

Architecture and the Pyramids of Giza

Known as “the Age of the Pyramids,” the Old Kingdom was characterized by revolutionary advancements in architecture.



Figure 1:

The Pyramids of Giza

This view shows all three pyramid structures: the Great Pyramid, the Pyramid of Khafre, and the Pyramid of Menkaure.

- The Old Kingdom (2686 BC - 2182 BC) was a period of political stability and economic prosperity, during which great tombs were built for Egyptian Kings in the form of pyramids.
- The first king to launch a major pyramid building project was King Djoser, who built his famous “Step Pyramid” at Saqqara.
- The Pyramids of Giza are the greatest architectural achievement of the time, and include three pyramid structures and the Great Sphinx monument.
- It would have taken several thousand workers decades to complete just one pyramid. While we know that the stone for the pyramids was quarried, transported and cut from the nearby Nile, we still cannot be sure just how the massive stones were then put into place.
- While stone was generally reserved for tombs and temples, sun-baked mud bricks were used in the construction of Egyptian houses, palaces, fortresses, and town walls.

Note:

Limestone is an abundant rock of marine and freshwater sediments, primarily composed of calcite (CaCO_3). It occurs in a variety of forms, both crystalline and amorphous.

To **quarry** means to obtain (mine) stone from an excavation pit, usually by blasting, cutting, or digging. A **quarry** is a site for mining stone, limestone or slate.

A **sphinx** was a creature with the head of a human and the body of an animal (commonly a lion).

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Figure 2:
The Sphinx of Giza, partially excavated, with two pyramids in background. Albumen print.

The Great Sphinx of Giza is the largest monolith statue in the world, and was believed to have been built for King Khafra during the 4th Dynasty.



Figure 3:
Step Pyramid at Saqqara

Djoser's step pyramid was the first of the great pyramids built during the Old Kingdom in Egypt. Unlike later pyramids, it used a step design that is easily recognized.

The Old Kingdom of Egypt existed from the 3rd through the 6th Dynasties (2686 BC - 2182 BC). A period of political stability and economic prosperity, it is characterized by revolutionary advancements in *royal funerary architecture*. Both Egyptian society and the economy were greatly impacted by the organization of major state-sponsored building projects which focused on building tombs for their kings. These tombs were built in the form of great pyramids, and for this reason, the Old Kingdom is frequently referred to as “the Age of the Pyramids.” The first king to launch a major pyramid building project was King Djoser, who ruled in the 3rd Dynasty. He built his famous “*Step Pyramid*” at *Saqqara*, not far from the capital city of Memphis (near modern-day Cairo) (Figure 2). In the following dynasties, the pyramid design changed from the “step” pyramid to a true pyramid shape as kings continued to build tombs for their kings. Among these, the Pyramids of Giza are considered the greatest architectural achievement of the time.

The Pyramids of Giza

The Pyramids of Giza, also known as the Giza Necropolis, are one of the oldest remaining wonders of the world. The Necropolis includes three pyramid complexes: *the Great Pyramid* (built by King Khufu of the 4th Dynasty); the somewhat smaller *Pyramid of Khafre* (Khufu’s son); and the relatively modest-sized *Pyramid of Menkaure* (Figure 0). The Necropolis also includes several *cemeteries*, a *workers’ village*, an *industrial complex*, and a massive sculpture known as the *Great Sphinx*. The *Great Sphinx* is a limestone statue of a reclining sphinx--a mythical creature with a lion’s body and a human head. It is commonly believed that the head is that of King Khafra, who ruled during the 4th dynasty. It is the largest monolith statue in the world, standing 241 ft long, 63 ft wide, and 66.34 ft high (Figure 1).

We still do not know exactly how the huge and impressive stone monuments were built. Most of the stone for the interior seems to have been quarried immediately to the south of the construction site. The smooth exterior of the pyramid, however, was made of a fine grade of *white limestone* that was quarried from the other side of the Nile River. These exterior blocks had to be carefully cut, transported by river barge to Giza, and dragged up ramps to the construction site. Theorists disagree as to the method by which the stones were then put into place and how possible the method was; it’s also possible that the architects developed their techniques over time.

The sides of all three of the Giza pyramids were astronomically oriented to the north-south and east-west within a small fraction of a degree. To ensure that the pyramid remained symmetrical, the exterior casing stones all had to be equal in height and width. Workers might have marked all the blocks to indicate the angle of the pyramid wall and trimmed the surfaces carefully so that the blocks fit together.

The work of quarrying, moving, setting, and sculpting the huge amount of stone used to build the pyramids might have been accomplished by several thousand skilled workers

and unskilled laborers. Evidence from the tombs indicates that a workforce of 10,000 laborers working in three-month shifts took around 30 years to build a single pyramid.

Domestic Architecture

Due to the scarcity of wood, the predominant building materials used in ancient Egypt were sun-baked *mud-brick* and *stone* (mainly limestone, though sandstone and granite were also used). From the Old Kingdom onward, stone was generally reserved for tombs and temples. Egyptian houses, royal palaces, fortresses, and walls of precincts and towns were made out of mud bricks. Mud was collected from the Nile river, placed in molds and left to dry in the hot sun to harden for use in construction.

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 Ancient Egyptian temples were aligned with astronomically significant events, such as solstices and equinoxes, requiring precise measurements at the moment of the particular event.