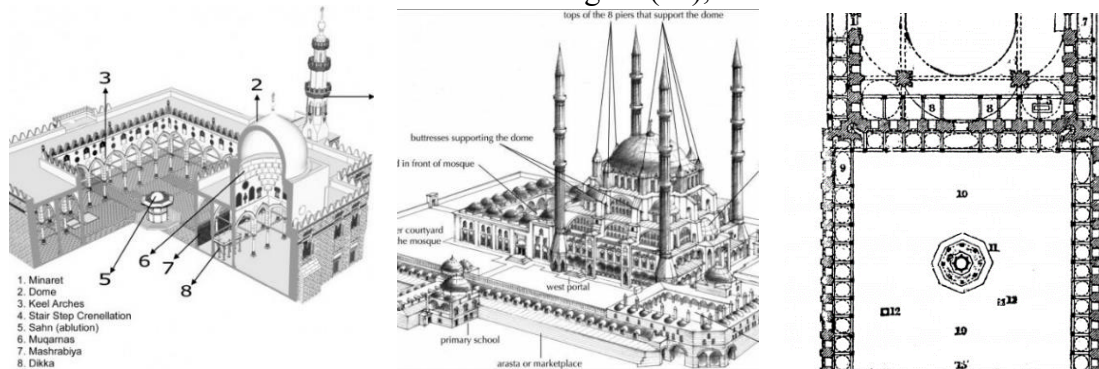
**Al-Nasser Qalawun Mosque in the Citadel:** This mosque is square and consists of a courtyard surrounded by four arcades and a qibla portico, consisting of four naves, and the other arcades each consists of only two tiles, while the dome above the mihrab occupies three square tiles, and the façade is simply topped by a row of windows with pointed arches, and the mosque has two prominent entrances from the façade<sup>(28)</sup>.





**Figure(19):** The horizontal projection plan of Nasser Qalawun Mosque/minaret/mosque  
**8-7 The era of the Ottoman Caliphate:**

**Muhammad Ali Mosque in Cairo:** this was built by Muhammad Ali in the mountain castle in (1236 AH) in the style of the Sultan Ahmed Mosque in Astana in Turkey, and it is characterized by the accuracy of construction, the beauty of decoration, and the large number of domes and minarets as shown in Figure (20), <sup>(29)</sup>.



**Figure (20):** The horizontal projection plan of Muhammad Ali Mosque / three-dimensional perspective / three-dimensional perspective sector

The horizontal layout consists of a rectangle divided into two squares: one part on the eastern side and the other on the western side.

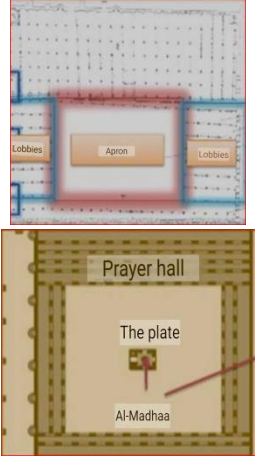
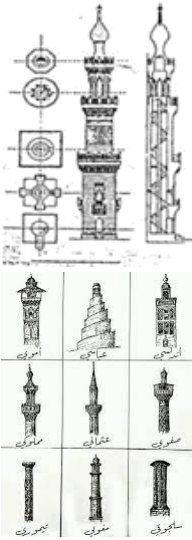
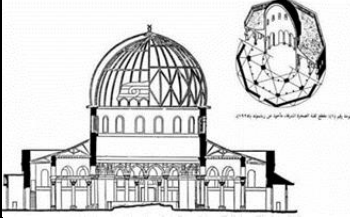
The eastern part is the prayer house, with an interior side length of 41 meters, and it features a dome with a diameter of 21 meters and a height of 52 meters above the building's floor level.


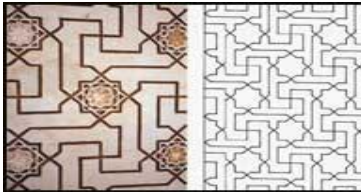
The dome is supported by four large arches that rest on four large square pillars. Surrounding the dome are four semi-domes.

**8-8 The most important features and expressions of architecture in the Islamic era to extract the intellectual framework for cosmic architecture:**

From the analysis of examples, we find that there are general constants that control the shape of the building in the Islamic era that formed the principles and ideas of cosmic architecture and an attempt to understand the spiritual potential in architecture by interpreting the symbolism of the units and the distinctive architectural elements of architecture in the Islamic era. Table (7) shows The intellectual framework of cosmic architecture.

**Table (7):** The intellectual framework of cosmic architecture(researcher)

		<b>The intellectual framework of cosmic architecture</b>	<b>material</b>	<b>The spirit</b>		
<b>Architecture in the era of the Islamic State (characteristics)</b>	<b>Horizontal projection</b>	<p>The horizontal projection depends on the square in the design, as it consists of four sides, either square or rectangular in the middle of an unroofed square dish to give a sense of psychological comfort and direct communication with God and climatic treatment to humidify the air.</p>	 <p><b>Analysis of the horizontal projection</b>  <b>Amr Ibn Al-Aas Mosque/Ahmed Ibn Tulun Mosque</b></p>	<p><b>Quadrature scale</b></p> <p><b>Stone wood water (Almeida)</b></p>	<b>Direct communication with God</b>	
	<b>Minaret</b>	<p>Graded upwards in ascending form, they themselves point to heaven upwards toward the Absolute, a discourse of faith addressed to God, and they are "ascending spiritual signals of heaven to the center of the universe."</p>	 <p><b>Minaret analysis</b></p>	<p><b>The transition from square to circle/ hexagon</b></p> <p><b>Stone</b></p>		<b>Cultural significance to delivering a signal</b>
	<b>Dome</b>	<p>The dome symbolizes half of the universe, which is the sky, complemented by the mosque's sanctuary that represents the other half of the universe.</p>		<p><b>The transition from hexagon/octagon to circle</b></p>		

		<b>Analysis of horizontal projection / vertical sector (Dome of the Rock)</b>	<b>Stone wood</b>	
<b>Decorations</b>	Plant or paper art, which depends on drawing the leaves of plants and flowers Engineering drawing, which depends on drawing circles, triangles, and stars overlapping / Arabic calligraphy Arabic calligraphy varied for many types, including Naskh, Ruqa, and Kufic.	 <p><b>Geometric decorations</b></p>  <p><b>Arabic calligraphy decorations</b></p>	<b>Straight Lines/ broken</b>	<b>Symbolism Principles of the Islamic</b>

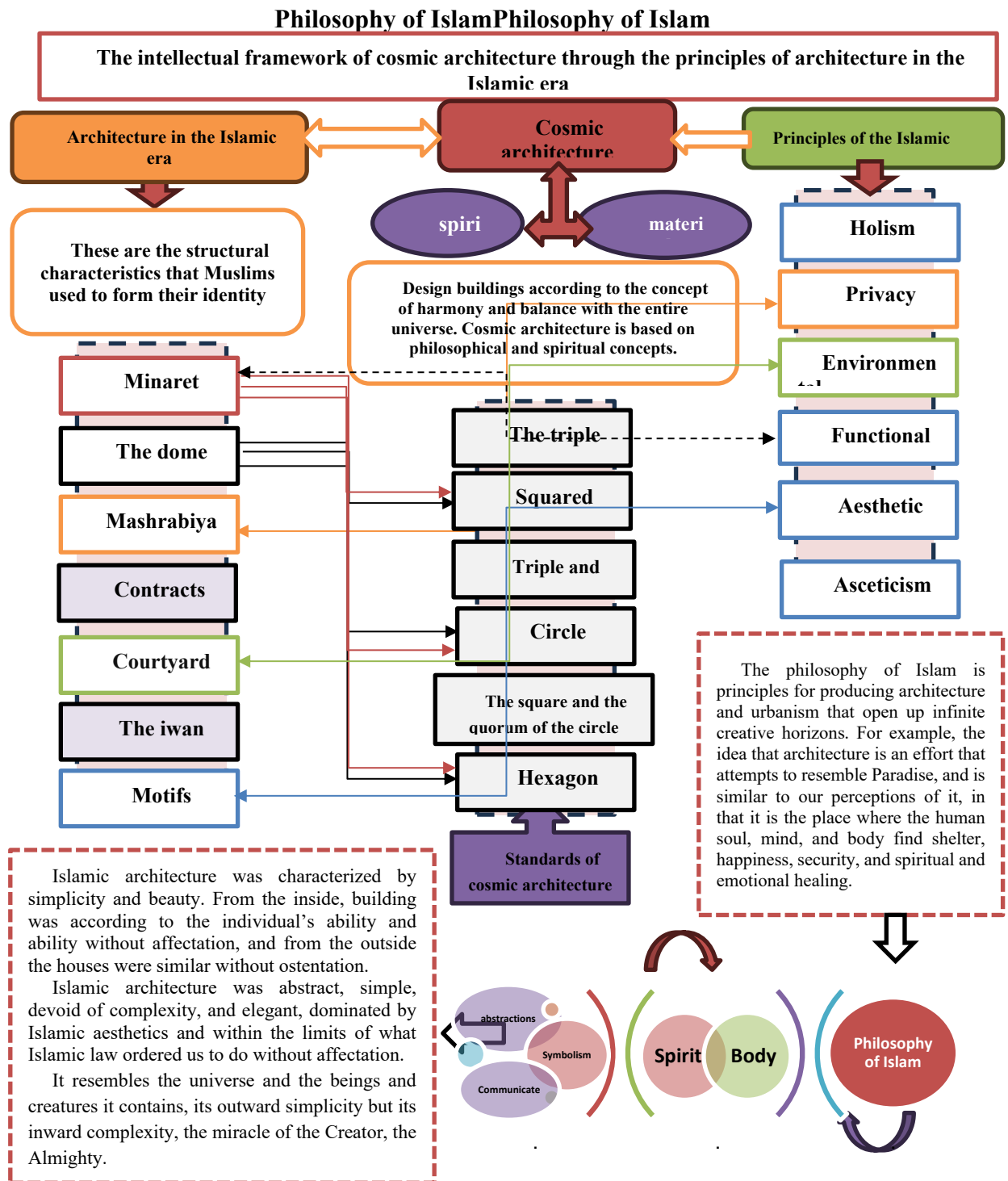
- Islamic architecture in mosques is considered a manifestation of the intellectual framework of universal architecture, as it combines function, meaning, and beauty. And it creates a spiritual atmosphere that inspires humility and contemplation.

**The embodiment of cosmic ideas in Islamic architecture is manifested through:**

- **The domes:** they symbolize the sky and Almighty God.
- **The mihrab:** it refers to the qibla and the direction of prayer. The importance of directing the Qibla towards the Sacred Kaaba is a symbol of the unity of Muslims and their orientation towards God.
- The pulpit is used for preaching and spreading knowledge.
- **The squares:** They provide ample spaces for gathering, praying, and direct communication with God.
- **Plant and geometric decorations :**express unity and divine perfection. About faith in God and the universe.
- The intellectual framework of cosmic architecture in the Islamic era for mosques embodies the interaction of religious and philosophical thought with architectural creativity. This conceptual framework can be summarized through the following points:
  - **Symbolism:** Mosques are places for worship and contemplation, and they express spiritual and unifying values. Designs often include symbolic elements such as the qibla (direction of Mecca), the prayer pulpit, and the prayer niche, all aimed at guiding the faithful and enhancing their spiritual experience.
  - **Balance and Harmony:** Architecture embodies balance and harmony in design. It relies on the principles of geometric engineering and the proportions that are reflected in the design. This balance is considered an embodiment of the concept of cosmic order and harmony that reflects divine unity.
  - **Abstraction and Ornamentation:** The design focuses on abstraction in the decorations, steering away from the pictorial representation of people or animals. Geometric and botanical patterns are used to reflect divine perfection and to enhance the focus on spirituality rather than material appearances.

- **The relationship between the interior and exterior:** mosques reflect an interest in the design of both internal and external spaces. The vast courtyards, majestic columns, arched ceilings, and grand entrances all create an environment characterized by tranquility and serenity, allowing the faithful to fully immerse themselves in worship.
- **The impact of culture and geography:** architecture is influenced by different cultures and interacts with them. It stands out in construction, design, and decoration techniques. In different regions of the Islamic world, a diversity of architectural styles emerges that reflects the interaction between Islamic thought and other cultural patterns.
- **The sacred space:** the architectural design of mosques contributes to the creation of a sacred environment that reflects the connection to the heavens and the universe. The designs are characterized by a focus on universal directions such as the Qibla, reflecting a connection with the spiritual and global world.

These factors form the intellectual framework of cosmic architecture in the Islamic era, reflecting how architectural design can embody religious and philosophical concepts, creating an environment that enhances spirituality and connection with divine dimensions.



**Figure (21):** The intellectual framework of cosmic architecture derived from the principles of the Islamic religion

## **9- Research results and recommendations:**

### **9-1- Results:**

1. The researchers confirmed the existence of cosmic architecture in the various cities of Islam because the principles and concepts on which it was built and produced are one principle that are general concepts emanating from true Islam and its teachings.
2. The early Muslim architects' understanding of Islamic purposes and principles, resulted in their similarity in the content of the design, with the great diversity of forms and solutions used to achieve these purposes and objectives, despite the different environments, climates, and building materials.
3. The decline of civilization and the influence of architects by Western architectural theories, and the absence of the impact of religious principles and values (Islamic) for their products, so architecture became an abstract reproduction of architectural elements without discussing their suitability to the needs of societies and became an architectural block (material) without a soul and here disappeared cosmic architecture in its most comprehensive concept, which combines matter and spirit.
4. Architectural models are based on geometry based on sacred golden proportions (cosmic architecture). And that it has its origin rooted in divine truths (knowledge of the truth, love of beauty, will of good). These truths were manifested in the manifestations of the universe, nature, and all creatures, which God Almighty made wise, and showed His power, greatness, and miracles.
5. The architectural details were manifested in the manifestations of the universe and the nature that God made wise, to be the bearer of gloss and verses indicating its greatness and miracles, revealing with evidence and apparent evidence the true purposes of Islamic architecture in all its variations, and in a way that indicates its reliance on the unity and comprehensiveness of the divine command, leading to the statement of the relationship between architecture with its tight rules and metaphysical spiritual knowledge.

### **9-2- Recommendations:**

1. Study the many aspects of human perception levels of facts. These cognitive levels are overlooked by the Arab world today according to what it has received from modern Western knowledge, which focuses entirely on the material level and sensory knowledge, devoid of all religious and spiritual dimensions of knowledge. Where the research seeks to clarify these levels and distinguish between them to be criteria and foundations can be based on.
2. The research recommends the importance of understanding and contemplating the provisions of religion and its etiquette as understood by previous Muslim architects and translated through cities and facilities, and to devise rules for architecture to suit our reality, in which materials, techniques, methods, and needs have evolved, by following their example with the approach, not the product.
3. The necessity of educating architects about the importance of the need for architectural jurisprudence that suits our time and the needs of people and at the same time disciplined by controls that achieve the combination of matter and spirit.
4. The necessity of directing researchers to take the foundations on which Islamic architecture of various kinds was based within this sacred meaning. It should not be dealt with and researched based on the modern perspective of geometry, which is devoid of all its basic implications and original meanings.
5. The research recommends the importance of studying some natural cosmic manifestations and their relationship to lineage and deriving critical criteria for the theory of cosmic architecture derived from Islamic thought by analyzing the material aspects and determining its symbolism and religious and spiritual background.

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\*1- Abu al-Walid Muhammad ibn Ahmad ibn Muhammad ibn Ahmad ibn Ahmad ibn Rushd al-Andalusi, known as Ibn Rushd, the grandson of an Andalusian Muslim philosopher. He studied jurisprudence, fundamentals, medicine, mathematics, astronomy and philosophy, and excelled in the science of disagreement, practiced medicine and took over the district of Cordoba.

\*2- Brothers of Safa and Khalan Al-Wafa are a group of Muslim philosophers from the people of the third century AH and the tenth century AD in Basra united to reconcile between Islamic beliefs and well-known philosophical facts, influenced by the Ikhwan al-Safa philosophy Greek, Persian and Indian and they take from each doctrine party was their idea of the origin of the universe starts from God and then to the mind and then to the soul and then to the first matter and then bodies and astronomers and elements and minerals and plants and animals.

\*3- Muhammad ibn Ali ibn Muhammad ibn Arabi al-Hatimi al-Tai al-Andalusi, known as Muhyiddin ibn Arabi, one of the most famous Sufis whose followers and other Sufis nicknamed him the "Grand Sheikh", and therefore the Akbari Sufi order is attributed to him. He was born in Murcia, Andalusia, in the month of Ramadan in the year 558 AH corresponding to 1164 AD, two years before the death of Sheikh Abdul Qadir Al-Jilani. He died in Damascus in 638 AH corresponding to 1240 AD. He was buried at the foot of Mount Qasioun.

He is a spiritual scholar of Andalusian Muslims, poet and philosopher, whose work has become significant even outside the Arab world. His works are more than 800, but only 100 remain. His teachings in the field of cosmology have also become of great importance in several parts of the Islamic world.

\*4- Abu 'Abd al-Rahman al-Khalil ibn Ahmad ibn 'Amr ibn Tamim al-Farahidi al-Azdi al-Yahmadi al-Basri known as al-Farahidi Al-Farahidi was well versed in astronomy, mathematics, Islamic law, music theory and Islamic hadiths.