



GIANTS OF GIZA

PHARAOHS KHUFU, KHAFRE, AND MENKAURE BUILT
THEIR MASSIVE TOMBS TO LAST. FOR MORE THAN 4,000
YEARS, THE PYRAMIDS OF GIZA CONTINUE TO AMAZE
WHILE HOLDING ON TO THEIR MANY SECRETS.

JOSÉ MIGUEL PARRA

ORIGINAL SKYSCRAPERS

Menkaure (front), Khafre (middle), and Khufu (the Great Pyramid) tower over sightseers, dwarfing even the sprawl of modern Cairo (far right).

GORDON PRESS





WERNER FORMAN/GTRES

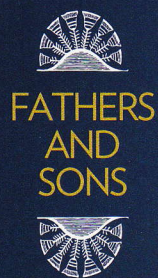
FAMILY TIES

The pharaoh's relatives, such as Nefertabet, Khufu's daughter—depicted on this relief (left) found in her tomb in Giza—were buried beside the sovereign's pyramid.

Amelia Blanford Edwards was one of a stream of European travelers drawn to see the wonders of Egypt at the close of the 19th century. In her 1877 book, *A Thousand Miles Up the Nile*, she writes of the hot drive to the edge of the desert, until “the Great Pyramid, in all its unexpected bulk and majesty, towers close above one’s head . . . The effect is as sudden as it is overwhelming. It shuts out the sky and the horizon. It shuts out all the other Pyramids. It shuts out everything but the sense of awe and wonder.”

Most modern travelers would probably reach for similar words to pinpoint the sublime thrill

of seeing the Pyramids at Giza in person today. They are so iconic, so astonishingly ancient, that it is hard to imagine that 4,600 years ago the plateau where they stand was a desolate, dune-covered wilderness where a scattering of tombs lay under the burning Egyptian sun. Along with the enigmatic Sphinx and other smaller tombs and monuments, Giza has three principal pyramids: Khufu (originally 481 feet high, and sometimes called Cheops, or the Great Pyramid); Khafre (471 feet); and Menkaure (213 feet). Emerging out of the complex dynastic needs of Egypt’s 4th dynasty, they are the triumphant product of one of the most daring and innovative engineering projects the world has ever known.



circa 2550 B.C.

KHUFU, second king of Egypt’s 4th dynasty, begins work on his pyramid. When complete, the massive tomb will measure 481 feet high, the biggest pyramid ever.



circa 2530 B.C.

REDJEDEF, Khufu’s son, holds power for only a few years. He commissions a pyramid north of Giza at Abu Ruwaysh, but the structure is never finished.



circa 2520 B.C.

KHAFRE, another son of Khufu, commissions the second pyramid at Giza. Although it is slightly smaller than Khufu’s, it sits on higher ground, making it look taller.



IN HIS FATHER'S SHADOW

At 471 feet, Khafre's pyramid was originally a little lower than that of his father, Khufu. Its distinctive cap is formed by the white limestone casing, with which all the Giza Pyramids were originally faced.

JOHN FRUMM/GTRES

circa 2490 B.C.

MENKAURE, after succeeding his father, places his pyramid next to Khafre's and his grandfather's. The contents of all three tombs will be looted.



DANITA DELIMONT/AGE FOTOSTOCK

STAIRWAY TO HEAVEN

The step pyramid in Saqqara, south of Giza, was Egypt's first. Built for the 3rd-dynasty pharaoh Djoser in 2650 B.C., the 204-foot structure was built of stone instead of traditional bricks.

The kings of the 4th dynasty ruled Egypt from around 2575 to 2465 B.C. Presiding over the golden age of the Old Kingdom, their center of power was the sophisticated Nile-side city of Memphis, about 15 miles south of Giza. The dynasty's second king, Khufu, ruled during a period of relative peace in Egypt, although the Greek historian Herodotus later depicted him and his son as cruel and proud.

Khufu's architects and engineers embarked on a project that transcends any other structure in the Bronze Age. Its completion utterly transformed the plateau. Khufu had selected it, in part, to distance himself from the magnificent pyramids built by his father, Snefru, in Dahshur, another necropolis near Memphis. Several other factors also made it an ideal site. The high plateau allowed greater visibility for the pyramid. It was near Heliopolis, basis of the cult of the sun god Re. Since there were already some tombs in Giza, the land had already been sanctified and so was fit for a pharaoh's tomb of a stature never seen before, or surpassed since.

After Khufu's death, his son Redjedef ruled for a short time and began work on a tomb in Abu Ruwaysh that was never finished. The next pharaoh, his brother Khafre, built a pyramid—as well as the

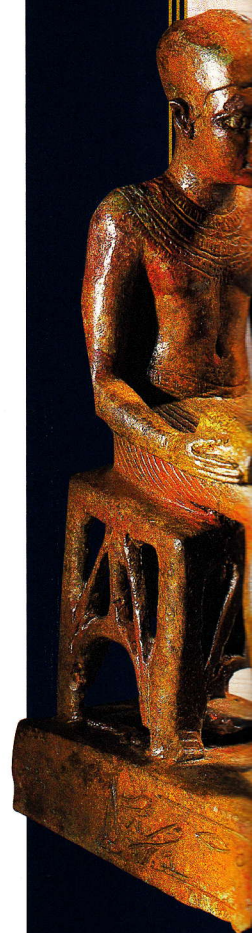
Great Sphinx, some scholars claim—in Giza. The next generation followed the same pattern: Baufre, son of Redjedef, built his tomb outside of Giza, while Menkaure, Khafre's son, built his in Giza.

Each pharaoh who built in Giza did so in accordance with some simple rules that harmoniously ordered the three funerary complexes on the plateau: the facade of Khafre's high temple is aligned with the western face of Khufu's pyramid. And the facade of Menkaure's high temple is aligned with the western face of Khafre's pyramid. At the same time, the imaginary line that roughly joins the southeast corners of the three pyramids points toward the temple of Re in Heliopolis.

Who Built the Pyramids?

Herodotus claimed that construction of the Great Pyramid—today calculated at over six million tons of stone—was carried out using slave labor. It is now known this building was undertaken, in fact, by paid Egyptian laborers. The notion that Egyptian monuments were built by slaves—such as the plight of the Hebrew slaves recounted in the biblical book of Exodus—seems to have had currency in the ancient world.

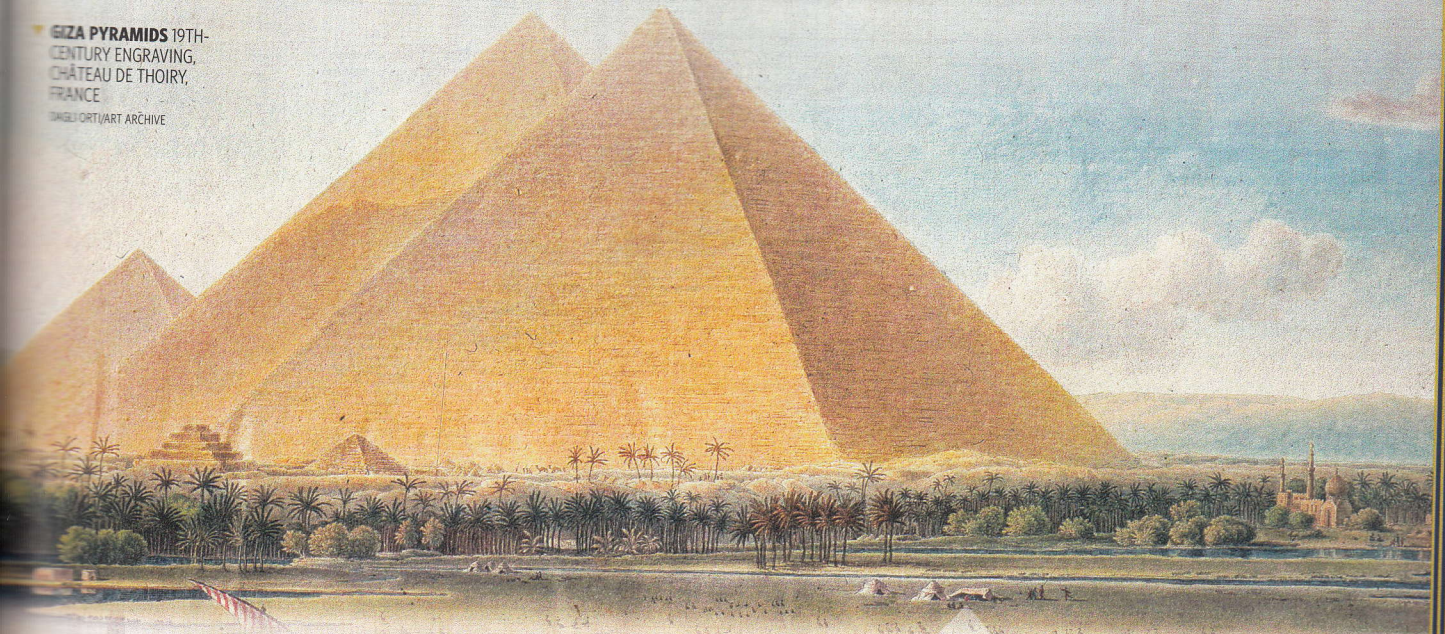
Such colossal building projects would have left some kind of archaeological trace, and so it



THE PHARAOHS' ARCHITECTS

The Old Kingdom pharaohs put their eternal life in the hands of architects gifted with engineering knowledge and vast creativity. Imhotep, a civil servant and mathematician, built the step pyramid as a tomb for his king, Djoser, while Khufu entrusted the Great Pyramid to his nephew, Hemiunu.

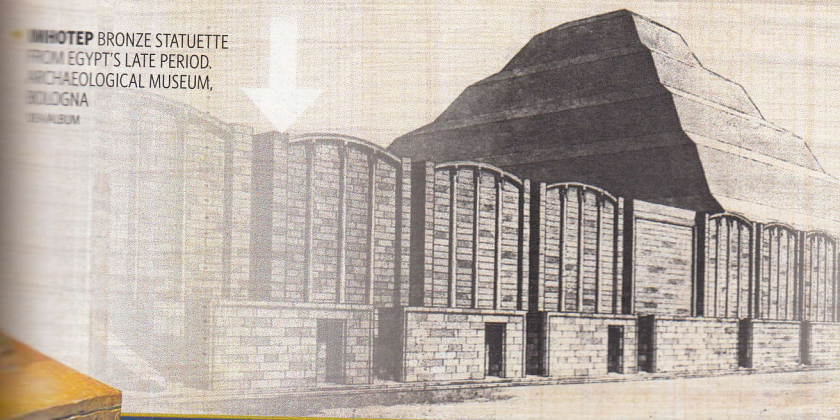
▶ **GIZA PYRAMIDS** 19TH-CENTURY ENGRAVING, CHÂTEAU DE THOIRY, FRANCE
IMAGI/ORTI/ART ARCHIVE



IMHOTEP, THE BUILDER GOD

Imhotep was one of the leading minds of the 3rd dynasty, not only because he was the architect of the first pyramid to be built, the **Saqqara** step pyramid, but because he held senior positions in all areas of Egyptian society: religious, political, economic, and artistic. He also built the pyramid of Djoser's successor, **Sekhemkhet**. He was later deified as the god of medicine throughout Egypt in the Late Period.

▶ **IMHOTEP** BRONZE STATUETTE FROM EGYPT'S LATE PERIOD, ARCHAEOLOGICAL MUSEUM, BOLOGNA
TEHVALBUM

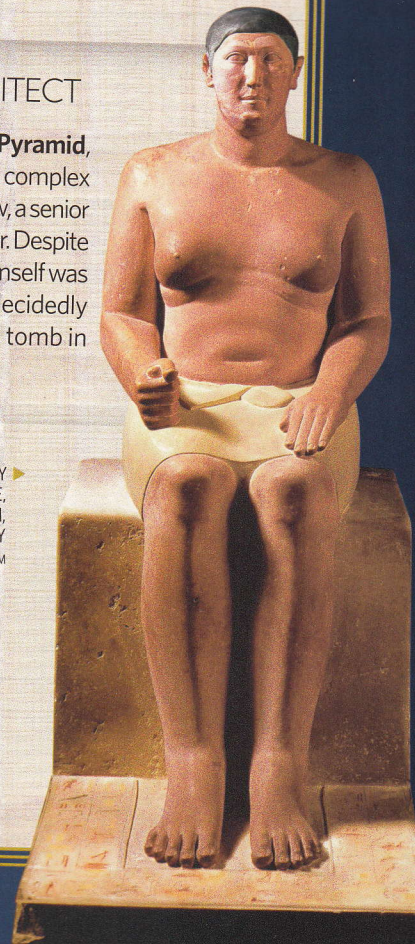


HEMIUNU, THE PORTLY ARCHITECT

It is not known who designed the **Great Pyramid**, but the man responsible for supervising its complex construction was **Hemiunu**, Khufu's nephew, a senior civil servant who acted as the pharaoh's vizier. Despite the mystery surrounding Giza, **Hemiunu** himself was a flesh-and-blood man, as shown by his decidedly lifelike—and fleshy—statue, found in his tomb in Giza's west cemetery.

▶ **HEMIUNU** 4TH-DYNASTY LIMESTONE STATUE, PELIZAEUS-MUSEUM, HILDESHEIM, GERMANY
DEA/ALBUM

▶ **THE STEP PYRAMID** STANDS OVER PHARAOH DJOSER'S FUNERARY COMPLEX IN SAQQARA.
BRIDGEMAN/ACI





C. SAPP/GETTY IMAGES

PATRIARCH'S PYRAMID

Snefru, Khufu's father, built several failed pyramids, such as this one in Meidum, before managing to construct one with smooth sides at Dahshur, near Memphis.

was amid huge excitement that in 1999 archaeologists started to uncover the village housing of the workmen who built the two later pyramids of Khafre and Menkaure. This followed the discovery of the workers' cemetery in 1990, which was divided into upper and lower parts according to the rank of the deceased.

Both village and cemetery offer archaeologists a mine of valuable data about the conditions in which the two smaller pyramids of Giza were built—data that, in turn, gives a working hypothesis as to the construction of the pyramid of Khufu. A study of workers' bones shows that the work was backbreaking—sometimes literally. Yet these laborers, far from being slaves, were privileged civil servants, and beneficiaries of a number of enviable perks.

Analyses show they enjoyed a protein-rich diet, practically unheard of among the rest of the Nile Valley's inhabitants. Evidence that broken limbs and fractures had been set correctly strongly suggests adequate medical care was provided. One of the skeletons in the cemetery had a leg amputated so precisely that experts estimate that the patient lived for some 20 years after the operation. The discovery of the workers' village has also enabled archaeologists to

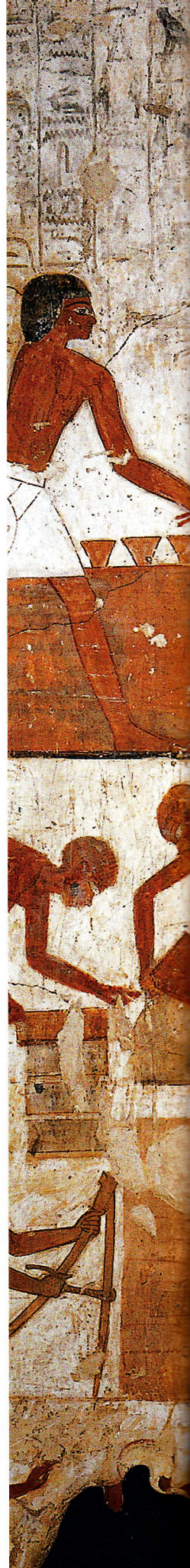
debunk another of Herodotus's somewhat fanciful claims: that 100,000 people built Khufu's pyramid. In fact, the village seems to have had a maximum capacity of 20,000 people, of whom perhaps half were dedicated to construction at any one time.

Putting It Together

The daunting challenges of building such a structure, and efficiently marshaling thousands of workers, required meticulous planning. Scribes set about calculating the number of blocks that would be required to build a pyramid with the selected gradient—in the case of Khufu, the angle of the sides with the ground is 52 degrees—the kind of mathematical problem recorded in Egyptian mathematical papyri, and at which Egyptian civil servants excelled.

Graffiti and inscriptions at the site have also enabled scholars to piece together telling facts about life on this colossal construction site. Blocks found with dates from all seasons in the Egyptian calendar suggest the pyramids were built year-round and not just when the Nile was in flood.

There are many types of pyramids and not all were built in the same way. The lowest stones in



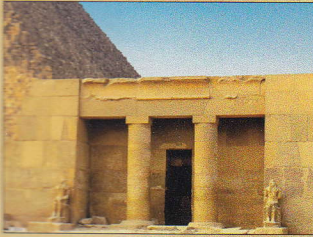


MEN AT WORK

On the lower panel of this mural in the tomb of Rekhmire, masons prepare bricks and stone blocks, illustrating how building materials could be transported. Luxor, 18th dynasty

INSIDE THE GREAT PYRAMID

While the exterior of Khufu's pyramid is what makes an impression on most visitors, its interior is no less awe-inspiring. A series of passages, including the Grand Gallery, links two main areas: the King's Chamber, which held Khufu's sarcophagus, and the so-called Queen's Chamber, believed to have housed a sacred statue of the pharaoh.



ART: ARCHITRE

1 Mastabas

Khufu's officials built rectangular tombs alongside their master's pyramid. The practice was continued by their successors, such as the mastaba (left) of Seshemnefer IV of the early 6th dynasty.

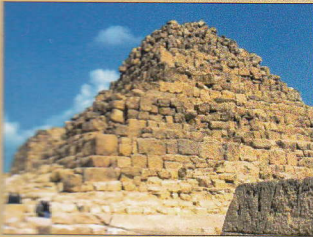


PHOTO: ANDREW PARKER

2 Queens' Pyramids

Each standing around 100 feet high, the three small Queens' Pyramids contain, running north to south: Hetepheres, mother of Khufu (wife of Snefru); and Merityetes and Henutsen, two of Khufu's wives.

WESTERN CEMETERY Hemiunu, architect of the Great Pyramid, has his mastaba here.

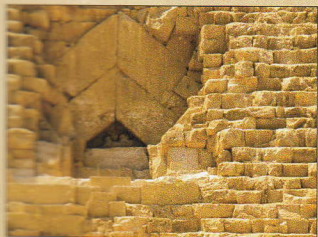


PHOTO: MIA

3 Entrance

The main entrance to the pyramid was on its northern side. In an attempt to camouflage it, the builders covered it with a vast slab of limestone. The ruse was discovered by looters later in antiquity.

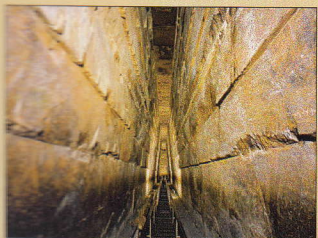
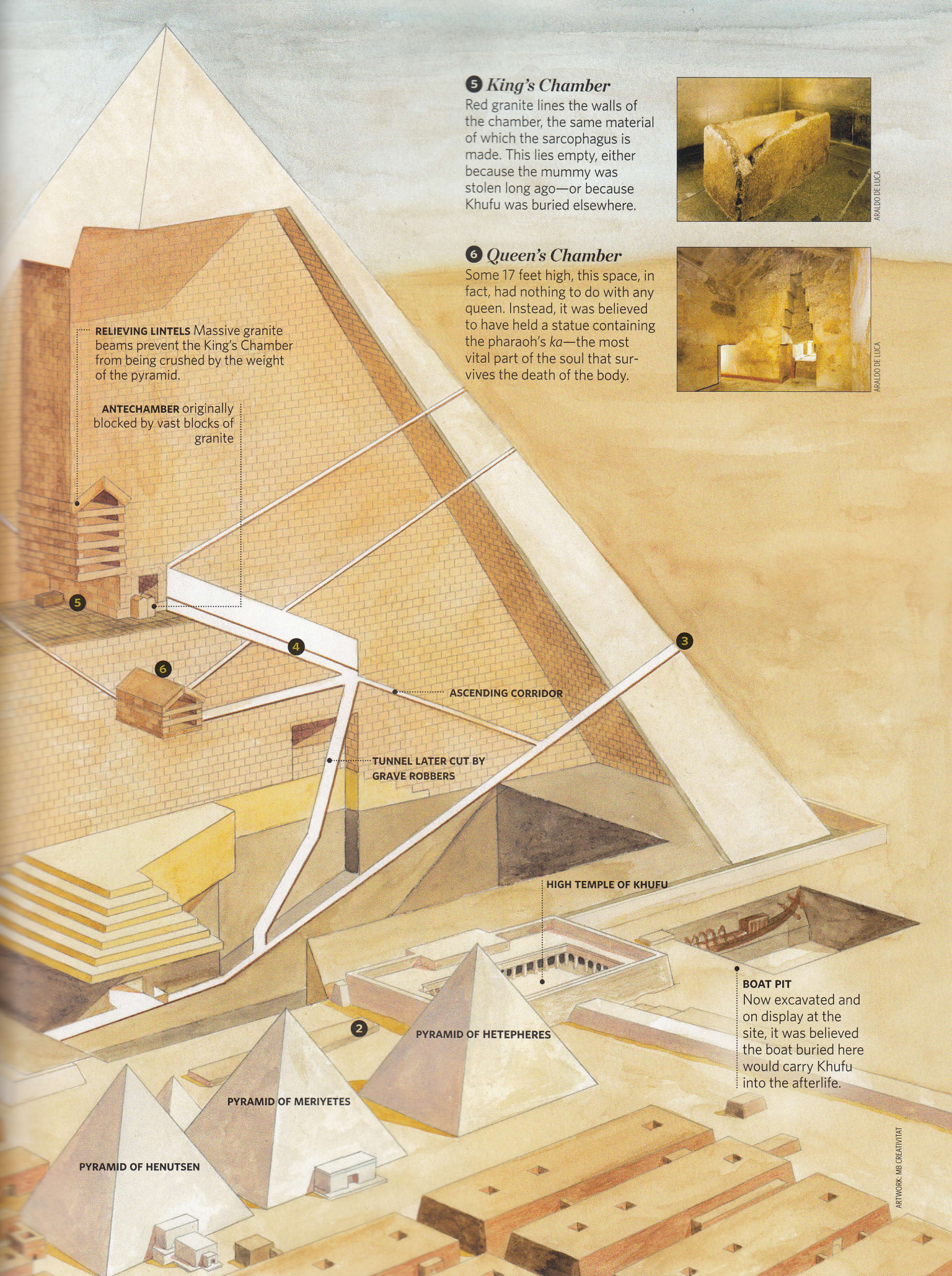


PHOTO: DE LEEA

4 Grand Gallery

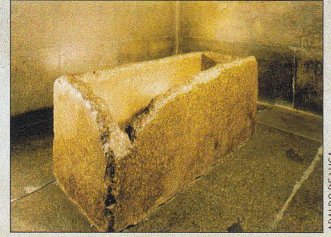
The initial ascending corridor, barely three feet high, opens out into this imposing gallery about 26 feet high but only six feet wide, with a roof formed of corbels. The passage leads to the King's Chamber.

MASTABAS laid out in an ordered series of avenues **1**



5 King's Chamber

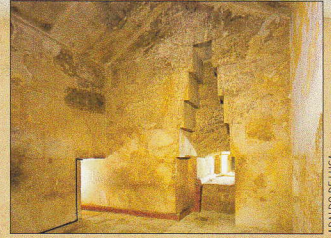
Red granite lines the walls of the chamber, the same material of which the sarcophagus is made. This lies empty, either because the mummy was stolen long ago—or because Khufu was buried elsewhere.



ARALDO DE LUCA

6 Queen's Chamber

Some 17 feet high, this space, in fact, had nothing to do with any queen. Instead, it was believed to have held a statue containing the pharaoh's *ka*—the most vital part of the soul that survives the death of the body.



ARALDO DE LUCA

RELIEVING LINTELS Massive granite beams prevent the King's Chamber from being crushed by the weight of the pyramid.

ANTECHAMBER originally blocked by vast blocks of granite

ASCENDING CORRIDOR

TUNNEL LATER CUT BY GRAVE ROBBERS

HIGH TEMPLE OF KHUFU

PYRAMID OF HETEPHERES

PYRAMID OF MERIYETES

PYRAMID OF HENUTSEN

BOAT PIT
Now excavated and on display at the site, it was believed the boat buried here would carry Khufu into the afterlife.

HUNTING FOR A PHARAOH'S FACE

HE ORDERED the building of one of the biggest monuments in the world, one which bears his name 4,500 years after he ruled. His name appears on documents and on the few reliefs that remain on the entrance path to his funerary complex. Yet until a few years ago, there was only one tiny representation of Khufu, the man who built the Great Pyramid of Giza: an ivory carving just three inches high (right), an artifact considered—in a supremely ironic twist—as the smallest piece of Egyptian royal sculpture ever discovered.

Recently, however, some specialists have suggested that a pair of limestone and granite stone heads from the Old Kingdom might be portraits of Khufu—a theory contested by other historians. Yet another hypothesis may give Khufu the biggest boost of all: According to Giza expert Rainer Stadelmann, the face of the Great Sphinx at Giza is not Khafre—as some scholars have argued—but Khufu himself, in divine form, protecting his pyramid.

KHUFU, IVORY FIGURINE, 4TH DYNASTY, EGYPTIAN MUSEUM, CAIRO



DAGLI ORTI/ART ARCHIVE

THE LONG WALK

Deep inside Khufu's pyramid, the Grand Gallery (right) leads to the chamber where some believe a sarcophagus made from a block of hollowed-out granite held Khufu's body.

Egypt's first ever pyramid—Djoser's step pyramid in Saqqara, built the century before Khufu's—are bricks. But as construction progressed, and engineers became more confident, they used larger blocks. The largest at Giza, weighing three tons, were those used to build Khafre's pyramid.

Much of the stonework in the Giza Pyramids came from a quarry barely half a mile to the south of the Great Pyramid of Khufu. The white limestone that once formed the outer casing had a longer journey to Giza, moved by boat along the Nile from Tura, eight miles away. When he was working in Karnak in the 1930s, the scholar Henri Chevrier discovered that a five-ton block can be dragged horizontally along a wet clay track by just six men. As pictures found in tombs have shown, blocks of that size were also sometimes pulled by oxen. The ramps by which they were raised onto the pyramid structure have also been depicted on the decoration of some tombs, and there is archaeological evidence for such ramps at Giza itself.

The geometry of a pyramid helped overcome the logistical problem of raising massive stones: As much as 40 percent of a pyramid's volume is concentrated in its bottom third. The raising of stone blocks by means of a ramp beyond the

lower third of the structure was, however, a major challenge, and it is still not fully known how the Egyptians solved the problem. One solution would have been to use the building's inner step structure—visible today, since the outer casing stones have long disappeared—because then the blocks would only have had to be raised a little at a time, in the same way a heavy object can be eased up a staircase.

The rows making up Khufu's pyramid are slightly more than two feet high on average. So it is highly likely that, given sufficient manpower, levers could be used to raise large blocks into position—and so on, until the construction reached completion in the form of the pinnacle, known as the pyramidion, which historians believe was put in place in the course of a solemn ceremony.

The pyramidion atop Khufu has long been toppled, but is thought to have been of white Tura stone. It capped a total of two and a half million stone blocks, making it one of the most massive buildings on the planet, the only one of the Seven Wonders of the Ancient World that is still standing. ■

AUTHOR OF SEVERAL BOOKS ON PYRAMIDS AND DAILY LIFE IN ANCIENT EGYPT, JOSÉ MIGUEL PARRA HAS PARTICIPATED IN RECENT EXCAVATIONS AT LUXOR.

