

**VI CONGRESSO
INTERNAZIONALE
DI
EGITTOLOGIA**

Atti



**SESTO CONGRESSO INTERNAZIONALE
DI EGITTOLOGIA**

Atti

VOLUME II

1993

Comitato Organizzativo del Congresso

Silvio Curto

Sergio Donadoni

Anna Maria Donadoni Roveri

Bruno Alberton

Coordinamento Editoriale

Gian Maria Zaccone

Tomaso Ricardi di Netro

*Il volume è stato realizzato con il contributo
della **Società Italiana per il Gas p.A.** di Torino
ed è offerto a tutti i congressisti
del VI Congresso Internazionale di Egittologia.*

Indice del volume

<i>Premessa</i>	p.	III
BAKR Mohammed	»	V
AUTH Susan H. <i>The Egyptian Collections at The Newark Museum</i>	»	3
BEHLMER Heike <i>Historical evidence from Shenoute's "De extremo iudicio"</i>	»	11
BELLUCCIO Adriana <i>Le mythe du Phénix e la lumière de la consubstantialité royale du père et du fils</i>	»	21
BELOVA Galina <i>Les pays de la Nubie ancienne</i>	»	41
BERG-ONSTWEDDER Gonnje van den <i>The Apocryphon of Bartholomew the Apostle</i>	»	47
CAPASSO Mario <i>A proposito dell'itinerario papirologico di Jean-François Champollion</i>	»	51
CAREDDU Giorgio <i>Un'ipotesi circa la musica egizia</i>	»	61
CARREIRA José Nunes <i>Hermopolitan traditions in Philo Biblius' Phoenician History</i>	»	69
COLLIER Mark <i>Pro verb</i>	»	77
DAVIDE Domenico <i>Notizie storiche della Collezione osteologica egiziana predinastica e dinastica «Giovanni Marro», conservata al Museo di Antropologia ed Etnografia dell'Università di Torino</i>	»	87
DEGARDIN Jean-Claude <i>Le temple de Khonsou. Problèmes de destination et de propriété</i>	»	93
DEMAREE R. J. <i>Recent work on the administrative papyri in the Museo Egizio, Turin</i>	»	101
DOLZANI Claudia <i>I testi medici egiziani tra scomparsa e riscoperta. Possibili vie di un «iter» sotterraneo</i>	»	107

EYRE Christopher John <i>Why was Egyptian Literature?</i>	p.	115
FIORE MAROCCHETTI Elisa <i>Variations of the Mastaba Tomb during the Middle Kingdom</i>	»	121
GIADOROU-ASTORI Lucio <i>La pyramide-symbole: image réfléchie d'un système mathématique-physique retrouvé</i>	»	129
GOLVIN Jean-Claude, LEBLANC Christian, SADEK Abdel Aziz <i>La sauvegarde du Ramesseum</i>	»	133
GRANDET Pierre, MATHIEU Bernard <i>La construction ergative de l'accompli égyptien</i>	»	145
GRILLETTO Renato <i>Analisi per attivazione neutronica e chimica di una serie di denti egiziani antichi e moderni</i>	»	153
HARING Ben J. J. <i>Libyans in the Theban region, 20th dynasty</i>	»	159
HARLE Diane <i>Nestor L'Hôte, «ami et compagnon de Champollion», (1804-42)</i>	»	167
HAWASS Zahi <i>The Great Sphinx at Giza: Date and Function</i>	»	177
HAYNES J. L., LEPROHON R. J. <i>The Royal Ontario Museum Shabtis project. A progress report</i>	»	197
HEEL Koen Donker van <i>Publishing a Choachyte's Archive</i>	»	203
HEINSOHN Gunnar <i>Who were the Hyksos?</i>	»	207
HODJASH Svetlana <i>Katalog Altägyptischer Gefässe aus der Sammlung des Staatlichen Puschkin-Museums des Bildende Künste</i>	»	221
JOHNSON W. Raymond <i>The Deified Amenhotep III as the Living Re-Horakhty: Stylistic and Iconographic Considerations</i>	»	231
JONG Aleid de <i>The functions of the Ba in Ancient Egyptian Anthropology</i>	»	237
KAMMERZELL Frank <i>Aristoteles, Derrida und Ägyptische Phonologie: zu systematischen Verschiedenheiten von geschriebener und gesprochener Sprache</i>	»	243
KORMYSHEVA Eleonora <i>The officials at the court of meroitic kings and their role in king's election</i>	»	253
LEBLANC Christian, FEKRI Magdi <i>La prospection archéologique des vallées latérales de T3 ST NFRW. Bilan et perspectives</i>	»	259
LIU WEN-PENG <i>Review for the Despotism of Pharaonic Egypt</i>	»	269

LLAGOSTERA Esteban <i>Studio scientifico di due teste di mummia egiziana proprietà del prof. Jaoquin Barraquer oftalmologo di Barcellona</i>	p.	273
LOCHER Kurt <i>New arguments for the celestial location of the decanal belt and for the origins of the S3h-hieroglyph</i>	»	279
LOOSE Jana <i>Labourious "Rites de Passage": Birth Crisis in This World and in the Beyond</i>	»	285
LUFT Ulrich <i>Asiatics in Illahun. A preliminary report</i>	»	291
MACKE André, MACKE-RIBET Christiane <i>Paléopathologie osseuse de la population égyptienne d'époque ro- maine provenant de la Vallée des Reines</i>	»	299
MANNELLI Neri <i>La Collezione di un viaggiatore ottocentesco: Massimiliano Strozzi Sacratì</i>	»	307
MANTELLINI Elio, TOSI Mario <i>La calcolosi biliare in Egitto al tempo dei Faraoni</i>	»	313
MARCHIORI BAKOS Margaret <i>The significance of wine drinking in love in the daily life in ancient Egypt</i>	»	319
MARX Christoph <i>Das Lexicon der Ägyptologie im Information Center »Altertum«</i>	»	325
MOERS Gerald <i>Negationen im Altägyptischen</i>	»	333
MÜLLER Maya <i>Iconography: basic problems of the classification of scenes</i>	»	337
MU-CHOU POO <i>The Liturgy of the Offering of Mirrors: a Structural Analysis</i>	»	347
NIWINSKI Andrzej <i>Excavations in a Late Period Priest's Mummy at the National Museum Warsaw. Preliminary report</i>	»	353
NOBERASCO G., BEUX JAEGER M. <i>L'Egitto nelle Sacre Scritture</i>	»	363
OSING Jürgen <i>Zwei hieratische Papyri aus Tebtunis</i>	»	373
PADRÒ Josep <i>Note sur la tombe de Séhou à Héracléopolis Magna</i>	»	377
PIRELLI Rosanna <i>Egyptian myth and trade</i>	»	383
COZZOLINO Caterina <i>The land of PWNT</i>	»	391
FATTOVICH Rodolfo <i>Punt: the archaeological perspective</i>	»	399
POOLE Federico <i>Scarabs from the Necropolis of Pontecagnano</i>	»	407

RAND NIELSEN Elin <i>Honey in medicine</i>	p. 415
RASSART-DEBERGH Marguerite <i>A l'origine de la connaissance du Monachisme Copte</i>	» 421
REINTGES Christoph <i>A Functional Reexamination of Hammamat-inscription 191.6</i>	» 437
ROSATI Gloria <i>Una versione del «Papiro Geografico» di Tanis da Tebtynis</i>	» 447
SCHNEIDER Thomas <i>Asiatic Personal Names from the New Kingdom. An Outline with Supplements</i>	» 453
SCHOLZ Piotr O. <i>Die Kontinuität des Altägyptischen in der Ikonizität und Theologie des Orientalischen Christentums</i>	» 471
SHERKOVA Tatjana A. <i>Egyptian Gods in Kushan Kingdom?</i>	» 479
SIST Loredana <i>The Reliefs of Tomb n. 27 at the Asasif</i>	» 485
SMITH Mark <i>New Middle Egyptian Texts in the Demotic Script</i>	» 491
SMITH Stuart Tyson <i>The House of Merykay at Askut and the Beginning of the New Kingdom in Nubia</i>	» 497
SOUVALTZI Liana <i>Discovering a Macedonian Tomb in Siwa Oasis</i>	» 511
STADNIKOW Sergei <i>Die verallgemeinerenden Ausdrücke der Könige des Alten Reichs auf den Sinai-Inschriften</i>	» 515
SWEENEY Deborah <i>Women's correspondance from Deir El-Medineh</i>	» 523
TORINO Marielva <i>A case of tooth replantation in Ancient Egypt</i>	» 531
TRAPANI Marcella <i>The Royal Decree and the Divine Oracle from the Old to the late New Kingdom: a Compared Research</i>	» 537
VACHALA Bretislav <i>Die Biographie des Ptahschepses</i>	» 547
VALBELLE Dominique <i>La notion d'identité dans l'Égypte pharaonique</i>	» 551
VERCOUTTER Jean <i>La fin de l'ancien empire: un nouvel examen</i>	» 557
VERHOEVEN Ursula <i>Ein saitisches Totenbuch</i>	» 563
VYCICHL Werner <i>Le quattro forme della coniugazione sdm-f</i>	» 565

WALKER Anna Kay <i>Ancient Egypt: An Educator's Guide</i>	p.	567
WIMMER Stefan <i>Ein Ächtungstext aus Israel/Palästina</i>	»	571
ZEIDLER Jürgen <i>A New Approach to the Late Egyptian "Syllabic Orthography"</i>	»	579
ZIGNANI Pierre <i>L'armée romaine de Haute-Egypte sous Dioclétien, à propos de «Praesentia»</i>	»	591
<i>Tavole</i>	»	597
<i>Indici</i>	»	599

The Great Sphinx at Giza: Date and Function

The Sphinx is one of the most important monuments in the world. It is unique in ancient Egypt. It is also considered to be the first colossal royal statue in pharaonic Egypt (fig. 1).

The Sphinx is a representation of a lion with a king's face and head. The king wears the Nemes headdress and a false beard¹. It is very difficult to decide whether this beard dates from the Old Kingdom or the New Kingdom. The most recent geological studies strongly suggest that the beard is from the Old Kingdom, part of the original limestone from which the Sphinx was carved. This material is dated to the Middle Eocene, about 50 million years ago². The Sphinx sculptors must have formed the beard with the head when the sculptor created the Sphinx as it would be impossible to add it as a separate piece. Lehner's study of the beard fragments also shows that it is similar to the original limestone of the Sphinx. Nevertheless, it is very rare to find sphinxes with long divine beards like that of the Giza Sphinx in the Old Kingdom. Such representations only occur on reliefs during Dynasty 5³.

In 1983 there was a fear among officials in the Egyptian Antiquities Organization (E.A.O.) that the Sphinx's head was in danger. No scientific study was involved and the fear was based entirely on superficial information and not on technical or geological evidence⁴. It was suggested that the Sphinx's beard should be restored to support the head. Graphic reconstructions of the beard were based on the photogrammetric maps that were made by the ARCE Sphinx Project in cooperation with the German Institute in Cairo⁵. While the graphics help us understand the ancient appearance of the Sphinx, the beard should not be replaced in actuality for two reasons.

The first point is that when the Sphinx's beard replacement was proposed no analysis was done to prove that the head was in real danger and the reconstruction was based only on fragments of the beard. Secondly, people are accustomed to seeing the Sphinx without a beard. Reconstructing a beard from pieces will not be suitable in the eyes of the public or of scholars.

In 1989 UNESCO commissioned a scientific investigation by the Centre Experimental de Recherches et d'études du Batiment et des Travaux Publiques to examine the head and the area of the Sphinx's neck. The UNESCO team used ultrasonic techniques for this purpose⁶. In addition, they took samples from different locations of the body for chemical analysis in order to get a more accurate

diagnosis of the surface weathering. One of the most important results of their work was to show that the neck and the head of the great Sphinx are the strongest part of the statue⁷. The conclusion was that the reconstruction of the beard was not needed to support the head.

Results from conservation of the Sphinx

A new phase of conservation of the Sphinx started in 1989⁸. During all previous modern phases of the preservation work on the Sphinx, sculptors were never involved. In our work, two well known sculptors were involved together with other specialists from the Egyptian Antiquities Organization⁹. The new phase was mainly concentrated on the removal of the stones that were added to the Sphinx's body from 1982-1987. These stones were themselves replacements from even older masonry repairs, mostly of 1926. The most recent work was a good opportunity to understand the modeling of the Sphinx for the first time. New information was obtained about the statue, and this result demonstrates that co-operation between archaeologists and artists is important in understanding how the Sphinx was carved by the Old Kingdom sculptors. The skill of the ancient artist and how he worked with the mother rock can be appreciated by a skilled modern artist¹⁰.

Most scholars have suggested that the "Overseer of all the Works of Khafra" changed a rock knoll that was left by the builders of Khufu's pyramid into a statue to resemble Khafra with the face of a king and body of a lion¹¹. It is not true, however, that the location of the Sphinx was so ~~harbored~~. As a result of his research Lehner suggests that the location of the Sphinx was chosen carefully in relation to the Pyramid of Khafra "which would also suggest that its location was not a chance occurrence of a knoll or quarry nodule"¹².

Stadelmann pointed out that the ancient Egyptians quarried about seven million cubic meters of limestone for the building of the Pyramids at Giza¹³. I believe that when the ancient Egyptians quarried the limestone from the Sphinx area to build the superstructures of the Giza Pyramids, it was in the mind of the Overseer of Works to carve the Sphinx in this location. The master plan of the Pyramid complex of Khafra included the Sphinx and its temple as an architectural component within the complex.

The Sphinx and its temple, however, are not part of the usual architectural components of the Old Kingdom pyramid complex. This program was completely set in Dynasty 4 and continued throughout Egyptian history until the beginning of the New Kingdom. The Sphinx and its temple are a unique addition to the standard pyramid complex that was never repeated in Dynasties 5 and 6 or the Middle Kingdom¹⁴.

Important new evidence has been revealed during conservation work now in progress on the Sphinx. To reiterate, most of the current work on the Sphinx is to replace the large stones that were added to the lion's body during 1982-1987 with other stones, their sizes based on the photogrammetric map that was recorded in 1979¹⁵. This is a unique opportunity for scholars to look carefully at the

mother rock and to distinguish all the different levels of reconstruction and conservation that happened down through the ages.

The most important fact is that the Sphinx's body is comprised mostly of poor quality layer beds of mother rock with many vertical fissures (Member II)¹⁶. At the very base of the Sphinx there is a harder quality stone which is, however, very rough and brittle (Member I). Some of the larger fissures pass through Member II and right down into Member I which makes up the lowest part of the lion body and the floor of the Sphinx. Since the natural limestone was formed in geological ages, the Sphinx's body layers were, of course, already of poor quality in the Old Kingdom when the Egyptians carved the Sphinx. If there was a master plan for the Khafra complex that included the Sphinx, the Overseer of Works had no choice but to carve it in this location and to incorporate these weaker layers in the massive lion body. The workers first removed the mother rock in a U-shaped ditch, leaving a standing rock core which became the Sphinx.

At the very base of the Sphinx, where we have gained a good look at the mother rock, there are extremely large limestone blocks, similar to those from Turah in their quality, that cover the bedrock and form a casing or coating over the Sphinx. Since the hard Member I mother rock does not weather, its rough surface underneath these large blocks must have been left as we see it by the original Sphinx builders. It was also in this condition when the casing of the very large blocks just mentioned was added. The conclusion follows that these large blocks belong to an Old Kingdom casing that was done by Khafra's workmen in order to complete the modelling of the lion body, since the poor quality limestone of Member II, higher up and comprising most of the core body, would not suffice for fine modelling. The Sphinx architect tried to complete the mother rock sculpture by adding stones, exactly as the builders did with the pyramids, matabas, and temples of this time¹⁷.

We know that the weak Member II mother rock was badly deteriorated when the Sphinx was restored in the 18th Dynasty, 1200 years after the carving of the Sphinx. We know from the Thutmose IV Granite Stela that the Sphinx was buried up to its neck in sand in around 1400 B.C. The implication of the Thutmose stela, set up at the chest of the Sphinx, is that this prince freed the colossal statue from the sand and thereby became pharaoh. The Sphinx became an important focus for a popular and royal cult under the name Horemakhet, "Horus in the Horizon", a combination of the god of kingship, Horus, and the sun god, Re. Toward the end of the 18th Dynasty kings began to make statues on a scale that rivalled that of the Sphinx, for example, the two huge statues of Amenhotep III known as Memnon Colossi.

When the 18th Dynasty excavators uncovered the Sphinx, I believe they found a situation very much like that found by Baraize, when he cleared the statue completely for the first time (in modern times) for the Egyptian Antiquities Service in 1926. The sand had buried the statue nearly to the top of its back. As Baraize's men hauled away the sand and debris of the ages, they found many large and small restoration blocks that had gradually fallen off the curves of the lion body, down to about one-third the height of the north side of the body, and two-thirds the height of the body on the south side. Baraize simply took many of these stones,

including the large ones of the original Old Kingdom casing, and cemented them back into place on the Sphinx's body.

Thutmose IV's workmen could have done something very similar. The result is that on the upper part of the Sphinx's body we find Old Kingdom blocks (Phase I) reset against a badly weathered Old Kingdom core. It is clear that there was plenty of time between Khafra and Thutmose IV — 1,119 years at least — for the Old Kingdom casing stones to have fallen off, and for the weak stone of the Sphinx's body to have weathered to the condition that we see it under the Phase I restorations of the upper Sphinx's body. This weak stone weathers very quickly even today in a process of flaking and powdering that leaves freshly fallen stone flakes and dust at the base of these layers in the sides of the Sphinx ditch.

In other words the Old Kingdom master sculptor had carved the face, beard and neck only. The Overseer of Works and the Pyramid architect protected the weak rock with large stones of the same quality used to encase the pyramid. The sculptor added a finish to the casing of large stones rather than to the mother rock. The sculptor worked together with the architect in the gross modeling of the mother rock and the final modeling of the exterior form. This exterior final form of the Sphinx's body, modeled as a lion was completed with masonry. We have seen clearly these relationships between unfinished mother rock and finished Old Kingdom outer masonry during our restoration work on the tail, the sides and the chest of the Sphinx.

These large stones are of the same quality as those used in making the causeway of Khafra. However, these large stones on the Sphinx were not taken by Thutmose IV from the Khafra causeway to restore the Sphinx as Lehner¹⁸ suggested. The surface of the mother rock was already completely covered with these stones in the Old Kingdom. Only the head and neck were completed in the mother rock and left without covering because the layers from which they were carved are stronger (Member III). This is indicated clearly in the much better preservation of the surfaces of the Sphinx's face and head as compared with the major part of the lion body.

Our studies indicate that the Old Kingdom stones that were put on the Sphinx body were respected in later times, perhaps because they were held sacred by the later pharaonic restorers. Possibly during the Saite Period, a second major layer of restoration masonry (Phase II) was added to the Sphinx's body. This layer, composed of smaller slabs than those of Phase I was laid over the earlier Phase I layer, the surface of which was cut away, however, to aid in the fitting of the Phase II stones. Between 30 B.C. and the 2nd century A.D., in the Roman Period, there was again a program to restore the Sphinx. Once again, the Roman Period restorers did not remove the Old Kingdom stones from the Sphinx's body. The layers of the Roman Period are composed of small brick-sized stones (Phase III) that were placed on top of the Old Kingdom stones and later casings. The Romans seemed to know in that period the importance of the older original stones. No other explanation can be given except, that they considered these stones sacred and divine.

In conclusion, I would like to emphasize three points:

I: The Sphinx was not located haphazardly because a knoll had accidentally

survived in the quarry, rather it was an element of the master plan of Khafra's Pyramid complex. The architect ordered the workers to cut and remove the stones from that location around the chosen rock. The stones that were removed may have been used in building the Pyramids and the temple in front of the Sphinx.

The location of the Sphinx is also reflected in the Sphinx's New Kingdom name, Hor-em-akhet, "Horus of the Horizon". The determinative "akhet" has two horizons or peaks and the sun disk in between¹⁹. The Sphinx as the Sun god can be seen between the Khufu and the Khafra pyramids as if they were the peaks of the horizon. From another angle the Sphinx can be seen in a similar horizon profile formed by the pyramid of Khafra and the pyramid of Menkaura (fig. 1).

II: Phase I masonry that completes the modelling of the mother rock to form the Sphinx's lion body was fully laid on during the Old Kingdom²⁰.

III: Direct modelling of the Sphinx mother rock was limited to the face, beard and the neck.

The Date of the Sphinx

The Sphinx is among those few monuments the original date of which is still debated by scholars; nowadays, amongst Egyptologists, the question of who commissioned the Sphinx is between Khafra and Khufu, only a generation apart. This was not so among earlier Egyptologists.

Maspero was the first to describe the Sphinx as a representation of Khafra with the body of a lion²¹. Many scholars followed this theory such as Ricke²², Hassan²³, Fakhry²⁴ and Edwards²⁵. Recently, a very important and comprehensive study of the Sphinx dates it to the time of Khafra²⁶.

Brugsch dated the Sphinx to an earlier period than Khufu²⁷ based on the Inventory stela, also known as the Stela of Cheops Daughter, found by Mariette in the Temple of Isis attached to the Queen's Pyramid of Khufu Gi-C. This text states that Khufu found the Temple of Isis and the Sphinx, both in need of repair²⁸. If this statement were true, it would mean that the Sphinx was carved before the reign of Khufu. However, on the basis of the writing style and the gods "inventoried" in the text, this stela has been dated to a period later than the Old Kingdom²⁹. Maspero suggested that the Inventory Stela is a later copy of a 4th Dynasty original³⁰, a theory supported by Hassan's comparison to the stela of Shabaka, which states that the original document was eaten by worms³¹. However, doubts have been raised as to whether or not this stela is really a copy of an old Kingdom original³².

Another suggestion³³ dates this stela to the 18th Dynasty or the 22nd Dynasty, although both dates seem unlikely.

New archeological evidence has been found recently at the south-eastern corner of the Pyramid of GI-C, and directly south of the Isis Temple. This evidence would support the existence of a chapel dated to Dynasty 4 and dedicated to Henutsen Khufu's wife. Additions to the chapel were made in the 21st Dynasty and the 26th Dynasty³⁴. During our excavation around the Queens' Pyramids of Khufu east of the Great Pyramid, we found a model of a Sphinx (fig. 2, 3) and three typically Late

Period canopic jars made of limestone. During the same work we also found a small limestone statue of a sphinx (fig. 2). The statue is unfinished but has a beard, forepaws and a tail. The statue is set upon a pedestal. The sculptor left his tool marks on the statue. The features and the modelling are not clear but the proportions can be distinguished: length 70 cm.: width of the chest 25 cm.: height 45 cm. (fig. 3). The style of the statue dates it to the 26th Dynasty.

The three Canopic jars are (fig. 4, a, b, c):

1. Duamut-ef with jackal's head

Height 30 cm. (fig. 4a)

2. Kebeh-senw-ef with a hawk head

Height 30 cm. (fig. 4b)

3. Ka-Imseti with a human head

Height 32 cm. (fig. 4c)

We did not find the fourth jar with Hapi's head (for holding the heart), which would complete this set.

The Sphinx and the Canopic jars support the dating of the Isis temple to the 26th Dynasty. The Inventory Stela must date to the same period. The priests of Isis probably created the text of the stela to give an aura of great antiquity to their temple and to the worship of Isis at this place³⁵.

As I argued above, I believe that the Sphinx is dated to Khafra and that it was a preplanned component of his Pyramid complex. However there are two other theories published recently; the first dates the Sphinx to the reign of Khufu³⁶ and the second to about 7000 B.C.³⁷.

Stadelmann believes that the Sphinx was not carved from rock that was left standing by chance, but was instead planned and carved during Khufu's time to represent him as a guardian³⁸. He states that the Sphinx is not a cult object of the temple that lies before its paws; he notes that the Sphinx does not lie on the axis of the temple. Furthermore, Stadelmann adds that the Sphinx as a form of the Sun god and its name Hor-em-akhet, "Horus in the Horizon" is known only from the New Kingdom³⁹.

In supporting his dating of the Sphinx, Stadelmann suggests that the Sphinx Temple was also built by Khufu rather than by Khafra. In his view its building style and technique differ from those used in Khafra's lower temple⁴⁰. He believes that the lower temple of Khafra was built on the axis of the pre-existing Sphinx temple⁴¹.

Stadelmann gives evidence to support his theory that Khufu was thought to be the incarnation of Ra⁴². He argues that Khufu built the Sphinx Temple as a sun temple on the eastern border of his Pyramid site, where it could be identified as the place where the sun rose and set. Thus the Sphinx was the guardian of the Horizon of Khufu⁴³.

Although I accept the hypothesis that Khufu could represent Ra himself, the arguments for dating the Sphinx and the Sphinx temple to the time of Khufu are not convincing.

Most scholars date the Sphinx to the time of Khafra, based on its location and the similarity of its temple to the Lower Temple of Khafra. Hassan cites the existence of a drainage trench running down the northern side of the causeway

leading from Khafra's Lower Temple to his Upper Temple as proof that the Sphinx was carved after the causeway of Khafra⁴⁴. The ditch excavated around the Sphinx interrupts the drainage channel, suggesting it was quarried later than the channel and causeway. More evidence indicating that the Sphinx should be dated to Khafra is cited by Lehner. "...the Khafra causeway is founded upon a bridge of bedrock separating this quarry (south of the Khufu Pyramid) from the quarry in the west part of the central field. It seems unlikely that Khufu would have reserved this rock for his successor's causeway, and so the more northerly quarry may have been exploited by Khafra"⁴⁵.

A further indication that the Sphinx and its temple are part of the pyramid complex of Khafra is the location of Khafra's Lower Temple which is built on the same terrace at exactly the same level as the Sphinx Temple. The Sphinx and the Lower Temple of Khafra are parallel to each other on this terrace⁴⁶. On the other hand, the architectural components of Khufu's pyramid complex, especially the Upper Temple and the recently discovered location of the Lower Temple, have no such similarity to the architecture of the Sphinx and its temple.

The broken cartouche of Khafra at the end of the text of Thutmose IV's Dream Stela set up between the Sphinx's forepaws further suggests that the kings of the 18th Dynasty knew that Khafra was the builder of the Sphinx⁴⁷. Lehner made a comparison between the Sphinx's face and Khafra's face based on the alabaster face of Khafra exhibited in the Museum of Fine Arts, Boston. The Sphinx face is certainly not meant to be a portrait; it is a stylized representation of the king, and because of this, we should look for a match in the proportions of the two faces. Even though they are of drastically different sizes, there is a striking similarity in the spacing of the eyes, headband, mouth and eyebrows on the two faces when they are overlapped at the same size while true to scale⁴⁸.

Finally, Menkaura built his Lower Temple with an open court similar to the Sphinx temple and the Lower Temple of Khafra. This shows the continuity of the building plans of Dynasty 4.

Recently Robert Schoch has come up with a theory that the Sphinx is dated to 7000 B.C.⁴⁹ Schoch bases this odd conclusion on the following geological and related evidence: weathering patterns; "two stage construction" of the Sphinx and the valley temples; ancient repair campaigns to the Sphinx's body; seismic surveys around the Sphinx.

Schoch decided that the weathering patterns of the Sphinx's body are due to precipitation as opposed to wind. Part of his evidence is a comparison of the weathering patterns on the monuments of the same period at Giza and on earlier monuments at Sakkara. Schoch conducted a seismic survey using geophones set along a line beside the main body of the Sphinx. The results are alleged to show "surface" weathering in the floor of the area surrounding the Sphinx. He reported that there was 6 to 8 feet of weathering along the sides and two forepaws. But back around the rump of the Sphinx, he found weathering to a depth of only 4 feet. Schoch believes that this "subsurface weathering" indicates that the Sphinx was carved initially on three sides but the back was left undone as bedrock. In his opinion, Khafra finished the job by cutting out the back of the Sphinx and partially finishing the body. Based

on the uneven weathering. Schoch estimates that the front was carved between 5000 and 7000 B.C.⁵⁰.

Schoch is alone in his conclusion among all the geologists and specialists who have studied the Sphinx at first hand. From the entire history of archaeology in Egypt, there are no other data to support the notion that there was a pharaonic culture as early as 5000 to 7000 B.C. that could have carved the Sphinx. Moreover, the evidence cited previously refutes this idea.

In his published opinions about the Sphinx, Schoch has not made clear just how he distinguishes between weathering caused by rain, and erosion caused by other forces. Even other geologists, including those who have studied the Sphinx carefully, cannot understand how Schoch arrives at his conclusions. Weathering, for example, is a condition of the surface of the stone. Schoch does not make clear what his seismic profiles have to do with weathering, or just what he means by "subsurface weathering".

K. Lal Gauri, Director of the Stone Conservation Laboratory at the University of Louisville carried out a geological survey of the Sphinx with the ARCE Sphinx Project. Gauri also analyzed samples of the various limestone layers, including those that Schoch believes are eroded by rain water. Gauri points out that the present dry climate of Egypt could easily have created the deeply worn surfaces⁵¹.

Function of the Sphinx

The earliest Egyptian sphinx dates to the reign of Khufu's son and Khafra's predecessor, Djedefra. The quartzite head and neck, found at Abu Roash and now in the Louvre, represents the King⁵². In periods after the Old Kingdom, sphinxes were clearly guardians, often set up along processional ways or at the entrances to temples. Edwards and others, based on texts, dates to the Late Period the Heliopolitan belief that the king becomes Ra after his death, suggesting that the Sphinx represented Khafra as Ra and acted as the guardian of the Giza necropolis⁵³.

Ricke states that the Sphinx was the image of Horemakhet in the 4th Dynasty; therefore he thinks that the Sphinx has a solar function⁵⁴. There are no attested priests or priestesses of the Sphinx temple in the Old Kingdom⁵⁵. However, there is evidence to indicate this type of cult activity implying priests in the Old Kingdom. The range of pottery types from the Old Kingdom found in a recent excavation suggest that services were carried on for sometime in the temple⁵⁶. The pottery was thrown out and turned over in the original construction debris during the plunder of the temple. Ricke suggests that the main temple service may never have been begun since the temple was never completed⁵⁷. Ricke also suggested that the lack of titles from contemporary and later Old Kingdom sources, which clearly relate to services in this temple or which even mention the Sphinx in a recognizable form, may be due to the possibility that another cult was practiced here, perhaps dedicated to the worship of Neith and Hathor in the "House of Khafra"⁵⁸, as designated in certain titles. This term, "House of Khafra" may

mean that the Sphinx and its temple were a part of the “House of Khafra”. However, the evidence shows that the interior of the temple was entirely finished with granite sheating, and probably alabaster flooring. It would not be unexpected that a service was begun in the temple even if the exterior walls had not been cased, if indeed this was ever intended⁵⁹. It is worth noting that Ricke saw the north corridor outside the north wall of the Sphinx temple as a storage area. Our concentration of Old Kingdom pottery types was found at the west end of the north corridor and outside of the north inner storage rooms. This indicates that the Old Kingdom pottery recovered here was tossed out from the interior of the temple, perhaps from these storage areas⁶⁰.

Anthes believes that the Sphinx represents Khafra as Horus presenting offerings to the sun god Ra, offerings which took place below the Sphinx on the lower terrace of the open Sphinx Temple court⁶¹.

During the New Kingdom, the Sphinx was called Horemakhet “Horus of the Horizon”. As Horus the Sphinx lies between the “horizon” formed by the Pyramid of Khufu (which is called *akhet*, i.e. “horizon”) and the Pyramid of Khafra. After 1550 B.C. the Sphinx was renewed as a symbol of kingship and the symbol of the nation⁶². From this time on to the Roman Period, temples, artifacts, ear tablets, shrines, rest houses and dream stela were left around the statue⁶³.

Lehner argued that during the New Kingdom cult of the Sphinx a royal statue stood in front of the Sphinx’s chest (see Lehner drawing I). He based his theory on the following:

1. There is a kind of platform of large limestone blocks behind the Thutmose IV granite Dream Stela that could be a base for the statue.

2. About six stelae found by Hassan show a king in this position, on four of them the king wears the nemes or the blue crown.

3. When the beard of the Sphinx is reconstructed graphically, there is a space between the back of the Thutmose IV Stela and the support of the beard where a colossal royal statue could have stood.

4. The image of a colossal animal-form god protecting the king by enclosing the king in its outstretched forelegs is a prominent motif in the 18th Dynasty when the Sphinx was renewed.

Lehner cited New Kingdom sculptures that show a king below the chin of other gods, such as the famous statue of Amenhotep II below the chin of the cow goddess, Hathor, and statues of the king below the chin of the ram headed sphinxes of Karnak. He estimates that the royal statue at the Sphinx’s chest would be 7.5 meters high (fig. 6).

There is however evidence against Lehner’s theory. Stela A from the Sphinx shows a man giving offerings to Amenhotep II and the Sphinx⁶⁴ (fig. 5). Here the king is not shown below the divine beard of the Sphinx. Stela B also shows the same theme but it is the god Horus who stands behind the Sphinx⁶⁵. It could be that the existence of a statue of the king in front of the Sphinx is to show a double function of the Sphinx in the New Kingdom. The prince is giving offerings to Horus and Ra as well as to the king and the Sphinx. In Stela C from the Sphinx the offering is given on the top row to Horus and Ra and below to Isis and Horus. This indicates the worship of a triad that is connected with Giza⁶⁶.

These stelae do not support the idea of a royal statue at the chest of the Sphinx. The image of the king in this position in depictions on stelae would be a purely symbolic image to convey the idea that the god is protecting the king. Lehner explains that the Sphinx is a symbol of kingship and the nation which argues against one king putting his statue below the divine beard. This could never have happened on a divine and unique symbol and so huge a monument as the Sphinx. The Sphinx cannot be compared to the statue of Amenhotep II with the Hathor Cow (see figs. 5, 6). This statue of Hathor belonged to Amenhotep II and other kings that may have wanted to convey the same idea could simply have another statue of Hathor carved. Not so with carving another Sphinx.

Finally, I propose another function for the Sphinx in the Old Kingdom which could explain:

1. Why Khafra chose this location for the Sphinx.
2. Why the monument and its temple are unique and not repeated in the Old Kingdom pyramid complex or in the architectural program of the Old Kingdom.

It is likely that the Sphinx represents Khafra as Horus giving offerings to his father Khufu, the incarnation of Ra who rises and sets in the temple. The temple is located to the north of Khafra's Lower Temple, in line with it and separated from it by a narrow passage⁶⁷. The main axis of the Sphinx Temple runs east-west and has two entrances, on the north and the south⁶⁸. Ricke believes that the eastern set of central stepped recesses are for a ritual to the rising sun and that the western recesses are for the setting sun. He thinks the twenty four pillars around the hall (six on each of the four sides) represent the twelve hours of the day and the twelve hours of the night and that the two pillars in front of each of the two sanctuaries represent the arms and the legs of the goddess Nut. The open court is connected with the solar cult⁶⁹.

Stadelmann suggested that in the minds of the 4th Dynasty Egyptians, Khufu became Ra himself, because in his opinion the name of Khufu's pyramid *Akhet-Khufu*, "The Horizon of Khufu", indicates that Khufu was equivalent to Ra, who sets and rises each day on the horizon.

Furthermore, he notes that Djedefra and Khafra, the sons and immediate successors of Khufu, were the first kings to bear the title $S\bar{3}R^c$, "Son of Ra", i.e. their father, Khufu, was Ra.⁷⁰ I believe this theory is correct. There are additional observations that I have developed to support this, which are:

I. The enlargement of the Upper Temple of Khufu and the abandonment of Khufu's ritual pyramid⁷¹. Khufu originally planned a cult pyramid where the upper temple finally stood. The architect had excavated the substructure of the cult pyramid (known as the trail passage)⁷² from the rock surface east of Khufu's Pyramid. Khufu changed his cult in year 5, therefore the Upper Temple was enlarged and the angle of the causeway from the Upper Temple was changed. This is why the "trail passage" was left without a superstructure. The Upper Temple may have been modified to include the function of the cult pyramid. The new cult that occurred during Khufu's reign may have dispensed with the need for a cult pyramid.

II. Most of the kings of the Old Kingdom who had a pyramid were buried beneath it, with the exception of Khufu, who was buried higher up within it. The

pyramid shape is clearly related to the *ben-ben*, the pyramidal symbol of the sun god at Heliopolis. The *ben-ben* was thought to be the true pyramid and the normal burial chamber was placed under the pyramid as *ben-ben* since the 3rd Dynasty, except for Khufu and Sneferu. A burial chamber within the *ben-ben* would identify the king with Ra because the king then is actually Ra rising above the horizon⁷³.

III. In the wall reliefs that were found around the pyramid complex of Khufu and decorated blocks probably from Khufu's complex that were found within the Amenemhet I Pyramid at Lisht⁷⁴, there are no reliefs that show Khufu giving offerings to the gods. The lack of this type of relief, may be due to the fact that the new cult of Khufu and Ra would have equated the king with the god.

IV. Khufu's pyramid and that of Khafra are the only two pyramids which have the so called air channels. Also there are five boat pits around the south side and east side of the Great Pyramid, and Khafra has five boat pits around his Upper Temple. These are unique and also are not part of the architectural program of the Old Kingdom pyramid complex. The two southern boat pits are separated by a wall of bedrock which is on the north-south axis of the Great Pyramid. One of the two so-called air shafts is located on the central axis of the southern face of the pyramid and is at right angles to the east-west axis of the two boats. The so-called air channels and the five boat pits are likely to be connected with the new cult of Ra⁷⁵.

V. There are no temples built by Khufu for other gods. The statuette of Khufu that was found at Abydos was not connected with a 4th Dynasty temple. The statuette was found in building K which was constructed against a 6th Dynasty gateway⁷⁶.

VI. The Egyptians in the Late Period remembered Khufu from such Middle Kingdom texts as the Westcar Papyrus and later the words of Herodotus. In the 26th Dynasty, Khufu's cult was renewed and his pyramid re-opened. In that time this cult was so important as to warrant priests and his name being engraved upon countless scarabs and amulets.

VII. Khufu's new cult may have been the first religious revolution in ancient Egypt. There are also suggestions that the king dismissed the priests of Heliopolis and organized his own cult at Giza. Khafra worshiped his father, Khufu, as Ra. Not long afterward, perhaps in the First Intermediate Period the Egyptians almost destroyed his temples. Likewise the statues of Khafra found inside his lower temple were smashed. This is a sign of revenge more than just theft. The destruction may have been a reaction to the religious changes of Khufu and Khafra.

VIII. There are few private statues found in the reign of Khufu. The reserve heads occur mainly in the time of Khufu. They may have functioned as substitutes for the heads of the deceased, as sculptors models. In any case they are another indication of changes during the reign of Khufu, perhaps to accommodate his new cult⁷⁷.

IX. Khufu's Upper temple is the first to contain the five niches, according to one reconstruction of the badly destroyed sanctuary. A suggestion is that four niches were to house Khufu's four statues representing him as Ra and Horus and the last niche was for a cult statue for Hathor. The Upper Temple of Khafra also

had five niches. Perhaps three of the statues represented Khafra as King; the other two niches were perhaps for statues of Khufu as Ra, and of Hathor. Khafra may have accepted his father Khufu as a god and worshiped him as Ra in his pyramid complex.

X. Although Khufu designed his pyramid with a burial chamber beneath the pyramid, this chamber was left unfinished. This change may have been made in Khufu's Year 5 to accommodate the new cult by planning a chamber higher up in the pyramid.

XI. Djedefra, the son who succeeded Khufu, built his pyramid at Abu-Roash. He ruled only 8 years. I suggest that the reason he did not build his pyramid next to his father at Giza was that he did not accept his father's new cult.

XII. Khafra carved the Sphinx to present himself as Horus, Son of Ra, to worship his father Ra in the Sphinx Temple. The layout of the Sphinx was designed to be connected with the temple. It shows the sphinx (Khafra) giving offerings in the temple to Ra (Khufu).

Khafra planned carefully for the location of the Great Sphinx. The main function of the Sphinx and its temple was to accommodate the new cult initiated under Khufu. The Sphinx represents Khafra as Horus giving offerings to his father Khufu, the incarnation of Ra who rises and sets in the temple. Since Khafra was the son of Khufu and Horus was the son of Ra, it seems reasonable to equate Khafra with Horus and thus to identify Khafra with the Sphinx. Finally, the term Akhet-Khufu was the name of Khufu's pyramid. Thus the later name of the Sphinx "Hor-em-akhet" could have recalled, for the New Kingdom Egyptians, the name of the Khufu Pyramid. The Sphinx was "Horus in the Horizon of Khufu".

1. Caviglia found fragments of the Sphinx beard and also the head of a uraeus. The estimation is that the fragments represent about 13% of the original beard. Most of the fragments were put in the Cairo Museum and one piece went to the British Museum. See M. Lehner, *Archeology of an Image: The Great Sphinx of Giza*. University Microfilm, Ann Arbor, Michigan 1991; and *Reconstructing the Sphinx*, Cambridge Archaeological Journal, Vol 2, No. 1, April 1992, pp. 1-26; S. Hassan, *The Sphinx: Its History in the Light of Recent Excavations* (Cairo: 1949), p. 11.

2. R. Said and L. Martin. Cairo and geological excursion notes, in: *Guidebook to the Geology and Archeology of Egypt* (F. A. Reilly, ed) Petroleum Exploration Society of Libya, 6th Annual Field Conference (1964) p. 115; Lehner, *The Great Sphinx of Giza*.

3. Lehner, *Reconstructing the Sphinx*, p. 16.

4. A. Saleh, *Study of the Reconstruction of the Beard of the Sphinx* (paper presented to the Egyptian Antiquities Organization: 1983).

5. *Ibid.*; M. Lehner, *The ARCE Sphinx Project: a Preliminary Report*, NARCE 112 (1980), p. 3-33.

6. B. Chagneaud and Bouineau, *Report on the Sphinx presented to E.A.O.*; see also a review prepared by Feisal Esmael, *Application of Modern Ultrasonic Methods in Diagnosis of the State of the Great Sphinx*, *The First International symposium on the Great Sphinx: Towards Global Treatment of the Sphinx*, Abstracts (E.A.O. Cairo 1992), pp. 31-35.

7. F. Ismael, Review of the UNESCO team work on Application of Modern Ultrasonic Methods, p. 31; see also for the Sphinx stone layers, K. Lal Gauri, Deterioration of Stone of the Great Sphinx, NARCE 112 (1981), pp. 35-47, The Deterioration of Ancient Stone Structures in Egypt, BdE 88 (1981); Selection of Stone for Repair of the Great Sphinx, NARCE 116 (1981-82); Geologic Study of the Sphinx, NARCE 127 (1984), pp. 24-43. The result of Gauri's work showed that the Sphinx consists of three limestone layers: Member III of the head, a very strong layer, Member II of most of the body, and Member I at the base. This result was presented to the E.A.O. before the study of the reconstruction of the beard.

8. Z. Hawass, in Feisel A. Esnael (ed.), Proceedings of the First International Symposium on the Great Sphinx, (Cairo, 1992), pp. 185-188.

9. Adam Honien and Mahmoud Mabrouk, both well-known Egyptian artists are involved in the Great Sphinx conservation.

10. Personal communication from Mahmoud Mabrouk.

11. I.E.S. Edwards, The Pyramids of Egypt (Viking 1985), p. 128; A. Fakhry, The Pyramids, p. 159; Hassan, Sphinx; C. Zivie, Sphinx, L'A Vol. 8 (1984), pp. 1138-1147.

12. Lehner, The Great Sphinx of Giza; Id., A Contextual Approach to the Pyramids, Archiv für Orientforschung 31 (1985), pp. 136-158.

13. R. Stadelmann, Snofru und die Pyramiden von Meidum und Dahschur, MDAIK 36 (1980), pp. 437-49.

14. Z. Hawass, The Funerary Establishments of Khufu, Khafra and Menkaura during the Old Kingdom, Ann Arbor, Michigan Microfilm (1987).

15. Lehner, The ARCE Sphinx Project, pp. 3-33.

16. See note 7 above.

17. See Lehner, The Great Sphinx of Giza; see also G. A. Reisner, History of the Giza Necropolis, Cambridge, Mass., Harvard University Press 1942), p. 11; Farouk el-Baz, Desert Builders Knew a Good Thing When They Saw It, Smithsonian, April 1981, pp. 116-122.

18. Lehner, The Great Sphinx of Giza.

19. Mark Lehner, personal communication.

20. Hawass, The History of the Sphinx Conservation, EAO forthcoming, for details.

21. G. Maspero, The Dawn of Civilization, London 1910, p. 237 and 247.

22. H. Ricke, Der Harmachistempel des Chefreden in Giseh, BÄBA 10, pp. 1-43.

23. S. Hassan, The Great Sphinx and its Secrets: Excavations of Giza 1936-37. Vol. VIII, Cairo 1953; The Sphinx: Its History in Light of Recent Excavations, Cairo 1949.

24. Fakhry, The Pyramids.

25. Edwards, The Pyramids of Egypt, see also Hawass, The Funerary Establishment.

26. Lehner, The Great Sphinx of Giza.

27. H. Brugsch, Egypt Under the Pharaohs, London 1891, p. 37.

28. See J. H. Breasted, Ancient Records I, pp. 83-83; G. Posener, Houroun: Nouvelles mentions de Cette Divinité, JNES 4, 1945, p. 241; G. Daressy, La fille de Cheops, Rec. Trav 30, 1928, p. 4.

29. Hassan, Giza, VIII, p. 116.

30. G. Maspero, Guide du visiteur au musée du Caire, Cairo 1915, p. 65.

31. Hassan, Giza, VIII, p. 117.

32. F. Junge, Zur Fehldatierung des sog. Denkmals memphitischer Theologie oder: Der Beitrag der ägyptischen Theologie zur Geistesgeschichte der Spätzeit, MDAIK 29, 1973, pp. 195-204; Vernus, disagreed with Junge's ideas in an informal paper presented at the University of Pennsylvania.

33. Hassan, Giza, VIII, pp. 116-117.

34. See Petrie and Hawass, Pyramids and Temples of Giza, p. 65; Reisner, Giza, p. 47; Jones and Milward, Temple of Isis, JSSE, Vol. 12, No. 4, p. 139-151.

35. See Lehner's discussion of this monument, Great Sphinx of Giza.

36. Stadelmann, Pyramiden, pp. 125.

37. R. Schoch, How Old is the Sphinx? (Paper written to accompany a presentation at the 1992 American Association for the advancement of Science Annual Meeting, Chicago 1992).

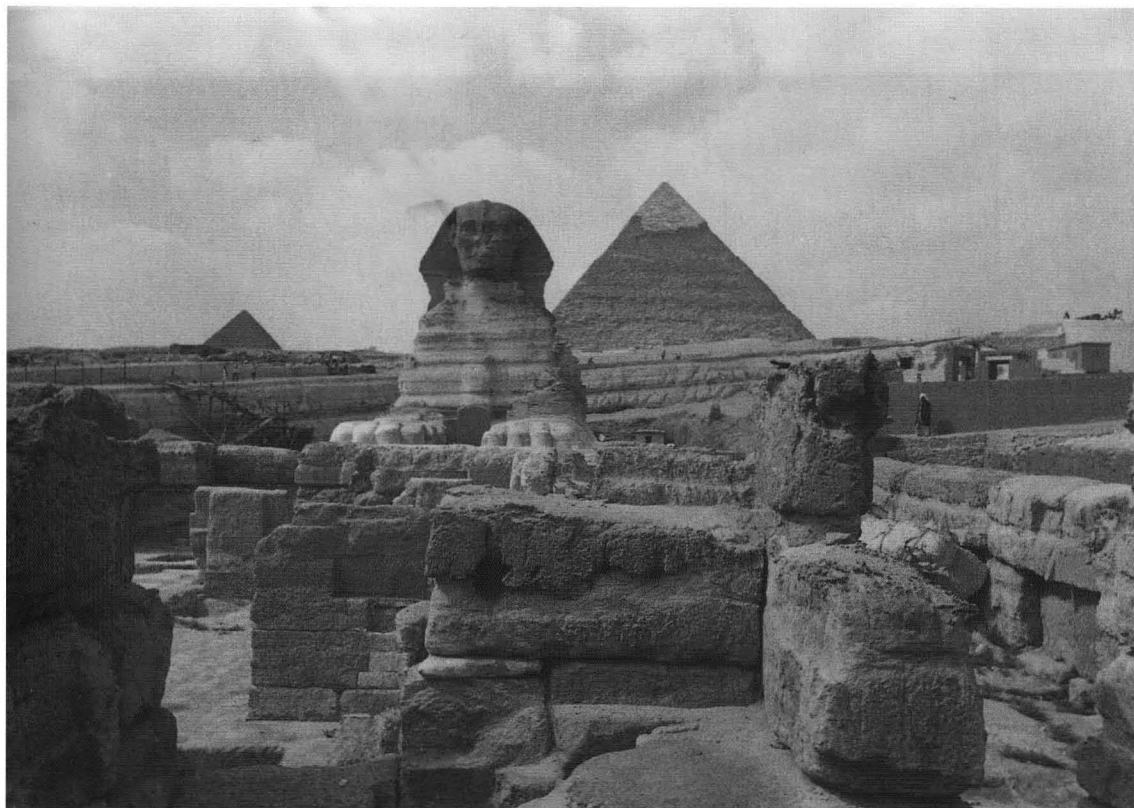
38. Stadelmann, Pyramiden, pp. 125.

39. Ibid.

40. Ibid., p. 126.

41. Ibid.

42. Ibid. pl 125; see also Müller, *Der gute Gott Radjedef*, ZÄS 91, 1946, pp. 129-33; see also other evidence supporting this theory in Hawass, *The Funerary Establishment*; see also my discussion in this paper on the function of the Sphinx.
43. Stadelmann, *Pyramiden*, p. 125.
44. Hassan, *Giza*, VIII, pp. 161-162.
45. M. Lehner, *A Contextual Approach to the Pyramids*, *Archiv für Orientforschung* 31, 1985, pp. 136-58.
46. Lehner, *The Great Sphinx of Giza*.
47. C. Zivie, *Giza au deuxième millénaire* (Bde 70, Cairo, 1976, Lehner, *The Great Sphinx of Giza*.
48. Ibid.
49. Schoch, *How old is the Sphinx?*
50. Ibid.
51. See Lehner, *The Great Sphinx of Giza*. K. Lal Gauri, *The Decay and Preservation of the Sphinx*, *The First International Symposium on the Great Sphinx*, Cairo 1992. See references in note 7 above.
52. Smith and Simpson, *Art and Architecture*, p. 116; Smith, *HESPOK*, pp. 31-32. The curve on the back of the head of the statue suggest that it had the shape of a Sphinx.
53. Edwards, *The Pyramids of Egypt*; Zivie, *Sphinx*, LÄ 40, 1984, pp. 1139-1147.
54. Ricke, *Harmachistempel* pp. 3-20.
55. Hawass, *The Funerary Establishment*, see Appendix.
56. Hawass and Lehner, *Excavations in the Area of the Great Sphinx* (forthcoming).
57. Ricke, *Harmachistempel* pp. 32.
58. Ibid., 39 ff.
59. Ibid. p. 7 ff.
60. Hawass and Lehner, *Excavations*.
61. Anthes, *Was veranlasste Chefren zum Bau des temples vor der Sphinx?*, BÄBA 12 (Festschrift Ricke 1971), pp. 47-58.
62. Lehner, *The Great Sphinx of Giza*.
63. Mentioned on the Serapeum stela is a man named Psametik who was a *hm-ntr* of Horemakhet (D. Wildung, *Die Rolle Ägyptischer Königen in Bewusstsein ihrer Nachwelt*, I, Berlin, 1969, pp. 184-85.
64. See Hassan, *The Great Sphinx and its Secrets*.
65. Hassan, *The Sphinx*, fig. 39, p. 188; fig. 40.
66. Hawass, *The Funerary Establishment*.
67. Maragioglio and Rinaldi, *L'Architettura* V, p. 134.
68. Stadelmann, *Pyramiden*, p. 126.
69. Ricke, *Harmachistempel*, pp. 1-43. Ricke and Schott support this hypothesis with scenes in offering chapels of Hatshepsut and Thutmose III in Luxor. Cf. E. Naville, *The Temple of Deir-el Bahri*, IV, London 1985, pls. 124-26, Schott, S., *Ägyptische Quellen zum Plan des Sphinx Tempels*, BÄBA, 10, 1970, pp. 49-79.
70. Stadelmann, *Pyramiden*, pp. 126.
71. M. Lehner, *The Pyramid Tomb of Hetep-heres and the Satellite Pyramid of Khufu*, Mainz am Rhein 1985, pp. 72-74, Hawass and Petrie, *Pyramid and Temples of Giza* pp. 107-111.
72. Hawass, *Funerary Establishment: Hawass and Petrie, Pyramids and Temples of Giza*; Lehner, *Satellite Pyramid*, pp. 36-39.
73. See Edwards, *The Pyramids of Egypt*, pp. 290-293 for a full discussion of the *ben-ben* and the pyramid shape.
74. Reisner and Smith, *Giza II*, Figs 5, 6, A, 13, Hassan, *Giza*, X pls. V-VII, Hayes, *Scepter*, I p. 64. Goedicke, *Re-used Blocks*, pp. 8-9.
75. See discussion on the boat pits, Hawass, *The Funerary Establishment*.
76. Z. Hawass, *The Khufu statuette: Is it an Old Kingdom Sculpture?*, *Melanges Gamal Mokhtar* T. XCVII/1, IFAO 1985, pp. 379-394.
77. Z. Hawass, *A Burial with an Unusual Plaster Mask in the Western Field of Khufu's pyramid*, in *The Followers of Horus*, Studies (Oxford, 1992), pp. 327-336.



1.



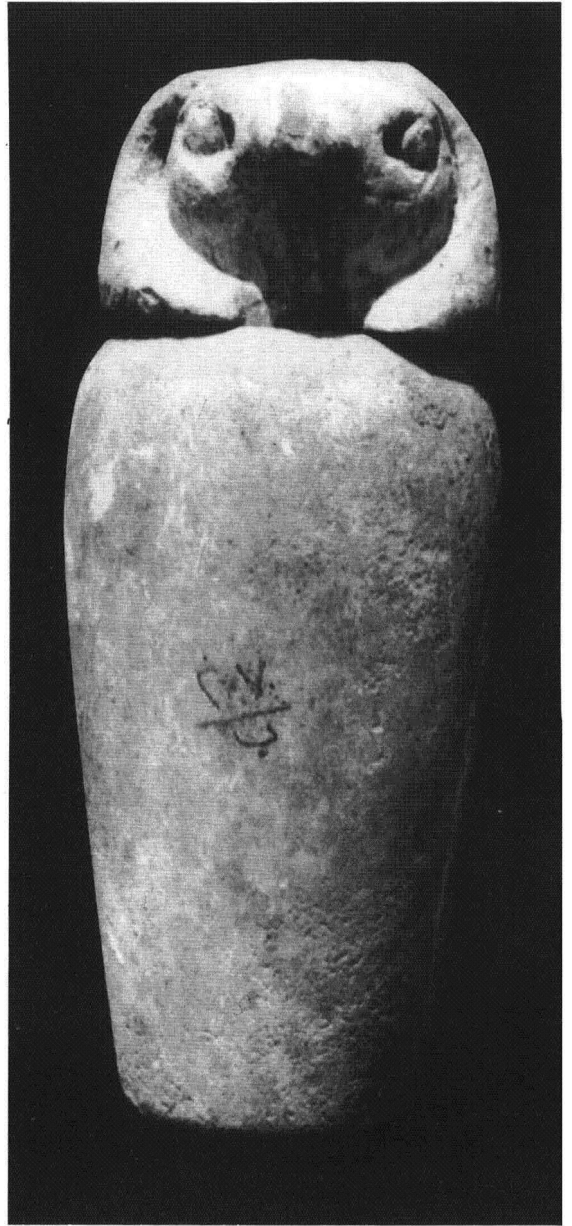
2.



3.



4a.



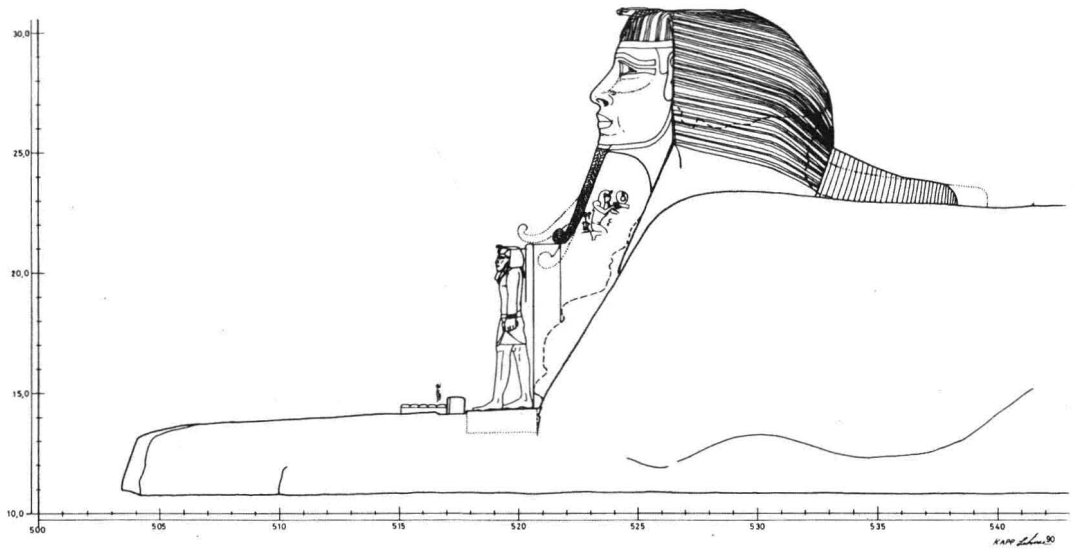
4b.



4c.



5.



6.