

A Case Studies of Ancient Egyptian Architecture

Dr. Mir Mohammad Azad, Abhik Barua

Abstract— Ancient Egyptian architecture is the architecture of ancient Egypt, one of the most influential civilizations throughout history, which developed a vast array of diverse structures and great architectural monuments along the Nile, among the largest and most famous of which are the Great Pyramid of Giza and the Great Sphinx of Giza.

Index Terms— Egyptian Architecture, Ancient Egypt

I. INTRODUCTION

Due to the scarcity of wood, the two predominant building materials used in ancient Egypt were sun-baked mud brick and stone, mainly limestone, but also sandstone and granite in considerable quantities. From the Old Kingdom onward, stone was generally reserved for tombs and temples, while bricks were used even for royal palaces, fortresses, the walls of temple precincts and towns, and for subsidiary buildings in temple complexes. The core of the pyramids came from stone quarried in the area already while the limestone, now eroded away, that was used to face the pyramids came from the other side of the Nile River and had to be quarried, ferried across, and cut during the dry season before they could be pulled into place on the pyramid.



Figure shows Drawings of the types of the architectural capitals specific for the Ancient Egyptian civilization

Ancient Egyptian houses were made out of mud collected from the Nile River. It was placed in molds and left to dry in the hot sun to harden for use in construction. Many Egyptian towns have disappeared because they were situated near the

Dr Mir Mohammad Azad, Golden State University, Master of Computer Application, 2006 from Bharath Institute of Higher Education and Research Deemed University (Bharath University) and Bachelor of Computer Application, 2004, Bangalore University, India. He is pursuing Bachelor of Law (LL.B) from National University of Bangladesh.

Abhik Barua was born in Village – North Guzara; Post Office – Rughnandan; Police Station - Raozan; District - Chittagong, Bangladesh on 15th January, 1980. He received MA in Interior Design, 2012 and BA [Hon's] in Interior Architecture, 2007 from Shanto Mariam university of Creative Technology, Uttara, Dhaka, Bangladesh.

cultivated area of the Nile Valley and were flooded as the river bed slowly rose during the millennia, or the mud bricks of which they were built were used by peasants as fertilizer. Others are inaccessible, new buildings having been erected on ancient ones. Fortunately, the dry, hot climate of Egypt preserved some mud brick structures. Examples include the village Deir al-Madinah, the Middle Kingdom town at Kahun, and the fortresses at Buhen and Mirgissa. Also, many temples and tombs have survived because they were built on high ground unaffected by the Nile flood and were constructed of stone. Thus, our understanding of ancient Egyptian architecture is based mainly on religious monuments, massive structures characterized by thick, sloping walls with few openings, possibly echoing a method of construction used to obtain stability in mud walls. In a similar manner, the incised and flatly modeled surface adornment of the stone buildings may have derived from mud wall ornamentation. Although the use of the arch was developed during the fourth dynasty, all monumental buildings are post and lintel constructions, with flat roofs constructed of huge stone blocks supported by the external walls and the closely spaced columns. Exterior and interior walls, as well as the columns and piers, were covered with hieroglyphic and pictorial frescoes and carvings painted in brilliant colors. Many motifs of Egyptian ornamentation are symbolic, such as the scarab, or sacred beetle, the solar disk, and the vulture. Other common motifs include palm leaves, the papyrus plant, and the buds and flowers of the lotus. Hieroglyphs were inscribed for decorative purposes as well as to record historic events or spells. In addition, these pictorial frescoes and carvings allow us to understand how the Ancient Egyptians lived, statuses, wars that were fought and their beliefs. This was especially true when exploring the tombs of Ancient Egyptian officials in recent years. Ancient Egyptian temples were aligned with astronomically significant events, such as solstices and equinoxes, requiring precise measurements at the moment of the particular event. Measurements at the most significant temples may have been ceremonially undertaken by the Pharaoh himself.

II. GIZA PYRAMID ARCHITECTURE

The Giza Necropolis stands on the Giza Plateau, on the outskirts of Cairo, Egypt. This complex of ancient monuments is located some 8 kilometers (5 mi) inland into the desert from



A Case Studies of Ancient Egyptian Architecture

the old town of Giza on the Nile, some 20 kilometers (12 mi) southwest of Cairo city center. This Ancient Egyptian necropolis consists of the Pyramid of Khufu (also known as the Great Pyramid and the Pyramid of Cheops), the somewhat smaller Pyramid of Khafre (or Kephren/Chefren), and the relatively modest-sized Pyramid of Menkaure (or Mykerinus/Mycerinus), along with a number of smaller satellite edifices, known as "queens" pyramids, and the Great Sphinx. The pyramids, which were built in the Fourth Dynasty, testify to the power of the pharaonic religion and state.

They were built to serve both as grave sites and also as a way to make their names last forever. The size and simple design show the high skill level of Egyptian design and engineering on a large scale. The Great Pyramid of Giza, which was probably completed c. 2580 BC, is the oldest and largest of the pyramids, and is the only surviving monument of the Seven Wonders of the Ancient World. The pyramid of Khafre is believed to have been completed around 2532 BC, at the end of Khafre's reign. Khafre ambitiously placed his pyramid next to his father's. It is not as tall as his father's pyramid but he was able to give it the impression of appearing taller by building it on a site with a foundation 33 feet higher than his father's. Along with building his pyramid, Chefren commissioned the building of the giant Sphinx as guardian over his tomb. The face of a human, possibly a depiction of the pharaoh, on a lion's body was seen as a symbol of divinity among the Greeks fifteen hundred years later. The Great Sphinx is carved out of huge blocks of sandstone and stands about sixty-five feet tall. Menkaure's pyramid dates to circa 2490 BC and stands 213 feet high making it the smallest of the Great Pyramids. Popular culture leads people to believe that Pyramids are highly confusing, with many tunnels within the pyramid to create confusion for grave robbers. This is not true. The shafts of pyramids are quite simple, mostly leading directly to the tomb. The immense size of the pyramids attracted robbers to the wealth that lay inside which caused the tombs to be robbed relatively soon after the tomb was sealed in some cases. However, there are sometimes additional tunnels, but these were used for the builders to understand how far they could dig the tomb into the crust of the Earth. Also, it is popular thought that due to grave robbers, future Kings were buried in the Valley of the Kings to help keep them hidden. This is also false, as the Pyramid construction continued for many Dynasties, just on a smaller scale. Finally, the pyramid construction was stopped due to economic factors, not theft. It is widely believed that the pyramids were able to be constructed due to slave labor. Some scholars believe that they were essentially built by farmers during the off season. Either way, the pyramids represent a lifestyle of the nobles that could not exist without the presence of slave labor.

III. KARNAK AND LUXOR TEMPLE

The temple complex of Karnak is located on the banks of the River Nile some 2.5 kilometers (1.5 mi) north of Luxor. It consists of four main parts, the Precinct of Amon-Re, the Precinct of Montu, the Precinct of Mut and the Temple of Amenhotep IV (dismantled), as well as a few smaller temples and sanctuaries located outside the enclosing walls of the four main parts, and several avenues of ram-headed sphinxes connecting the Precinct of Mut, the Precinct of Amon-Re and

Luxor Temple. The key difference between Karnak and most of the other temples and sites in Egypt is the length of time over which it was developed and used. Construction work began in the 16th century BC. Approximately 30 pharaohs contributed to the buildings, enabling it to reach a size, complexity and diversity not seen elsewhere.



The hypostyle hall of Karnak Temple

Few of the individual features of Karnak are unique, but the size and number of features is overwhelming.

The Luxor Temple is a huge ancient Egyptian temple complex located on the east bank of the River Nile in the city today known as Luxor (ancient Thebes). Construction work on the temple began during the reign of Amenhotep III in the 14th century BC. Horemheb and Tutankhamun added columns, statues, and friezes – and Akhenaten had earlier obliterated his father's cartouches and installed a shrine to the Aten – but the only major expansion effort took place under Ramesses II some 100 years after the first stones were put in place. Luxor is thus unique among the main Egyptian temple complexes in having only two pharaohs leave their mark on its architectural structure.



Luxor Temple, from the east bank of the Nile

The temple proper begins with the 24 metre (79 ft) high First Pylon, built by Ramesses II. The pylon was decorated with scenes of Ramesses's military triumphs (particularly the Battle of Qadesh); later pharaohs, particularly those of the Nubian and Ethiopian dynasties, also recorded their victories there. This main entrance to the temple complex was originally flanked by six colossal statues of Ramesses – four seated, and two standing – but only two (both seated) have

survived. Modern visitors can also see a 25 metre (82 ft) tall pink granite obelisk: this one of a matching pair until 1835, when the other one was taken to Paris where it now stands in the centre of the Place de la Concorde.

Through the pylon gateway leads into a peristyle courtyard, also built by Ramesses II. This area, and the pylon, were built at an oblique angle to the rest of the temple, presumably to accommodate the three pre-existing barque shrines located in the northwest corner. After the peristyle courtyard comes the processional colonnade built by Amenhotep III – a 100 metre (328 ft) corridor lined by 14 papyrus-capital columns. Friezes on the wall describe the stages in the Opet Festival, from sacrifices at Karnak at the top left, through Amun's arrival at Luxor at the end of that wall, and concluding with his return on the opposite side. The decorations were put in place by Tutankhamun: the boy pharaoh is depicted, but his names have been replaced with those of Horemheb.

Beyond the colonnade is a peristyle courtyard, which also dates back to Amenhotep's original construction. The best preserved columns are on the eastern side, where some traces of original colour can be seen. The southern side of this courtyard is made up of a 36-column hypostyle court that leads into the inner sanctums of the temple, which begin with a dark chamber not achechamber. **Egyptian Revival architecture**

IV. EGYPTIAN REVIVAL ARCHITECTURE

Egyptian Revival is an architectural style that uses the motifs and imagery of ancient Egypt. It is attributed generally to the public awareness of ancient Egyptian monuments generated by Napoleon's conquest of Egypt and Admiral Nelson's defeat of Napoleon at the Battle of the Nile in 1798. Napoleon took a scientific expedition with him to Egypt. Publication of the expedition's work, the *Description de l'Égypte*, began in 1809 and was published as a series through 1826. However, works of art and architecture (such as funerary monuments) in the Egyptian style had been made or built occasionally in Europe and the British Islands since the time of the Renaissance.



Quay in Saint Petersburg, with two sphinxes of Amenhotep III brought from Egypt in 1832

A. Egyptian Revival architecture before Napoleon

The most important example is probably Gian Lorenzo Bernini's obelisk in the Piazza Navona in Rome. Bernini's obelisk influenced the obelisk constructed as a family funeral memorial by Sir Edward Lovatt Pierce for the Allen family at Still organ in Ireland in 1717, one of several Egyptian obelisks erected in Ireland during the early 18th century.

Others may be found at Belan, County Kildare and Dangan, County Meath. The Casteltown Folly in County Kildare is probably the best known, albeit the least Egyptian styled, of these obelisks.



The obelisk in Piazza Navona

Egyptian buildings had also been built as garden follies. The most elaborate was probably the one built by Frederick I, Duke of Württemberg in the gardens of the Château de Montbéliard. It included an Egyptian bridge across which guests walked to reach an island with an Egyptian swing and an elaborate Egyptian "bath house". The building featured a billiards room and a "bagnio". It was designed by the duke's court architect, Jean Baptiste Kleber.

B. Egyptian revival in the wake of Napoleon

An illustration of a small Egyptian temple from William Hosking's chapter on 'Architecture' in the *Encyclopaedia Britannica* (offprint pub. 1832). Hosking was chosen later by the initiators of Abney Park Cemetery to design a pair of similar Temple Lodges for its front entrance.

The facade of the Egyptian Hall in 1815



What was new after the Napoleonic invasion was the sudden increase of the number of works of art and the fact that, for the first time, European buildings began to be built to resemble those of ancient Egypt.

The first of the Egyptian style buildings was a newspaper office. The *Courier*, a London newspaper, built a new office on the Strand in London in 1804. It featured a cavetto (coved) cornice and a pair of Egyptian-looking columns with palm form capitals.

The most important building of the Egyptian revival in France was the Egyptian Temple in the Place des Victories, built as a memorial to generals Desaix and Kleber. The cornerstone was laid on 19 Fructidor Year VIII (September 6, 1800.)

A Case Studies of Ancient Egyptian Architecture

An Egyptian Revival building that can still be seen in Paris is the 1812 Fountain of the Fellah, Rue de Sevres, by François-Jean Braille.

The Egyptian Hall in London, completed in 1812, and the Egyptian Gallery, a private room in the home of connoisseur Thomas Hope (1769-1831) to display his Egyptian antiquities, and illustrated in engravings from his meticulous line drawings in his book *Household Furniture* (1807), were a prime source for the Regency style of British furnishings.

The High gate Cemetery, with its Egyptian Avenue, is an example of the popularity Egyptian style continued to enjoy as funerary architecture.

C. Egyptian revival decorative arts

Egyptian revival decorative arts are a style in Western art, mainly of the early nineteenth century, in which Egyptian motifs were applied to a wide variety of Decorative arts objects.



The "Egyptian" service of Sevres porcelain, designed by Dominique Vivant and given by Napoleon to Czar Alexander I in 1807, on display in the Kuskovo Palace

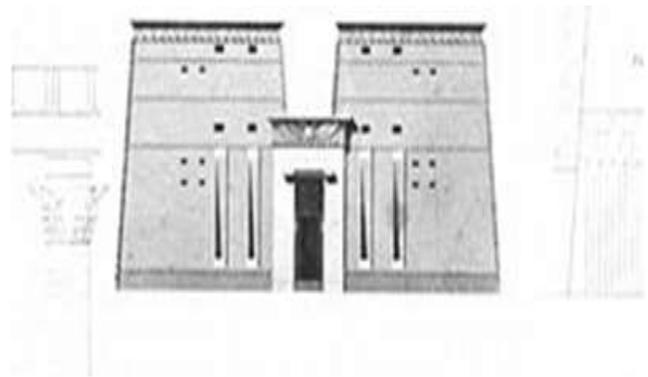
The "Egyptian" service of Sevres porcelain, designed by Dominique Vivant and given by Napoleon to Czar Alexander I in 1807, on display in the Kuskovo Palace.

- Brooch by Tiffany & Co, early 20th century



• Enthusiasm for the artistic style of Ancient Egypt is generally attributed to the excitement over Napoleon's conquest of Egypt and, in Britain, to Admiral Nelson's defeat of Napoleon at the Battle of the Nile in 1798. Napoleon took a scientific expedition with him to Egypt. Publication of the expedition's work, the *Description de l'Égypte*, began in 1809 and came out in a series though 1826, inspiring everything from sofas with Sphinxes for legs to tea sets painted with the pyramids. It was the popularity of the style that was new, Egyptian zing works of art had appeared in scattered

European settings from the time of the Renaissance.



• The Egyptian Gallery, a private room in the home of connoisseur Thomas Hope to display his Egyptian antiquities, and illustrated in engravings from his meticulous line drawings in his *Household Furniture and Interior Decoration* (1807), were a prime source for the Regency style in British furnishings. His book *Household Furniture and Interior Decoration*, inspired a generation of fashionable English homeowners to install parlor suites featuring chairs, tables and sofas in shapes that evoked the objects depicted on Egyptian tomb paintings.

Later discoveries prompted small further revivals.

V. ANCIENT EGYPT HOUSES

For the most part ancient Egypt houses were constructed using materials that were handy and plentiful. This meant that the design of houses in ancient Egypt varied little, even among the wealthy. This makes it very easy to imagine what Egyptian houses look like.



Remains of stone houses

Wood was extremely scarce, almost non-existent in ancient Egypt. The two construction materials that the ancient land of Egypt seemed capable of producing in multitude was sand and papyrus reeds; with some stone quarries. Therefore, for the most part, the majority of ancient Egyptian houses were constructed of mud brick. Ancient muddy houses in Egypt were made by first mixing a compound of mud and straw. The mixture could then be formed into bricks that were allowed to bake and dry under the hot Egyptian sun. While the mud might be plentiful, it was not particularly sturdy. In a very short amount of time, usually just a few years, an ancient Egyptian house constructed of mud brick would begin to deteriorate and crumble. Ancient muddy houses in Egypt

were primarily constructed and lived in by the commoners on the lowest social strata in Egypt, who could afford little else.

In Egypt ancient houses constructed by the wealthy nobles were much different than those built by commoners. Those who could afford to do so built their ancient Egypt house of stone taken from stone quarries. Ancient Egypt houses constructed of stone were much sturdier and solidly built. The wealthy could afford to fill their homes with far more luxuries than poorer families. In Egypt ancient houses built by wealthy families, were likely to contain tiled floors and beautifully painted walls.

While ancient Egypt houses built by commoners and nobles might have differed in many respects, in many others, they were quite similar in order to survive the burning heat of the Egyptian climate as comfortable as possible. Almost all ancient Egypt houses were constructed with a flat roof. Not only did this most likely make the construction process simpler, but the flat roofs also offered a welcome respite from the burning Egyptian sun. Families often lounged, ate and slept on the roofs of ancient Egypt houses.

Another similarity in a typical ancient Egyptian home and houses was the presence of a hearth. Even in wealthy ancient Egypt houses, there was a need for a hearth in order to prepare food. Due to the arid climate of the Egyptian nation, it is not likely the hearth of a house of ancient Egypt, although quite common, would have been needed for heating.

The abundance of furniture was not common in most ancient Egyptian houses, due to the lack of wood. The most common furnishings were three legged stools and chests; even in wealthier Egyptian homes..

VI. ANCIENT EGYPTIAN DÉCOR



Bring the striking, ornate beauty of the ancient world into your home with ancient Egyptian décor. The Egyptians brought many innovations to the world, and their influence on interior design is no different. Find out how these ancient designs can make your home look fresh and up to date

Everyone is familiar with the drama of Egyptian designs from this time period, whether it is through visiting, or seeing photos of, the great Sphinxes or from viewing Egyptian art in museums. The Egyptians are known for their bold, colorful designs, ornate carvings and of course, the intricacy of the patterns and hieroglyphics. Ancient Egyptian décor incorporates all of these elements, bringing the best of Egyptian style to a modern world. One of the easiest ways to introduce ancient Egypt into your interior design scheme is

through accessories. Some common accessories inspired by this culture include:

- Bastet Cat statues/paintings of Bastet cats - Cats were considered to be sacred beings by the ancient Egyptians because they were believed to personify the goddess Bastet. Bastet was thought to be daughter of Ra and the goddess of pleasure and motherhood.

- Ankhs - The ancient Egyptian symbol of life force is often used in jewelry as well as being incorporated into interior design.

- Canopic Jars - Canopic jars were the jars Egyptians used to store the internal organs of the dead that were removed when bodies were mummified. They come in sets of four, representing the four sons of Horus, and each jar is decorated with a different god charged with protecting the organs of the dead so they could be used in the next life. Sound a tad gruesome for your home design? No internal organs involved in modern canopic jar versions - they essentially resemble Egyptian inspired Russian dolls and are exceedingly popular.

- Busts - The Egyptians loved to glorify their leaders and their gods with ornate and exceedingly complex busts, and so these designs have endured in modern Egyptian inspired designs. You can find busts of everyone from Cleopatra and Nefertiti to Bastet cats and the sun god Ra.

- Reliefs - Reliefs featuring both hieroglyphics and depictions of gods and rules are common.

- Mummies - Of course, you can't discuss ancient Egypt without talking about mummies. Representations of mummies are used regularly in Egyptian inspired interior design. These representations can take many different forms, from statues of mummies to reliefs and paintings of mummies and mummification process to sarcophagus statues that open up to reveal a mummy resting inside. Like canopic jars, using mummies in your home décor might sound a little creepy to some readers, but remember that to the ancient Egyptians, death was very much a stepping stone into a different kind of life and was not a tragic event - hence the idea behind the process of mummification.

- Figurines - Like the busts, ancient Egyptians also liked to honor their gods and their leaders with small figurines depicting them in battle or simply in a regal pose.

In terms of colors and materials, ancient Egyptian inspired design tends to be very bold and colorful, with gold, marble, ivory and many varieties of wood being the common material bases.

VII. CONCLUSION

Egyptian Architectural style developed during the Pre-Dynastic Period c. 4000 BC. Religious beliefs of eternal life resulted in an impressive sepulchral architecture layout. Egyptian pyramids are the most outstanding architectural achievement of the world. Temples, Statues, Tombs and monuments are other important Egyptian structures. The Nile valley comprises many large and famous monuments of the world. The Great Pyramid of Khufu, The great Sphinx of Giza, Temple at Luxor, Temple of Giza, Amon, Isis, Horus and Kom Ombo remain as standing examples of Egyptian architecture, rich and diverse. Its style changed in different periods, depending on the prevailing socio-religious conditions.

REFERENCES

- [1] R. G. Blakemore, History of Interior Design and Furniture: From Ancient Egypt to Nineteenth-Century Europe, John Wiley and Sons 1996, p.100
- [2] W. M. Flinders Petrie, Kahun, Gurob, and Hawara, Kegan Paul, Trench, Trübner, and Co., London 1890.
- [3] Charles Gates, Ancient Cities: The Archaeology of Urban Life in the Ancient Near East and Egypt, Greece and Rome, Routledge 2003, p.101
- [4] Dieter Arnold, Byron Esely Shafer Temples of Ancient Egypt, I.B.Tauris, 2005
- [5] "Temples aligned with the stars", New Scientist 2724 (5 Sep. 2009), p. 7;
- [6] J. Belmonte & M. Shaltout, "Keeping Ma'at: an astronomical approach to the orientation of the temples in ancient Egypt", Advances in Space Research (August 2009) doi:10.1016/j.asr.2009.03.033
- [7] Winston, Alan. "An overview of the Giza Plateau in Egypt". Retrieved 26 July 2011.
- [8] Reich, Lawrence S. Cunningham, John J. (2010). Culture and values : a survey of the humanities (7th ed.). Boston, MA: Wadsworth Cengage Learning. ISBN 0-495-56877-5.
- [9] "The 7 Wonders of the Ancient World". Archived from the original on 8 August 2011. Retrieved 26 July 2011.
- [10] Lehner, Mark. "The Pyramid of Khafre". The Complete Pyramids. Archived from the original on 28 July 2011. Retrieved 26 July 2011.
- [11] Reich, Lawrence S. Cunningham, John J. (2010). Culture and values : a survey of the humanities (7th ed.). Boston, MA: Wadsworth Cengage Learning. ISBN 0-495-56877-5.
- [12] "Pyramid of Mankare". National Geographic: Egypt. National Geographic Society. Retrieved 26 July 2011.

AUTHOR'S PROFILE



Dr Mir Mohammad Azad was born in Village – Koror Betka; Post Office – Mirrer Betka; Police Station - Tangail; District - Tangail, Bangladesh on 10th October, 1982. He received PhD in Computer Science, 2008 from Golden State University, Master of Computer Application, 2006 from Bharath Institute of Higher Education and Research Deemed University (Bharath University) and Bachelor of Computer Application, 2004, Bangalore University, India. He is pursuing **Bachelor of Law (LL.B)** from **National University of Bangladesh**. He was working as a **lecturer** and **head of computer science** in various colleges in Bangalore and also worked as an **Assistant professor** and **Vice Principal** in different colleges in Bangalore during the year (2005-2009). He worked as an **Assistant Professor** and **Head of CSE & CSIT** at **Shanto Mariam university of Creative Technology (2010-2014)**. He is having **23** publications in international journal in various countries like UK, USA, FRANCE, KOREA, PAKISTAN, INDIA, GERMAN, and JAPAN. At present he is working as an **Associate Professor**, Department of **Computer Science and Engineering**, Department **Computer Science and Information Technology** in **Shanto Mariam university of Creative Technology**, Uttara, Dhaka, Bangladesh. His areas of interest include Computer Architecture, Architecture, E-commerce, Digital Image processing, Computer Network, Wireless communication, MIS and Law.



Abhik Barua was born in Village – North Guzara; Post Office – Rughnandan; Police Station - Raozan; District - Chittagong, Bangladesh on 15th January, 1980. He received MA in Interior Design, 2012 and BA [Hon's] in Interior Architecture, 2007 from Shanto Mariam university of Creative Technology, Uttara, Dhaka, Bangladesh. At present he is working as a lecturer of Interior Architecture in Shanto Mariam university of Creative Technology, Uttara, Dhaka, Bangladesh.