

The Architectural-Astronomical Relations as one of the ancient Egyptian Civilization's Philosophies in Design

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Abstract

It is clear through the observation of many buildings of ancient civilizations that there are many astronomical relationships, and it became clear from the study that it was one of the design philosophies of most of the civilizations of the ancient world, especially as it was related to religious philosophy and that the cosmic bodies that the buildings were directed to represent the gods of these civilizations such as Sun, Moon, and stars.

Keywords:

Archeoastronomy, Architecture design Philosophy, Architectural- Astronomical relations

Introduction

Most of the civilizations of the ancient world were established on the banks of rivers, where they knew stability and shifted from grazing to agriculture. This prompted them to make permanent residences. From here, stability and research in nature began for the forces in the universe to worship them, and these became the deities, and religion began to be formulated in its various forms

Ancient Egyptian architecture is one of the most important and greatest civilizations known to history, which arose because of the gathering of people on the banks of the Nile River Valley, which was the beginning of the emergence of the Egyptian society with its laws, traditions, and architecture that will be addressed in the research. Or astronomical relationships, where we find many buildings, especially temples, and even some cities that have astronomical directions for the sun, the moon, or some star.

Hence the ancient world civilization can be described as those periods that witnessed the formation of human groups and building with clear architectural and civilized features, especially since they were based on studied and systematic sciences and philosophies, and we can study them and follow their approaches which compatible in our current time to take benefits from them.



Figure 1 Various pictures of ancient world civilizations

(1) Definition of ancient world civilizations

Some believe that perhaps what caught the attention of the first human being was his observation of groups of other living beings and how they live in groups and their living in group advantages, which helped him to realize the necessity of his presence in groups as well, so that each group became individuals with social, religious and cultural ties, and they built their "own Architecture" According to their culture and ideologies, which forming their civilizations which considered as one of the ancient world civilizations, and we can introduce ancient world from several definitions which put by historians as:

The periods which contained human society and its parts, William McGaughey

Wel durant's definition was that the ancient world is the period times which the beginnings of ancient civilizations emerged, imprinting their intellectual features on the monuments and features of architecture, and they became the heritage material that proves their existence

The Four Old-World River Valley Cultures



Figure 2 A map showing the locations of the rivers on whose banks the civilizations of the ancient world were based

(2) Stages of the ancient world Civilizations

Historians divided the ancient world civilizations into two phases:

- 1- The first stage: the Prehistoric era
- 2- the second stage: the era of ancient civilizations

The first stage: the Prehistoric era

It is the period in which primitive cultures appeared during which man tried to transform from primitiveness to civilization, as he worked on contemplating nature and creating the universe to satisfy his instincts, and the ruler of whole life in this stage was fearing from the mothers' gods, which represented in the natural phenomena that worshiped to feel their strength and desire to please them to avoid harming them such as (sun – stars – Earth – some animals – Totem) then the worship that of human gods and the spirits of ancestors and other acts of worship that he sanctified after that for his reasons, and the architecture of this stage was represented in simple altars and structures on which sacrifices are made and religious rites and rituals are practiced on them.

The second stage the era of ancient civilizations

It is the period which is the beginning of the rise of civilizations and quest for advancement and images of civilization and the transformation from dark thought to enlightened civilized thought, and the transformation of the people of this era from a primitive person working in agriculture, hunting, or grazing only to (Egyptian architect – Babylon Astronomer – Hebrew prophet – Persian Ruler – Greek Poet – Indian Saint – Chinese sage), also beliefs and religions turned from being primitive and natural only, to enter the element of religion with rituals specific to the belief and peoples differed at the time, some of them accepted beliefs through prophets and saints to confirm and establish the thought of the heavenly religion, and others turned their totemic deities into symbols or metaphysical gods, And it is the targeted stage in this paper especially the ancient Egyptian civilization.

(3) The Constituent features of any civilization

First people: People are the most important components of any civilization since there cannot be civilization without people, they are the most important material component of civilization

Second: The state or the ruling regime

The conditions of life dictated the existence of a political system and a ruler to protect the members of society from oppression and greed and to protect the rights of people and land which necessitated the existence of enactment of laws and the authority to implement the law.

Third: culture and literature

It is one of the important distinguishing elements of civilization as it is transmitted and developed from

generation to generation, and it is known as "social heritage "for example "handicrafts- foods – tools – clothes- symbols-language)

Fourth: Reading and writing

Knowing reading and writing has the greatest impact on the formation and development of civilization and it is helped in the dissemination of science, culture, and civilization and even contributed to its preservation for successive generations

Fifth: religion

- Religion is one of the most important elements that define and give the characteristics of society for the functions it offers for example:
- Regulating social and moral behavior in society
- Giving meaning and purpose to life
- Provide psychological peace
- Enhancing and strengthening the means of social solidarity and encouraging charitable work
- Provide answers to existential questions about God, life, and the universe

Sixth: Technologies and technological advances (Scientific knowledge)

- Technology or technological progress is the means that man has advised to facilitate his life and to enable him to do things that he was not in his primitiveness and with hands only to do, so the need was to make tools and build dams to control floods and rivers, develop irrigation systems, build fortifications and defensive buildings and so on

Seventh: Arts and Architecture

Architecture and arts are among the most important components of civilization, as they are built historical records that document and record everything that these civilizations have reached

(4) Stages of civilizations of the ancient world

After establishing the structure of History as science which documenting and confirms its truth with the emerged other sciences whose studies are concerned with man and his life events that he went through during his civilizational journey, including (Archeology- Mythology- Studies of the genesis and origins of human race and theories through cosmology and anthropology) the scholars enabled to divide the stages of civilizations of the ancient world into two parts:

Part one: Pre-Religious civilizations

The civilizations of the east, where the first countries were established in the east, extended over vast areas from Egypt to China and included the southern part of Asia and the northeast of Africa, this region includes a group of five fertile valleys which are (the Nile valley in

- **The state and the political system**

The king who was called later pharaoh ruled absolute, appointing senior officials dismissing rulers, imposing taxes, sending armies to neighboring countries, ETC, and also ruling without courts to support his influence and they concluded that they considered him one of the Gods, and the main categories of the state were three:

- 1- The royal or ruling family
- 2- The public that undertakes, irrigation and agriculture work
- 3- The army was a militia made up of factions equipped by tribes and Ethiopian volunteers.

- **Religion:** Data are indicating that the Egyptian religion was divided into an agricultural folk religion with its legends and ceremonies and is linked to some extent with the official religion and the master of god "Amun" the sun god, and his worship was the main worship in Egypt, and also the worship of ISIS and Osiris gods of the plant kingdom, and one of the legends says about them that they are the gods of barley and wheat, also the human worship was like the pharaoh himself, and he considered his image as the image of the sun, and they considered that the pharaoh after his death united with the god Osiris and this contributed to the sanctification of the pharaoh and the ruling family, and temples were actively contributing to the consolidation of royal power.

- **Reading and Writing:** the well-known writing was the hieroglyphic writing and it was expressed by some sacred images the language formed from about 70 signs or letters and it was the basis of the Egyptian writing, they wrote on stone, wood, cloths, and papyrus, the ancient Egyptian language is one of the branches of the language called Afro-Asian, and it is also was one of the languages of ancient near east.

- **Culture and Literature:** we find many magical inscriptions spread in the country, which were used by priests in great temples especially funerary temples, in burial rites and expressing ideas of the afterlife different fees.

- **Techniques and scientific knowledge:** the Egyptians knew arithmetic, numbers and surface areas geometry was also developed, they also know astronomy and astronomers used to study the sky and make lists of stars according to their gathering, the Egyptian calendar was "solar Calendar" so they monitored the movement of the sun and considered the emergence of the star of Xerus "Cyrus" as the starting point and with it, the

floods begin and they monitored the recurrence of this, the phenomenon is every 365 days and therefore these were considered the days of the year and medicine in Egypt made remarkable progress as well as mummification as physiological sciences appeared.

- **Arts and Architecture:** the architecture of the ancient Egyptian civilization can be divided into two periods, (the pre-dynastic civilization and the dynastic civilization) and also the pre-dynastic civilization is divided also into two parts:

- 1- The civilization of lower Egypt including the civilization of (Marmara -Omari - Fayoum - Maadi)
- 2- The civilization of Upper Egypt including the Nakada civilization - North of Luxor - Badari and Tasa)

As for the arts in the ancient empire, it is developed and we can see that from sculptures, spread and represented burial scenes and magical writings which secure the dead after death in his second life, and in the middle empire we saw the carving, engraving, and statuary were perfected and frescoes depicting scenes from daily life, portraits or battle scenes appeared, and in the modern empire, we find a large number of wooden and stone statues were found in the tombs and possessions of the modern and middle empire, which represent slaves plowmen, shepherds craftsmen and warriors and they are meticulous in skill and workmanship. They also found mirrors, chests, inlaid furniture, perfume boxes, plates, and utensils, all of which were made of gold, silver, ivory, ebony, bronze, and glass. The stage they received high training and had a great deal of technical expertise p. 151 - The art of architecture at this stage was huge tombs and pyramids for kings and terraces of masters and was used by columns on the shapes of plants. A very precise and perfect property.

Religion philosophy in Ancient Egyptian Civilization

Egyptian religion sees that in the beginning there was nothing but just a dark eternal ocean from which the sun god (Re) emerged with a self-powered in it, as himself was the god "Atom" paired with him and from him, self-created the first pair of gods (Shu-the god of air) and (Tefnut - the god of dew), and from them was born (Geb - the god of the earth) and (Nut - the god of the sky) and the offspring of their marriage was born (Isis - Osiris - set - Nephthys) and from all above was the holy ninth of Ain shams and this was the Egyptian view of the creation process by "Ra" which appears in several imaged (at dawn in the form of khybera - at noon in the form of a - at sunset in the form of an atom) as it has other names and forms.

And then Egyptian deities abounded and exceeded 2000 idols and female idols, including foreign deities where each city or village had its gods as every family also had

its god and the defeat of the family or city was a defeat for the god and the victory of the city in the war was considered a victory, honor, and glorification of it are god.



Figure 5 Pictures showing the gods of the ancient Egyptian civilization

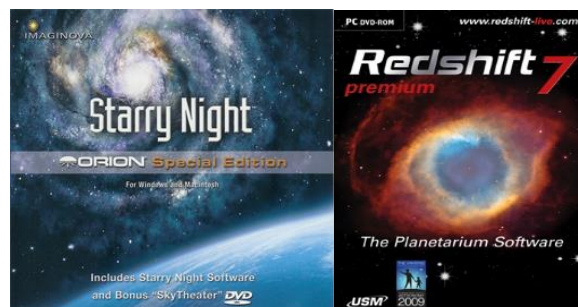


Figure 6 Pictures of the different astronomical programs used in the study

It's clear from all above that the religious belief in ancient Egyptian civilization was concerned with the universe and the cosmic assets and was also representing the first deities such as the sun, moon, stars, and the sky

And the ancient Egyptians left many temples, most of which still preserved most of their form and components, and they are divided into two types:

- ١- The funerary temples and consist of a basin surrounded by a wall surrounded by corridors and this basin ends in the hall of columns and thus to the place of worship and there are also several rooms for priests and storerooms are attached to the temple.
- ٢- The temples of the gods are distinguished by their immensity and the splendor of the sculptures (Statues and Columns) and architecture and the most important these temples are:

- Temple of Horus – Edfu – 227 BC
- Temple of Amun – Karnak 2716 BC
- Temple of First Thutmus 1530 BC
- Temple of Amun – Luxor
- Temple of Abu Simbel – Aswan
- Temple of Khnsou – Karnak – 1200 BC
- Temple of Hathor – dendara
- Temple of Isis - - 332 BC

And through studies carried out on several ancient Egyptian temples using Starry night Software on (about 25 temples), and show how and to where was the main axe orientation of these temples either sun, moon, or stars and present the results graphically as shown:

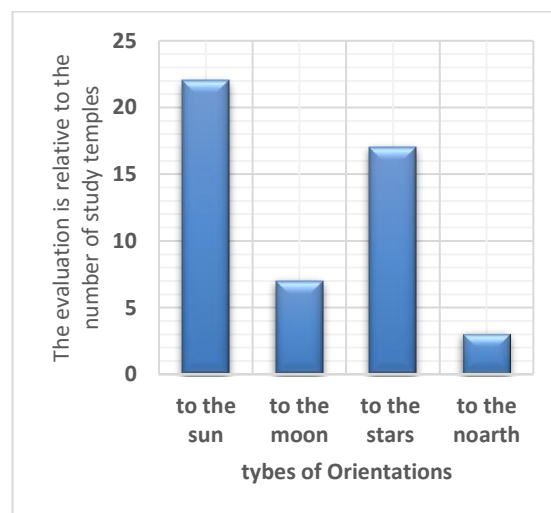


Figure 7A table showing the ratios of the directions with respect to the sun, moon, and stars, and the original directions



Figure 8 Map showing the orientation of the Temple of Hatshepsut and the Temple of Mentuhotep II to the mid-winter sunrise

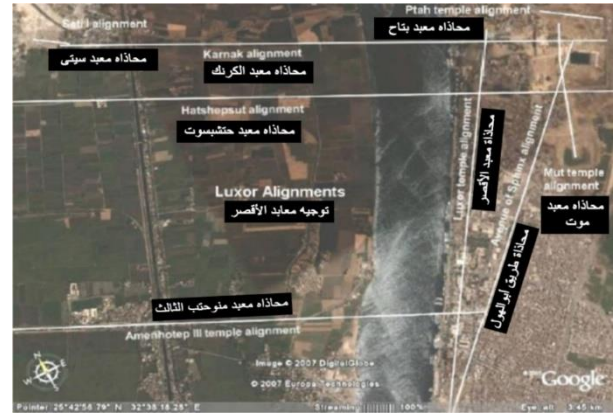


Figure 11A map showing the orientation of some temples in Luxor, east and west of the Nile, towards the sun and the moon



Figure 9 Map showing the orientation of the Temple of Ptah towards the rising of the moon and the Temple of Amun towards the sunrise, as well as the Temple of Hatshepsut towards the sun



Figure 12 Map showing the orientation of the Temple of Mut towards the moon and the Temple of Amun towards the sun



Figure 10 Map showing the orientation of the Temple of Ramses III to the Cassiopeia Star Cluster



Figure 13 Map showing the orientation of the Temple of Seti in Al-Gurna towards the rising of the moon



Figure 14 Map showing the orientation of the Temple of Ramses II towards the sunrise

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Conclusion

Through the studies and analyzes that were carried out based on astronomical studies carried out by the scientist (Muslim Shaltut - Belmont), where they monitored many of the directions of the Egyptian temples, it became clear that the association of these temples with the sun, moon and stars was the result of a religious need as these bodies represented their gods, for example, the sun was Representing the god Ra and the moon he represented the god Khonsu and the stars represented other gods as they believed that the king after his death turns into a star in the sky and so he was worshiped after his death or that he catches up with the greater god Amun or Amun Ra and changed this religious and astronomical culture look The ancient Egyptian man of architecture and the universe and made the directions and proportions of the temples change to serve this religious and philosophical idea and it was one of their architectural philosophies

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