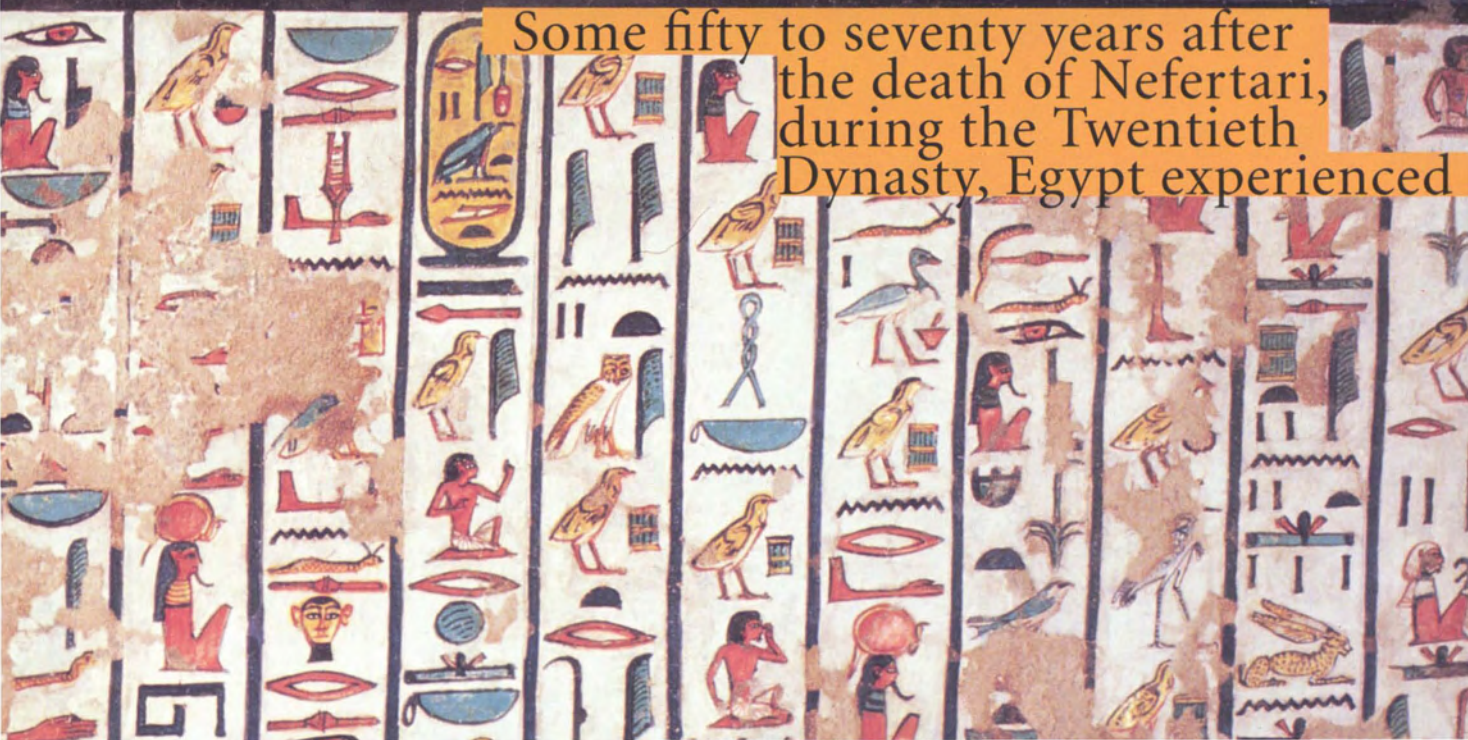






Some fifty to seventy years after the death of Nefertari, during the Twentieth Dynasty, Egypt experienced





A piece of embossed gold foil bearing Nefertari's name and an epithet "true of voice" discovered in 1988 by one of the tomb's conservators.

*Previous page:
The upper west wall of Chamber C. Nefertari, masked and mummified lies on a bier with the goddesses Nephthys and Isis in their kite form at her head and feet. Next to Nephthys is the benu bird, associated with resurrection. Beside Isis is a water god symbolizing abundance of years.*

several severe economic depressions, brought on in part by the loss of gold mines

and deteriorating relations with allies in the Near East. For an economy based on precious metal, the loss of the mines amounted to a financial catastrophe.

Sit-down strikes by the necropolis workers in Thebes occurred in the twenty-ninth year of Rameses III (about 1165 B.C.E.). Workmen laid down their tools and marched to the Ramesseum, the mortuary temple of Rameses the Great, seeking back wages. The disputed payments consisted mostly of grain and oil, which the workmen had ample reason to believe were sequestered in huge, mud-brick storehouses that today still stand behind the temple. Despite assurances from government officials, the back wages did not materialize until the workmen called a second strike, one involving their wives and children.

Not surprisingly under such circumstances, a cottage industry in tomb robbery arose. Apart from its spiritual function, the necropolis was a vast treasure trove of liquid wealth just waiting to be pillaged. All one had to do was muster the courage to break into a tomb and strip the mummies of their gold and jewels.

The situation became acute during the reign of Rameses IX (1125–1107 B.C.E.). In the sixteenth year of his reign, there was a rash of tomb robberies. Court proceedings preserve the testimony of people who knew about or had participated in the looting. Charges were hurled against local officials and even the mayor of western Thebes who were accused of conniving with workmen to rob tombs.

A generation later, the situation had grown even worse. The Theban priests of the Twenty-first Dynasty (1070–945 B.C.E.) were so alarmed that they gathered whatever royal mummies they could locate and secured them in places of safety. Two such caches have been discovered, one in the tomb of Amenhotep II in the Valley of the Kings, and a second in an Eleventh-Dynasty tomb belonging to a minor queen named In-hapy.

Neither sign nor mention of Nefertari's mummy has been found apart from some telltale fragments of her remains, discovered by Schiaparelli in 1904. Considering the extreme vulnerability of the tombs in the Valley of the Queens, it seems likely that Nefertari's tomb was robbed as long ago as 1109 B.C.E.; yet no one can know what took place inside the tomb for some three thousand years.

In addition to the mummy fragments, Schiaparelli discovered that the tomb still held pieces of the queen's rose granite

sarcophagus, thirty-four servant figurines (*ushabtis*, believed to be essential for the deceased to become an Osiris), several large glazed earthenware vases, and an enamel knob bearing the name of King Ay.

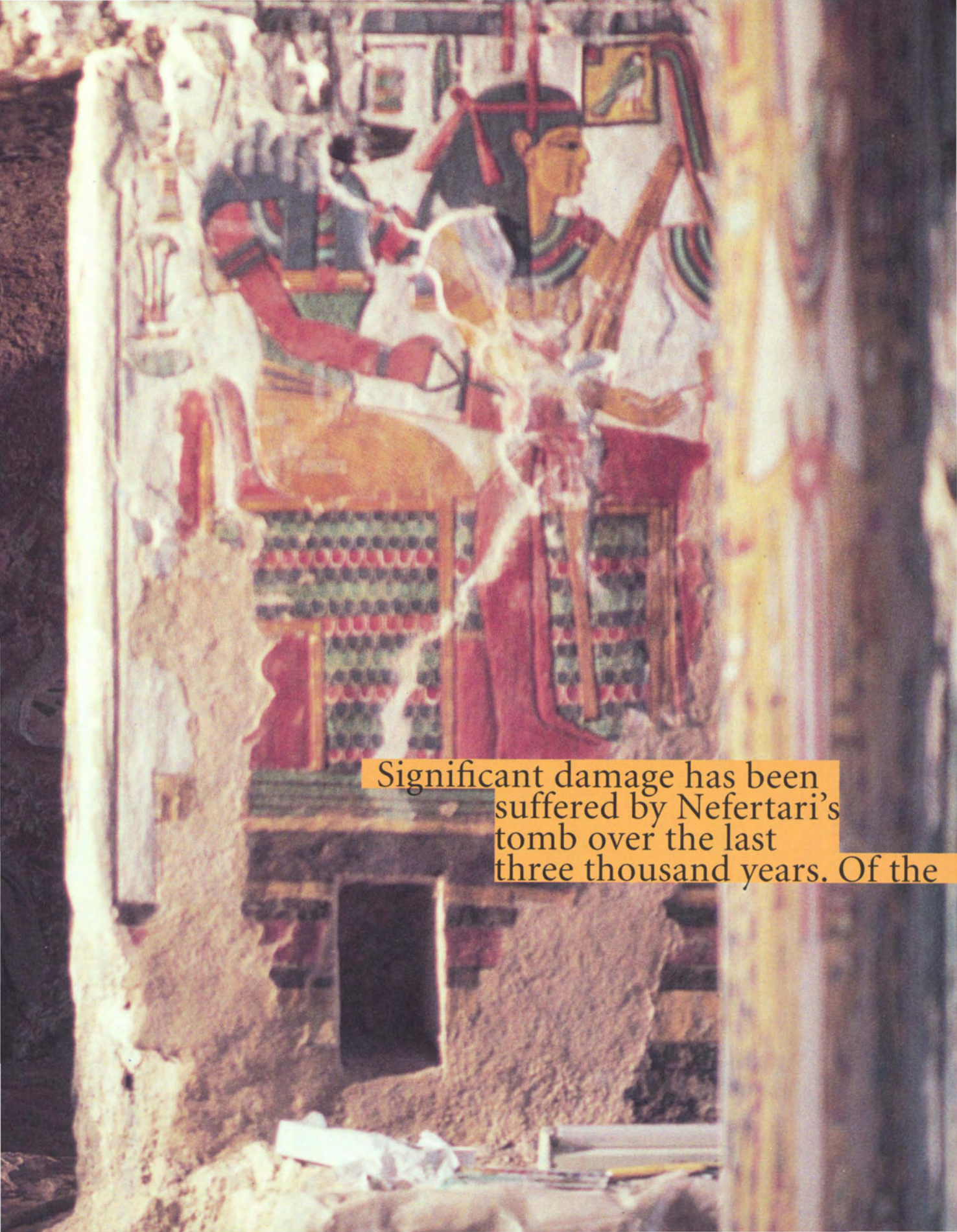
In 1904, some items of the queen's personal jewelry appeared on the antiquities market in Luxor and were purchased by the Museum of Fine Arts, Boston. These included a large plaque of gilded silver, a small plaque made of embossed sheet gold, a gilded bronze pendant in the shape of a lily, and four servant figurines. Although the exact origin of this jewelry is unknown, there is every reason to suppose it was part of the queen's burial equipment.

Astonishingly, in 1988, while trying to reattach a section of wall plaster, one of the tomb's conservators discovered a piece of embossed gold foil. The ornament bore Nefertari's name and the epithet "true of voice." The title is a customary designation for a deceased person and a strong indicator that the bracelet was made expressly for the great queen's burial.

Nefertari's sandals were among the few objects that escaped looting. Photo: J. Hyde.



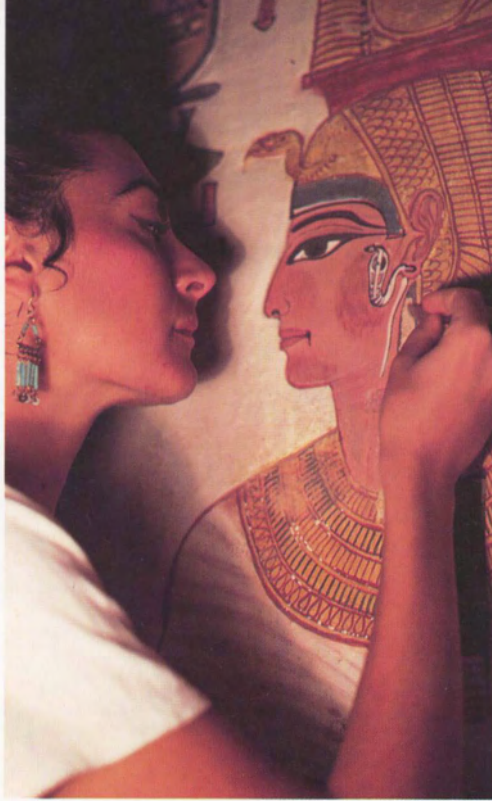




Significant damage has been suffered by Nefertari's tomb over the last three thousand years. Of the

A conservator working on the south wall of Recess E in 1988.

*Opposite:
The goddess Isis in Recess E, north wall, showing a few of the nearly ten thousand Japanese mulberry bark paper bandages used to hold loose fragments in place during emergency conservation.*



*Previous page:
Removing ground dust during site preparation in 1988 in Chamber Q.*

tomb's 520 square meters of original paintings and hieroglyphic decoration, at least twenty percent has completely vanished.

Since its discovery in 1904, the archaeological community has known of the perils facing the tomb and its matchless decoration. Even Schiaparelli had to perform emergency consolidation on sections of wall paintings during his initial survey. Yet despite his and others' efforts to solve some of the tomb's most tenacious problems, the deterioration continued, much of it the result of carelessness by visitors.

With this in mind, in 1985, the Egyptian Antiquities Organization (EAO) — renamed the Egyptian Supreme Council of Antiquities in 1994 — and the Getty Conservation Institute (GCI) began discussions to see how the tomb's paintings might be consolidated and cleaned, and further deterioration arrested or at least slowed. A joint EAO-GCI project was established in 1986.

Initial plans called for a full year's analysis of the tomb's geological, hydrological, climatic, and microbial problems, as well as exhaustive testing of plaster, pigments, and other materials. Preliminary results confirmed suspicions that the primary culprit responsible for the deterioration was salt. The limestone of the tomb and the mud plaster coating with which the walls had been finished were affected by moisture. As a result, minute amounts of sodium chloride dormant in the limestone and plaster were dissolving. Once mobilized, this salt-laden moisture seeped to the surface of the wall. There the moisture evaporated, leaving the salt behind, as crystals either within the plaster or as a crust upon the paint.

Salt crystals lodged between the limestone and the plaster can detach entire sheets of plaster. Smaller crystals within the plaster layers can split whole layers off the painted surface. The crust on the paint itself can all too easily be brushed away, and with it a good deal of pigment. Any increase in moisture within the tomb or sustained high humidity will affect the plaster and painting adversely.

The basic problem has been too much moisture from four sources: water used in the original preparation of plaster and paint; flooding via the tomb entrance; seepage through the porous limestone; and water vapor, introduced mainly by modern-day visitors.

Flooding has been a constant risk. The ancient dam at the head of the valley gorge proves how seriously Necropolis officials took this threat. Thick layers of water-transported debris in the Valley of the Kings and the Valley of the Queens have been dated from the Nineteenth Dynasty and testify to serious flooding in ancient times.





Since the tomb was opened to the public, some 150 visitors a day each spend ten minutes inside the tomb.

Photo: Shin Maekawa.

Schiaparelli's account of his opening the tomb mentions extensive debris on the chamber floors, presumably flushed in by storm water. In 1914, major flooding in the Valley of the Kings damaged the tomb of Rameses II, leaving it choked with rubble. As recently as November 1994, a modest shower in western Thebes became a torrent sweeping through the Valley of the Kings. Current estimates predict serious flooding about once every three hundred years.

In addition to all this, an ancient earthquake fractured the roof of Nefertari's tomb, opening tiny fissures that have since permitted the infiltration of surface water. In fact, apart from people inside the tomb, the principal historic mechanism for accumulation of water has been the slow seeping of moisture through these fissures and the pores of the bedrock.

Emergency conservation work undertaken in 1987 required the temporary placement of nearly ten thousand small bandages of Japanese mulberry bark paper to secure loose bits of decoration. Beginning in 1988, the actual treatment program was carried out by a team of Italian, Egyptian, and English conservators led by Professors Paolo and Laura Mora, with more than four decades' experience in the conservation of wall paintings. Guiding all their efforts was a determination to keep interventions to a minimum and to use only reversible methods and materials. The goal was to clean and stabilize, not restore, the tomb paintings; no in-painting took place.

Working under difficult conditions, the Moras and their team painstakingly consolidated flaking and chalking paint with acrylic solutions, and reattached loose and crumbling plaster by means of a special mortar made from local sand and gypsum. The final stage of work, carried out

between 1990 and 1992, involved cleaning the paintings with solvents that did not affect the pigments or gum arabic binding material.

This work took more than six years to complete. A photographic record of all phases of the work — from analysis to consolidation to cleaning — was compiled between September 1986 and April 1992. More than seven thousand images, consisting of 35 millimeter and 4 x 5 inch color transparencies, provide a complete archival record of the tomb and are the principal resource for scholars wishing to study it.

Although the tomb became a favorite tourist destination almost as soon as it was discovered, it was more often shut than open. Between the early 1970s and 1994, the tomb was closed to all but specialists and occasional VIPs. With the 1992 completion of consolidation and cleaning, pressure to reopen Nefertari's tomb grew dramatically. But three more years of scientific monitoring of the tomb environment in an undisturbed state were needed to establish base levels for future monitoring.

In November 1995, the decision was made by the authorities to open the tomb to the public. Now some 150 visitors move through the site every day, each allowed to spend ten minutes inside the tomb. Monitoring has shown that a single individual exhales and perspires between one-half and two cups of water per hour as well as carbon dioxide. So every day between five and twenty liters of water are deposited in the tomb. This moisture must go somewhere. What is not reabsorbed by people's clothing or extracted by the ventilation system is sucked up by the plaster and paint of the tomb.

Humidity within the tomb can climb to dangerous levels very rapidly. Especially during the summer, when humidity tends

to be high and natural ventilation of the tomb is less efficient, relative humidity can easily exceed seventy percent. At such elevated levels, the tomb requires from three days in winter to twelve days in summer to regain its microclimatic equilibrium.

Moreover, biological activity is triggered at only fifty percent relative humidity; and increased growth of microbes and fungi on the tomb walls may simultaneously contribute to deterioration of the paint layer. Prolonged, elevated humidity may further imperil the images by softening the gum arabic that binds the paint to the wall.

But, salt recrystallization and biological deterioration are not the only dangers. Physical damage to the fragile wall paintings, especially in the narrow entranceways, can occur easily, and the risk increases with the number of visitors in the tomb at any one time. There are other potentially adverse consequences of tourism. Apart from microorganisms, dust, and materials from visitors' clothing, there is the unknown long-term effect of artificial lighting on the wall paintings.

Continuing photographic and climatic monitoring have taken place since the completion of work in 1992. Telltale strips have been placed within the tomb to register tectonic shifts. A solar-powered monitoring station measures relative humidity, temperature, and carbon dioxide levels inside the tomb, as well as weather data externally. Spot readings by colorimeters disclose any color shifts or alterations in the paintings, and photographs provide a record of damage or change. By these means, GCI and Egyptian scientists hope to verify if the deterioration within Nefertari's tomb has been halted, slowed, or if further measures may be required.



Meanwhile, no simple equation exists for balancing the needs of tourists and the best interests of the tomb. This problem is hardly unique to Egypt. Yet Nefertari's tomb is a special case, both because of its fragility and its extraordinary beauty.

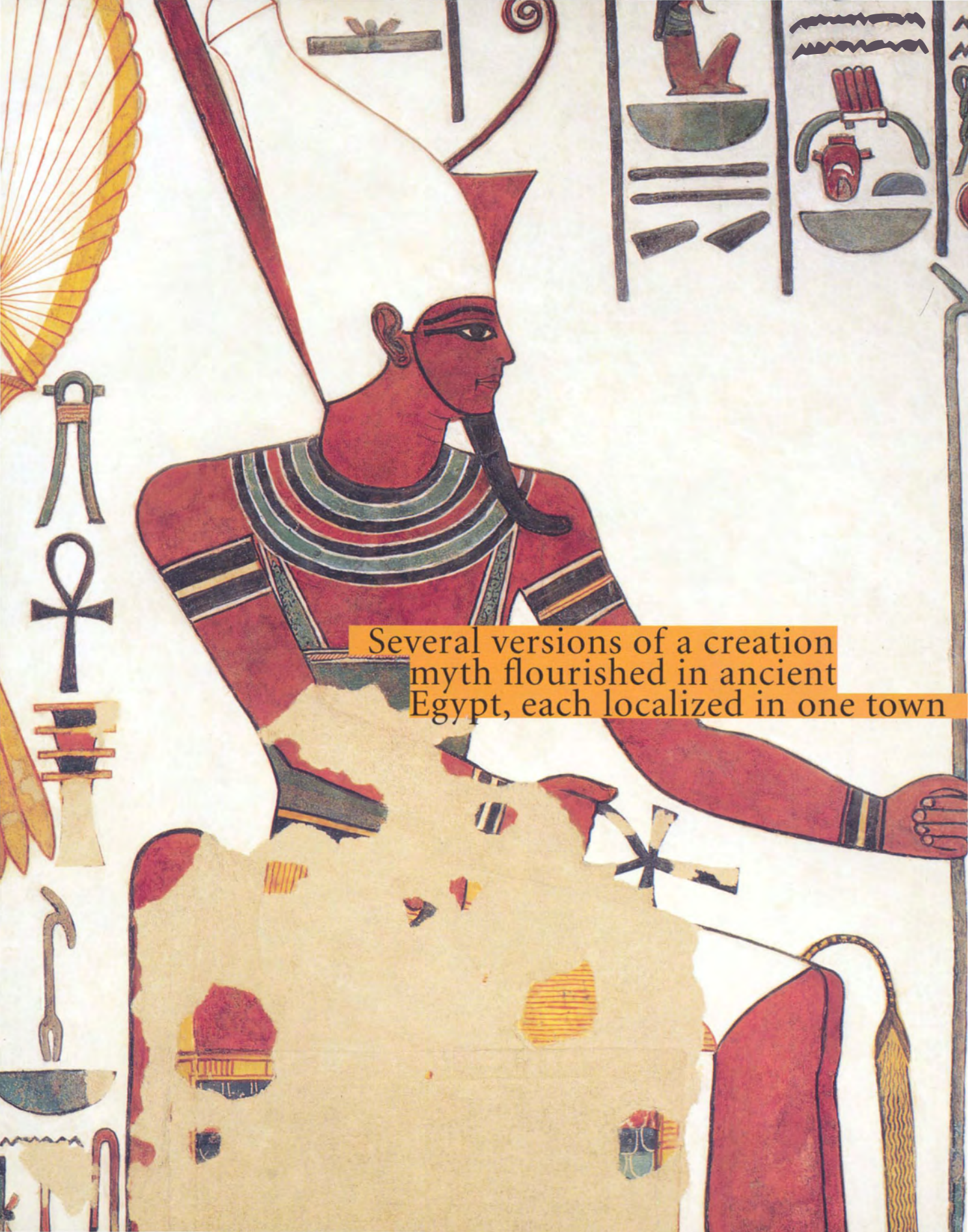
Short-term solutions have already been implemented. The Valley of the Queens has been landscaped and diversion structures installed at key points to shunt flood water away from tomb entrances. The large tour buses whose idling motors can be felt far away have been relocated still farther from the tombs, thus lessening any possible risk from vibration and pollution.

Long-term solutions include offering visitors a virtual reality tour of the tomb at a nearby museum. Similar experiments are already underway at other sites, and initial results elsewhere are encouraging. Perhaps the number of visitors to the tomb might be adjusted as humidity levels cycle, without creating too much frustration among a public eager to see one of Egypt's greatest sights.

The dangers are great. Having survived for thirty-two hundred years, the remaining original paintings now confront perhaps the greatest threat of degradation and destruction they have ever faced.

Conservators working on the west wall of Chamber C. Much of the decorated surface of this wall, which illustrates Chapter 17 of the Book of the Dead, has been lost. The entrance to the tomb can be seen on the left.





Several versions of a creation myth flourished in ancient Egypt, each localized in one town

Previous page:

The center section of two parallel scenes that occupy the east wall of Chamber G. Osiris, on the left, is in mummified form and wears the twin-plumed crown. A huge fan separates him from the god Atum in human form and wearing the double crowns of Upper and Lower Egypt.

Opposite:

Kheperi, the beetle-headed god of the morning sun, on the east wall of Recess E.

or another. The most influential and enduring of these stories related

how Atum, the creator god, emerged from the receding waters of the primeval ocean (personified by the god Nun) to squat atop a small mound. While perched upon this eminence, he engendered by masturbation both air/light and moisture. Air/light was represented as male, the god Shu; moisture as female, the goddess Tefnut. From this brother-sister pair sprang the next generation: earth, personified by the god Geb; and sky, personified by the goddess Nut. They in turn produced four divine offspring, again grouped into two pairs of sister-brother deities: Isis and Osiris, Nephthys and Seth.

These nine gods figured prominently in Nefertari's tomb. Their traditional home was Heliopolis, the City of the Sun, near modern Cairo. This Heliopolitan divine family provided a theological basis for the creation of the physical world and embodied truths about Egyptian society and attitudes toward life and death. Implicit in the scheme were such fundamental oppositions as earth and sky, female and male, order and chaos, good and evil. Even the potential for intergenerational conflict existed: Atum represented self-renewing force drawn from the sun, while Osiris represented the inevitability of physical decay.

At least as early as the Old Kingdom, the solar deity Re' was worshiped at Heliopolis. Early on, Re' and Atum were fused into Re'-Atum, a composite deity sharing attributes of both. Manifest in the late afternoon sun, Re'-Atum was the mature or setting sun.

Another version of Re', the morning or nascent sun, was Kheperi, a beetle-headed god often portrayed in royal tombs as a scarab beetle issuing at daybreak from the vulva of the goddess Nut. The intense noonday sun was the falcon-headed god, Re'-Horakhty. Temples to all these forms of Re' existed at Heliopolis; ten during the Ramesside period alone.

The chief sun symbols were the phoenix bird or heron (the *benu* bird), the sun's disk (the *aten*), and the obelisk (the *benben* stone). These appear repeatedly in the tomb of Nefertari, "for whom the sun shines."

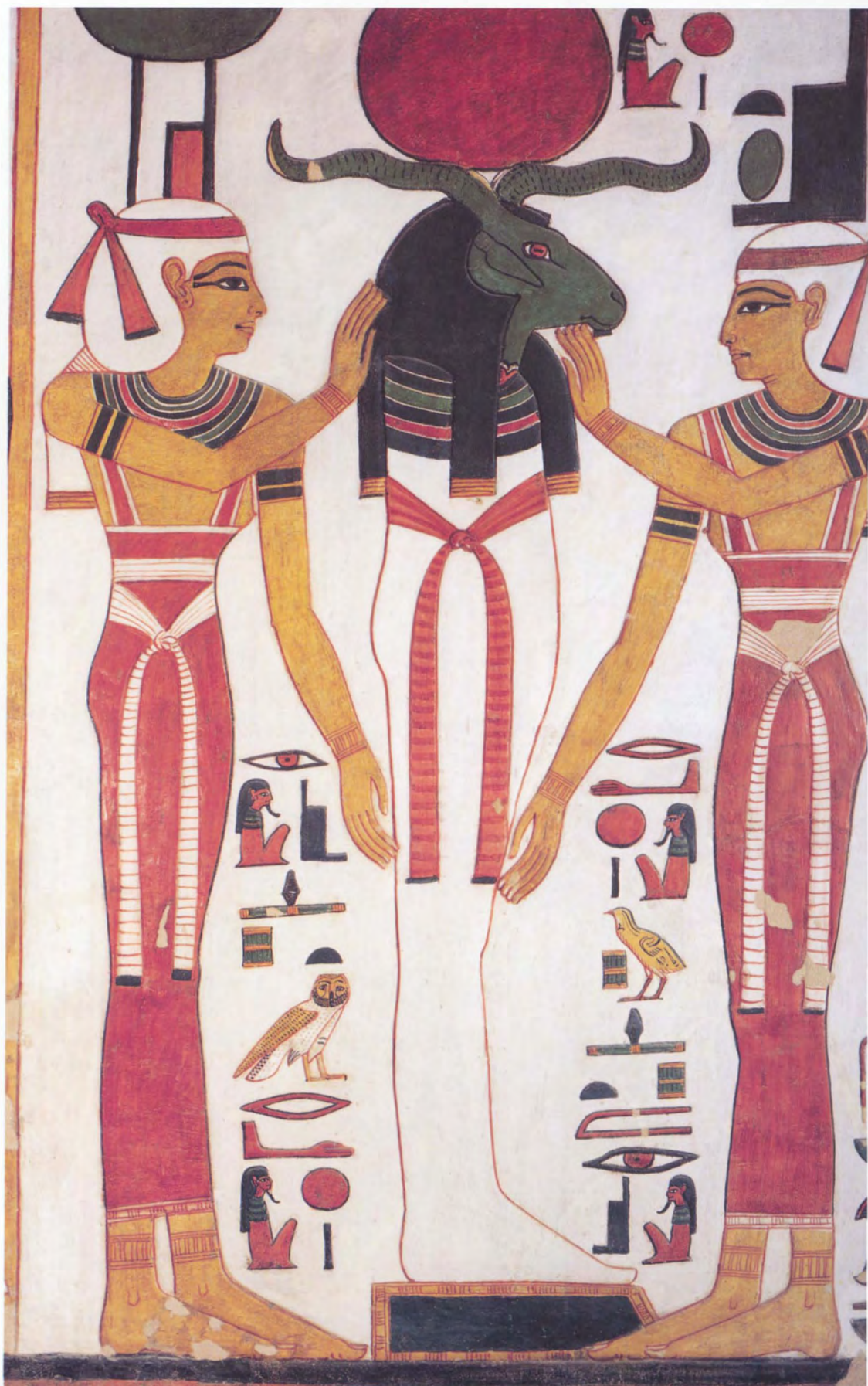
The second and third generation of Heliopolitan gods symbolized the natural world and its basic constituents: earth, air, sky. But the fourth generation related directly to human beings and human relations. The institution of kingship was symbolized in the person of Osiris, the original earthly king. Human strife emerged in the conflict between him and his brother Seth. Their struggle was the subject of many Egyptian myths and was seen as the endless battle of good against evil, truth against falsehood.

This conflict plays out in funerary rites too. The dead needed to identify with Osiris, the ultimate model for their salvation and a protection against Seth, who represented hostile, chaotic forces that imperiled a soul's transformation into an effective, eternal spirit.

The most complete account of Osiris and the cycle of stories associated with him comes from *De Isis et Osiris*, by Plutarch, the Greek biographer and historian. This tale tells how Seth killed Osiris, either by drowning or by dismemberment, and dispersed his body parts throughout Egypt.



The west wall of Chamber G. The goddesses Nephthys and Isis flank a ram-headed mummified figure. The text on the left reads: "It is Osiris who sets as Re," while the right-hand text declares: "It is Re' who sets as Osiris," thus implying the union of the two gods.



Fearing her wicked brother Seth, Isis took sanctuary in the Nile Delta marshes with her infant son Horus. During this time of exile, Horus acted as his mother's support and protector (Inmutef: the pillar of his mother). Isis, together with her sister Nephthys, eventually reassembled her brother/husband's body, preserving it from decay. In time, Osiris was reanimated.

Most often, Osiris was depicted as a mummy, wearing either the white crown of Upper Egypt or an elaborate variation with twin plumes on either side (the *atef*). The god was swathed in linen bandages, elbows akimbo, bandage-wrapped hands crossed over his breast. He held a crook in his right hand and a flail in his left. As his hands were crossed, these regal emblems rested on opposite shoulders.

Osiris' face, the only exposed part of his body, was often green, an explicit evocation of vegetal life and its annual renewal. New Kingdom private tombs often had "Osiris beds" — gauze frames in the outline of Osiris — with seeds strewn on them to sprout in the darkness of the tomb, a convincing demonstration of renewal and rebirth.

All Egyptians hoped to become an "Osirianized" being. But that depended on passing the judgment of Osiris, a scene illustrated countless times in tombs and funerary papyri, chiefly from the New Kingdom.

The deceased is ushered into the judgment hall, usually by Ma'at, the goddess of cosmic order and truth. Osiris sits in royal majesty accompanied by Isis, his



The djed pillar became a symbol of the backbone of Osiris. This one, in Chamber M, is equipped with two human arms holding was scepters and with ankh signs around the wrists.

consort. In the center of the room looms an enormous balance beam. In one pan is the heart of the deceased; in the other, Ma'at's Feather of Truth. Thoth, the ibis-headed god of writing, stands ready to record the result of this trial. Close by, a fierce demon, "the great swallower," is poised to devour the hearts of those who fail the test.

Throughout her tomb, Nefertari is consistently referred to as "the Osiris," so confirming her successful completion of this crucial step in her quest for immortality.

Clad in a leopard skin garment, Horus appears on the south face of Pillar 1 in the form of Horendotes officiating as a priest.

Divine Guidance

Akeru a lion-headed earth god associated with the eastern horizon and the morning sun

Amun the preeminent god of Egypt from the Middle Kingdom onward, whose home was Karnak Temple in Thebes

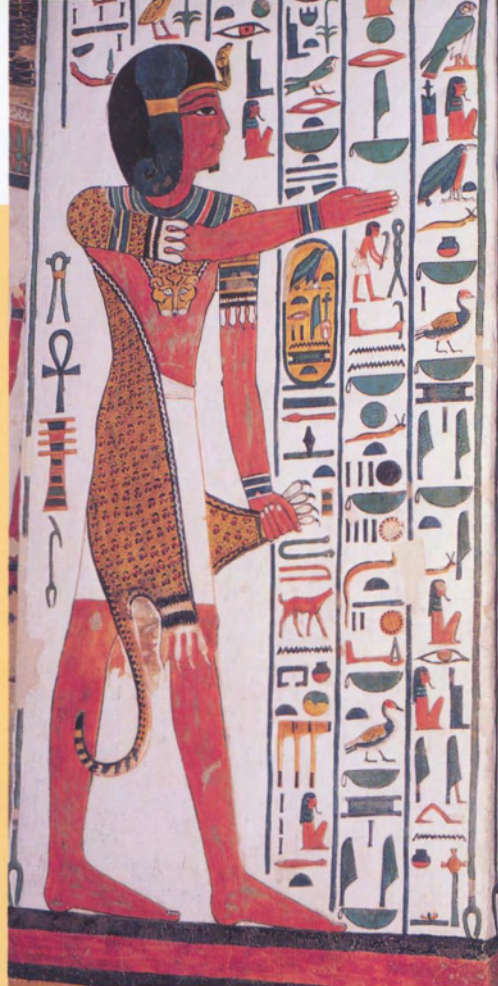
Aten the ancient Egyptian designation for the sun disk, which, personified, was worshiped as the great deity of creation by the pharaoh Akhenaten

Atum originally a sun god worshiped at Heliopolis; regarded as a protective deity associated with the rituals of kingship

Edjo the tutelary goddess of Lower Egypt, her cult center was located in the Delta city of Buto. She was represented as a cobra

Hathor a goddess of many functions and attributes who was often shown either with a cow head or as a woman with cow's ears and horns. Known as the "Golden One," she was said to suckle pharaohs and was later identified by the Greeks with Aphrodite

Horus a falcon deity originally worshiped as a sky god. Later identified with the reigning pharaoh and regarded as the son of Isis and Osiris



Isis the wife of Osiris and mother of Horus. The chief protector-goddess, assimilating to herself many of the attributes of Hathor and eventually becoming an extremely popular Egyptian deity during the Roman imperial period

Ma'at called the daughter of Re'. A goddess personifying truth, justice, and the divine order of the universe and present at the judgment of the dead. Usually portrayed wearing a feather atop her head

Mut the wife of the state god Amun. Her principal cult center was the southernmost of the three precincts at Karnak. She was represented either as a vulture or as a woman

Neith a creator goddess of antiquity; symbolized with a shield and arrows. Often shown wearing the red crown of Lower Egypt

Nekhbet a goddess who sometimes appears as a vulture, had her cult center at Elkab, south of Luxor,

The goddess Ma'at on the east wall of the descending corridor.



where she was, from very early times, worshiped as the tutelary deity of Upper Egypt

Nephthys the sister of Isis, who came to represent mourning in general because of her lamentations at the death of the god Osiris

Nut the sky goddess who was thought to swallow the setting sun Re' every evening, and give birth to him each morning

Osiris the husband of Isis, dismembered by Seth, his evil brother. Osiris was reassembled by his wife Isis and posthumously conceived his son and successor, Horus. For these reasons, he was considered to be the god of the underworld and offered the hope of resurrection

Ptah the creator god of Memphis, a site located to the southwest of modern Cairo. Represented as a mummy and later equated by the Greeks with their god Hephaestus

Re' like Atum, a manifestation of the sun god of Heliopolis. Often linked to other deities, such as Amun, in cults aspiring to universality

Re'-Horakhty a god in the form of a falcon whose name, Horus of the Two Horizons, represents the union of Re' and Horus as a universal solar deity

Thoth the Egyptian god of wisdom and writing, often depicted as an ibis-headed male figure to whom scribes traditionally addressed a prayer before beginning their work

Osiris, in mummified form, on the east face of Pillar 111 in the sarcophagus chamber.

