

Pyramid Development Continued...

The Pyramid of Khufu

The Great Pyramid or Pyramid of Khufu is the largest of the three pyramids, measuring over 750' on each side and originally stood over 480' high. Stone robbers began disassembling it at some point leaving it at about 450 feet today. Even at this height, it is still more than twice as tall as Zosser's step pyramid. Khufu's pyramid was one of the original Wonders of the World and remained the world's tallest structure until the building of England's Lincoln Cathedral in 1311 AD, over 3,000 years later! The Pyramid of Khufu is an engineering feat even by today's standards. The base is level to within an inch on all sides and the greatest difference in length between the four sides is just two inches! The four corners point precisely to the four cardinal points: north, east, south and west. The circumference of the base is exactly the circumference of a circle whose radius is the height of the pyramid leaving historians to believe the Egyptians understood the value of pi long before the Greeks.

The pyramid itself contains over 2.3 million blocks, averaging 2.5 tons each but some weighing as much as 15 tons. Exactly how the stones were moved and hoisted into place is still debated by historians today. Some people believe a large ramp was used to drag the stones up during construction while others imagine large cranes were used on ascending platforms to raise the blocks up in a stair-step fashion. Regardless of how it was constructed, it was a major feat of engineering and remains one of the most recognizable structures in the world today.

To better appreciate the size of the Great Pyramid, one should realize that to walk around the base alone would be to walk over a half a mile. It is estimated that more stone was used for its construction than for building all of the cathedrals, churches and chapels throughout England since the time of Christ! In fact, if one were to take all of the stone blocks from the Great Pyramid and chop them



The Great Sphinx of Giza in Egypt with the Great Pyramids seen behind it.

down into one-foot cubes laying them end to end, it is estimated that they would wrap the entire way around the coast of Australia – twice.

The Pyramid of Khafre

The Pyramid of Khafre is the second largest of the three and measures 706' on each side. Standing about 448' high it appears taller than the Great Pyramid but was built on a bedrock plateau that began 33' higher. Thus the structure itself is actually shorter. It is assumed that all three pyramids would have originally worn an outer casing of beautiful Tura limestone. But all of that has been removed today, except for a small section at the top of Khafre's Pyramid. Some believe that the top, or capstone, would have been gilded with a thin gold leaf or gold paint. The angle of the overall structure is steeper than that of his father Khufu's Pyramid, requiring fewer stones for its construction.

The Pyramid of Menkaure

The Pyramid of Menkaure is the final and smallest of the three and measures 354' on each side. It originally stood about 215', but today stands around 203' high, or about a quarter of the overall size of its predecessor. However, while Menkaure's pyramid is less impressive, the inner chambers revealed some of the most impressive statue work found in all of ancient Egypt. Menkaure's pyramid is also different in that it appears the lower portions, at least, were faced with a polished red granite and not limestone as is found on the peak of Khafre's Pyramid.

The Great Sphinx

A sphinx is a mythological creature with the body of a lion and the head of a human. This reclining sphinx often called The Great Sphinx, is believed to have been built by Khafre to guard over the burial chambers. Measuring roughly 240' long by 66' high, the Sphinx was carved from a rocky hill, predominantly limestone, that once stood there. There are many stories and legends surrounding the Sphinx, such as the one concerning Napoleon who is said to have blown off the Sphinx's nose (with a cannon ball) during target practice. However, while many theories abound, it is known that several passages lie under the Sphinx that may one day lead to concrete facts as archaeologists pursue new discoveries.



View of the three Great Pyramids at Giza with some smaller structures identified with Menkaure's pyramid in the foreground.

Abraham and the Pyramids

In chapter 10 of Genesis, one may read of God's call to Abraham (then Abram) when he was 75 years old and his and Sarah's (Sarai) subsequent journey into Egypt. This was likely just prior to or during the reign of Khufu (Seneferu's successor). Interestingly, before Khufu, pyramids were not exactly square, level or aligned with the cardinal points of the compass. However, Khufu's pyramid was exactly square, level and perfectly aligned with the four points of the compass – leading scholars to believe that new advances in mathematics and astronomy had suddenly burst onto the scene. Interestingly, the Jewish historian Josephus wrote in c. 93 AD that Abraham: "...communicated to them arithmetic, and delivered to them the science of astronomy; for before Abram came into Egypt they were unacquainted with those parts of learning; for that science came from the Chaldeans into Egypt, and from thence to the Greeks also." However, while Josephus would have known that Abraham was originally from Ur of the Chaldeans, he wrote long before the excavation of Ur (1922-1934 AD) which established the Chaldeans advanced knowledge of astronomy and arithmetic, implying that he had other sources not available to us today. Either way, it is highly probable that it was indeed Abraham, patriarch of the Israelite nation, who shared this knowledge with the Egyptians, indirectly helping to make the pyramids what they are today.

Pyramid Workers - Artisans or Slaves?

Over the years it has been hypothesized that it was Israelite slaves who built the Great Pyramids. However, this assertion does not line up with the Bible or archaeology for the following reasons: First, Exodus 1:11 says the Israelite slaves, "...built for Pharaoh store cities, Pithom and Raamses" and 5:11 discusses the workers having to

make bricks without straw. Exodus does not say anything about pyramids, which were made of stone block. Second, according to Ussher and other Biblical historians, the Great Pyramids were built around the time of Abraham, long before Joseph ever entered Egypt. Third, archaeological digs have unearthed the remains of what appears to be a town for hired workers located directly behind the Pyramid of Khafre. Egyptologists believe this town housed crews of around 30,000 rotating workers. Trial runs have determined that this number of men, working efficiently, could have constructed the Great Pyramid of Khufu in less than 20 years while some believe it to have taken as little as 3-6 years. This theory is based on markings discovered on the base of the Bent Pyramid that reference the 21st year of Seneferu and then about halfway up, more markings referencing the 22nd year of Seneferu. If these dates correspond accurately with construction, then the Bent Pyramid could have been completed in 2-4 years leaving the possibility open for Khufu's completion in 3-6 years. This and other evidence indicates that at least the precision work done on the pyramids was done by skilled laborers, each trained in their craft and not slaves.

Tomb Robbers

Unfortunately, most of the treasures these burial chambers once housed have been stolen over the centuries by tomb robbers. It was not just the structures themselves that were magnificent, but all of the items they contained – essentially everything the Pharaoh's ka would need for the afterlife. These treasure chests, therefore, contained everything from gold jewelry and fine fabrics to thrones, chariots and even ships. The pyramid designers undoubtedly understood attempts would be made to access the inner chambers and did what they could do to deter them via false entrances, massive stone slabs locked into place from above, backfilling passages with rubble and even, it is said, by placing booby traps. All of this has, unfortunately, not been enough to prevent major pillaging and losses to the archaeological record. Ultimately, by the New Kingdom, pharaohs were no longer building pyramids for burial chambers but opting instead for "secret" underground chambers such as those found in the Valley of the Kings.



Reassembled ship from Khufu's tomb (known as the solar barge), now in the Khufu Boat Museum in Giza.