Current Research in Egyptology II

Edited by

Ashley Cooke
Fiona Simpson

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FOREWORD

In January 2000 Dr. Angela McDonald and Dr. Christina Riggs of Oxford University started a wonderful thing: Current Research in Egyptology. In the dark days before this there was little or no chance of Egyptology research students from different institutions meeting together in one venue to discuss their current research. The symposium was a great success and is now a regular annual event that has been hosted by a number of other universities: Birmingham, London, Durham and most recently, Cambridge. The success of CRE lies in one of its initial aims, 'to foster communication and the exchange of ideas'. This is achieved not only in the professional forum of a lecture hall, but also, and perhaps more importantly, over a meal and in local hostelries. It is therefore with great regret that it has taken some time for this publication of the Liverpool CRE II to appear in print and we offer our apologies.

On 18-19 January 2001, 34 speakers from ten different institutions came together in Liverpool to present papers on their current research in the field of Egyptology. With many of the symposium members working within the six World Heritage sites of Egypt it seemed only fitting that the venue should be held at the Albert Dock, itself part of the famous Liverpool skyline, that is also deservedly a World Heritage site. The lecture theatre of the Merseyside Maritime Museum amply accommodated the speakers and a full audience that had come to hear a set of fascinating papers. At the close of the first day a meal was held in the agreeable Georgian ambience of Staff House, allowing for more informal chat.

Not all papers presented at the symposium are included in this volume and we have compiled a list of speakers and their paper titles that do not appear here with the collected published papers. Many speakers have published their work as part of a larger study in other places, such as Sami Uljas, whose paper he presented at CRE II was selected as a winner for the Basel Egyptology Student Prize. Like some other CRE publications, abbreviations for periodicals and reference work adhere to the conventions of the *Lexikon der Ägyptologie*, vol. 7, edited by E. Otto and W. Westendorf (Wiesbaden: Harrassowitz, 1992).

A great deal of people assisted with the organisation of the symposium and in many ways they ensured an enjoyable two days. For more than generous sponsorship we are grateful to the Humanities Graduate School of the University of Liverpool and to Prof. Elizabeth Slater, then Head of the School of Archaeology, Classics and Egyptology. Dr. Piotr Bienkowski assisted with the booking of the venue and we are grateful to him for his inside advice that allowed us to host the symposium in such congruous surroundings. Dr. Angela McDonald and Dr. Christina Riggs have provided great advice from their experience of running CRE I in Oxford. Dr. Mark Collier, Prof. Ken Kitchen, Dr. Ian Shaw and Dr. Steven Snape of SACE not only agreed to present papers on their current research but they have also provided valuable support and advice throughout and we would like to thank them. The trooper Pat Winker was unfailing with her help in mailing colleagues, accounts and the organisation of the delightful evening meal held in Staff House. Many friends and colleagues rallied round before, during, and after the symposium and in particular we would like to thank Dr. Debbie Hunter, Dr. Katerina Koltsida, Dr. Sherine El-Menshawy, Dr. Akiko Sugi, Dr. Susanna Thomas and Sami Uljas. In more recent times the exceptional company of Jon Hogg and Glenn Godenho and has made the task of editing this volume slightly less arduous, despite a whole range of difficulties.

CRE has just recently been hosted by Cambridge University, organised by Rachel Mairs and Alice Stevenson. Following an enthusiastic response for papers the symposium was extended to three days, exemplifying the current growth of the subject and the dying need of CRE. It would seem CRE has gone full swing and will next be hosted at Oxford University and we wish the best of luck to the organisers.

Ashley Cooke
Fiona Simpson
December 2004.

Symposium Papers not Included in this Volume

'The religious and social customs of New Kingdom Gurob from the Manchester Collection'
Audrey Carter, The University of Manchester

'Lahun Papyri'
Mark Collier, The University of Liverpool

'Kahun: A glimpse of the Middle Bronze Age'
Ashley Cooke, The University of Liverpool

'Egyptomania'
Rachael Dann, TheUniversity of Durham

'Textual criticism and Ipuwer'
Roland Enmarch, University College, Oxford

'Harbours' and 'quays' in the Nile valley: a novel solution to the problem of the fluctuating river level'
Angus Graham, University College, London

'An ethnoarchaeological investigation of the Festival of Opet'
Hiroshi Hirayama, Wasada University

'Tutankhamun's body armour: materials, construction and the implications for the Late Bronze Age military industry'
Thomas D. Hulit, The University of Durham

'Hatshepsut's femaleness as an ideological force in the Speos Artemidos inscription'
Deborah Hunter, The University of Liverpool

'Far-flung frontiers in Egyptological-related research'
K. A. Kitchen, The University of Liverpool

'Space and gender in Ancient Egyptian village households'
Katerina Koltsida The University of Liverpool

'Cat versus snake: A symbolic conflict with magical connotations'
Panagiotis Kousoulis, The University of Liverpool

'Memphis: questioning the Old Kingdom capital'
Serena Love, University College, London

'The orthography of fear. Bird determinatives in Ancient Egyptian'
Angela McDonald, Worcester College, Oxford

'Petrie and the origin of the underclass'
Bill Manley, National Museums of Scotland, Edinburgh

'Gloves in Ancient Egypt'
Sherine el-Menshawy, The University of Liverpool

'What's in a toponym? On Egyptian and Greek names for Ptolemaic settlements'
Katja Mueller, Peterhouse, Cambridge

'The priests and officials at Thebes during the Twenty-Fifth Dynasty in Egypt'
Chris Naunton, The University of Birmingham

'The emerald mines in the Sikait-Subara region of the Eastern Desert'
Ian Shaw, The University of Liverpool

‘The use of stable isotopes to reconstruct Ancient Egyptian diet’
Andrew Shortland, Mike Richards and Sonia Zakrzewski, The Research Laboratory for Archaeology and the History of Art, Oxford

‘The Libyan in Egyptian ideology’
Fiona Simpson, The University of Liverpool

‘Excavations at Zawiyet Umm el-Rakham’
Steven Snape, The University of Liverpool

‘Aspects of Egyptian iconography’
Akiko Sugi, The University of Liverpool

‘Ramesses II in the Western Delta’
Susanna Thomas, The University of Liverpool

‘The human body in the Pyramid Texts’
Aloisia de Trafford, *University College, London*

‘Notions on interclausal relations in Middle Egyptian object complementation with the infinitive’
Sami Uljas, The University of Liverpool

‘Can an Egyptian’s name shed light on their religious beliefs? References to goddesses in personal names from 1070 to 332 BC’
Nina Wahlberg, The University of Birmingham

THE AGE OF THE SPHINX AND THE DEVELOPMENT OF THE GIZA NECROPOLIS

Colin Reader

Introduction

The research on which this paper is based has largely been undertaken in response to the work of the American geologist, Robert M. Schoch, who in the early 1990's published a paper which concluded that the Great Sphinx of Giza was significantly older than was generally thought.[1] Schoch reached this conclusion following a study of the limestones from which the Sphinx was carved. In these rocks he saw evidence for erosion by rain.

In Schoch's view there had not been any substantial rains in Egypt since the end of a post-glacial wet phase which ended circa 5000 B.C. Furthermore, Schoch argued that the limestones exposed during the construction of his early Sphinx would require a period of time to degrade. This, claimed Schoch, pushed the date for the construction of the Sphinx beyond 5000 B.C. – possibly to 7000 B.C.

This early date was anathema to Egyptologists, who conventionally date the construction of the Sphinx to the Fourth Dynasty reign of Khafre (ca. 2500 B.C.). As Egyptologists were quick to point out, there is no archaeological evidence to support the early date for the Sphinx that had been proposed by Schoch[2]. The people of Egypt from ca 5000 B.C. were known to archaeologists as hunter-gatherers; people who did not have the capability to work stone on such a monumental scale.

Schoch's case was weakened further by a number of geologists who had been working in Egypt and who put forward mechanisms of weathering that, they felt, allowed the degradation of the Sphinx to be explained within a time-frame that was consistent with the conventional age of the monument. These mechanisms generally relied on processes of chemical weathering, by which moisture in the air is able to remove soluble salts from the exposed limestone. Such salts were shown to be abundant in the strata from which the Sphinx was carved, strata which extend across most of the Giza Plateau.[3]

Chemical weathering and other agents of degradation, such as abrasion by wind-blown sand, have undoubtedly influenced the degradation of the Sphinx. As has been discussed in a previous paper, however, these processes are not able to account for all the features of degradation that are present within the Sphinx enclosure (the low-lying area in which the Sphinx sits). It has been argued that, in addition to the processes of weathering and erosion that have been cited by others in support of the Fourth Dynasty date for the Sphinx, additional processes of degradation have modified the exposed limestones.[4]

The nature of these additional processes is discussed in the present paper, which summarises the author's previously published work and explores a number of other, previously unpublished, issues.

The attribution of the Sphinx to Khafre – the location of the Sphinx

In order to support the attribution of the Sphinx to the Fourth Dynasty pharaoh, Khafre, it has been argued that the Sphinx was carved from a block of limestone, left-over from quarrying undertaken during the reign of Khufu.[5] If this were the case, it provides an earliest possible date for the construction of the Sphinx (i.e. not before the reign of Khufu). It has also been argued that, as an integral part of Khafre's mortuary complex, the site of the Sphinx was dictated by the layout of adjacent features, such as the Sphinx Temple, Khafre's valley temple and Khafre's causeway.[6] Both these arguments, however, tend to neglect the influence of natural processes on the development of the Giza Plateau.

The 'quarry-block' hypothesis assumes that original ground levels at Giza were above the level of the head of the Sphinx and were reduced by extensive Fourth Dynasty quarrying. Quarrying on this scale would, however, represent a gross modification to the Giza landscape and is not consistent with the extent of quarrying that has been established by archaeological investigation[7] nor with the geomorphological evidence that can be gathered from the site.

Aigner, identified that the Giza area had been inundated by a landward advance of the Mediterranean sea during the Pliocene (2-7 million years ago).[8] The erosion caused by this inundation was controlled largely by the south-easterly dip of the Upper Mokattam Limestones and resulted in the formation of the plateau, much as we see it today, bounded by a number of north and eastward facing raised cliffs.

[1] Schoch, 1992.
[2] Hawass et al, 1994, 45.
[3] Gauri et al, 1995.

[4] Reader, 2001.
[5] Reisner, 1942, 26.
[6] Lehner et al, 1994, 32.
[7] Lehner, 1985a, 121.
[8] Aigner, 1983, 318.

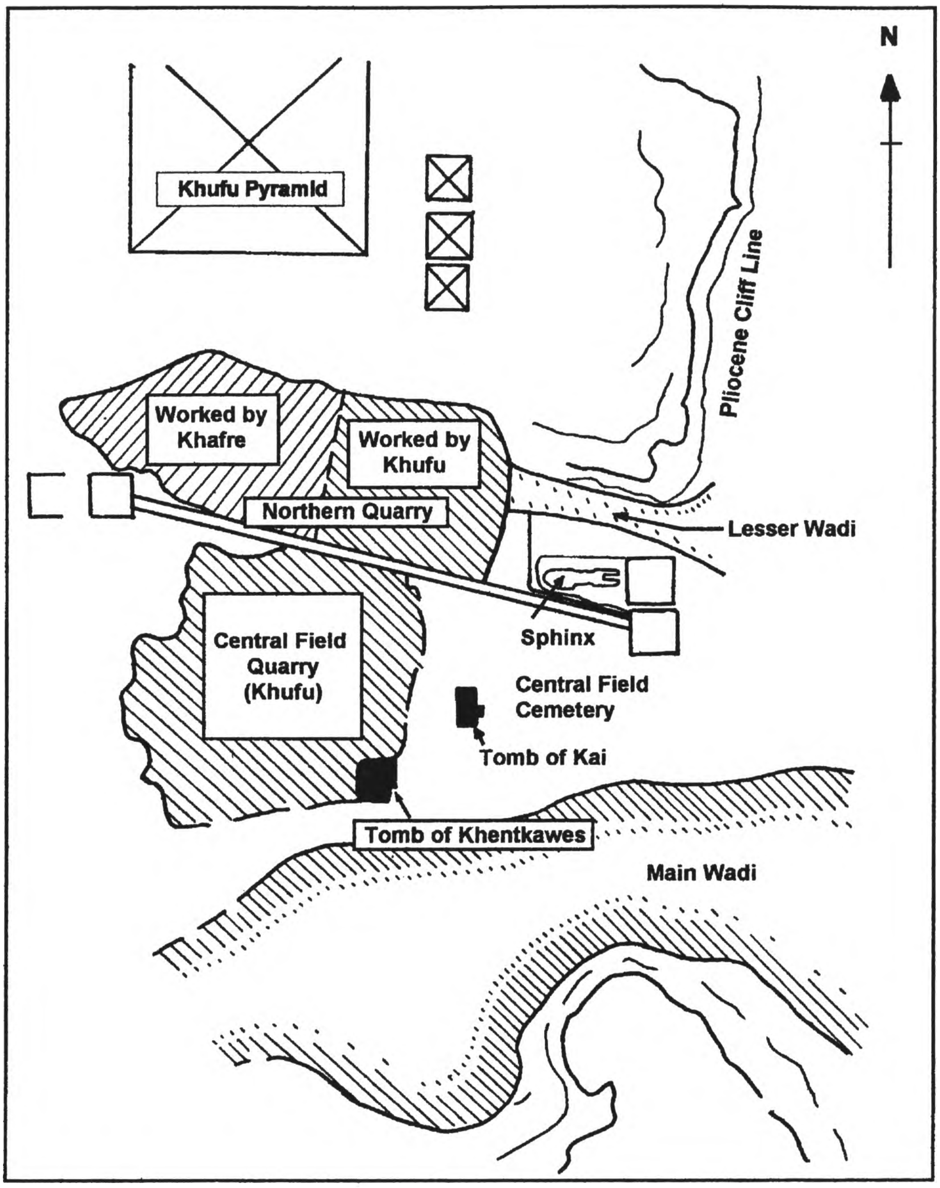

Fig. 1. Sketch plan of the central area of the Giza Necropolis.

In addition to the evidence presented by Aigner, there are a number of features which are relevant to the issue of the location of the Sphinx. To the south of the Giza necropolis is the 'Main Wadi', with the area between the Main Wadi and the Sphinx occupied by a number of tombs, the eastern part of the Central Field Cemetery (Fig. 1). Although the Central Field area has been modified by ancient quarrying and construction, it is possible to discern the original ground profile running through the lower part of a number of tombs and rising to the north and west towards the Sphinx.

To the north of the Sphinx, a modern tourist road runs east/west along the foot of a rock face into which a number of tombs have been cut. The state of weathering and erosion of this rock face, and its continuity with the Pliocene cliff line that defines the eastern limit of the Giza Plateau, indicates that this is a naturally eroded feature, which is considered to be the northern bank of a second smaller wadi (the 'Lesser Wadi'– Fig. 1). The presence of this Lesser Wadi has been independently identified by others.[9]

Rather than support the hypothesis that the position of the Sphinx was controlled by the presence of existing temples and other structures, collectively, these geomorphological features indicate that the development of the area surrounding the Sphinx was determined on the basis of the local topography. Originally, ground levels rose from the Main Wadi in the south, to a high point in the vicinity of the Sphinx. The mass of rock from which the Sphinx was later to be carved, was isolated from the northward continuation of the plateau (the area of

[9] El-Baz, 1992, Figure 4.

Khufu's pyramid) by the Lesser Wadi. The resulting outlier, capped by durable Member III strata is likely to have preserved the steepened profile of the Pliocene cliff line on its eastern flank and, consequently, may have been particularly prominent when viewed from the Nile valley.

The geology and degradation of the Sphinx

The limestones from which the Sphinx has been carved have been divided into three principal units or members.[10] The lowest lying rocks, the Member I strata, consist of a massively bedded reefal limestone. The Member I rocks form much of the floor of the Sphinx enclosure and both the lower part of the enclosure walls and body of the Sphinx. The overlying Member II rocks are by comparison, rather thinly bedded, consisting of a series of thirteen alternating harder and softer limestone beds. The Member II strata make up most of the body of the Sphinx and the southern and western enclosure walls. Above the Member II rocks, the head and neck of the Sphinx are carved from the Member III strata – perhaps the most durable of the exposed limestone units.

Concentrating on the Member II beds, chemical weathering has affected the softer beds to a greater degree than the more durable units. The resulting degradation, as discussed by Gauri[11], has taken the form of a pattern of near-horizontal banding, with the more durable beds projecting from the weathered face. This horizontal banding can clearly be seen on the body of the Sphinx (Fig. 2).

As Gauri noted, this banded degradation extends, relatively uniformly, across all four sides of the Sphinx.[12] It can also be observed along the eastern sections of the southern wall of the Sphinx enclosure, however, this banded degradation differs markedly from the pattern of degradation along the same limestone beds exposed in the western enclosure walls. What appears to have previously gone unnoticed is that in the west of the enclosure, the horizontal degradation reaches greater depth, resulting in the more durable beds protruding further from the cut face. Most significantly, however, these limestone beds are cut by deeply incised sub-vertical features, with the strata between the vertical features having a heavily rounded appearance (Fig. 3). These features of degradation, which are restricted to the western walls of the Sphinx enclosure, are considered to represent more intense degradation and, as such, they are particularly significant for the debate on the age of the Sphinx.

In response to these issues, a number of people have argued that it *may* be possible to explain the variation in degradation described above in terms of chemical weathering, with factors such as aspect and the position of the exposures with respect to groundwater movement thought to play a key role.

The issue of aspect can be readily addressed. The western enclosure walls (Fig. 3) and the chest of the Sphinx (Fig. 2) are exposures with the same aspect, both facing east towards the rising sun. It is evident that, whereas the degradation of the chest of the Sphinx is characterised by features described by Gauri in relation to chemical weathering, the degradation of the western enclosure wall is markedly different.

As well as sharing a common aspect, there are a number of other cut faces at Giza that are in a similar hydrogeological setting to the Sphinx. None of these, however, show even incipient development of the rounded degradation, which characterises the western Sphinx enclosure.

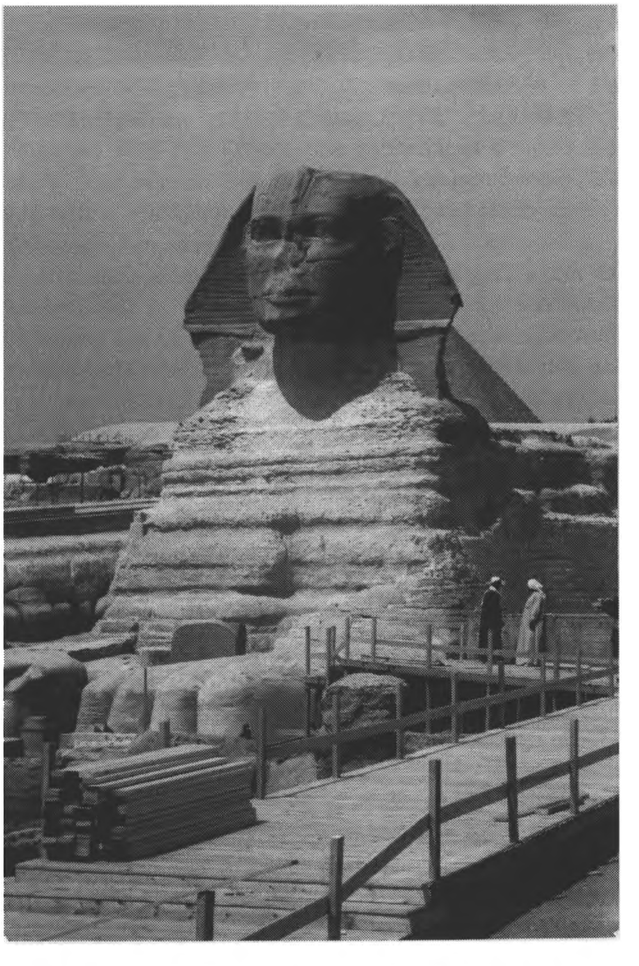

Fig. 2. Degradation of the eastern elevation of the Sphinx. Author's photograph.

[10] Gauri, 1984.
[11] Gauri, 1981.
[12] Gauri et al, 1995, 127.

Fig. 3. Degradation of the western wall of the Sphinx enclosure. Author's photograph.

The degradation of the walls in the western end of the Sphinx enclosure has few, if any, parallels within the Giza Necropolis. Furthermore, the processes responsible for this anomalous degradation had, over a scale of tens of metres, a selective or restricted effect on the exposed limestone beds, a characteristic, which is not generally associated with chemical weathering or sand abrasion. It is argued, therefore, that the development of this characteristic degradation requires the action of processes of erosion or weathering in addition to those that have been cited in support of the Fourth Dynasty date for the Sphinx.

The surface hydrology of the Giza Plateau

The Sphinx sits at the low lying edge of the sloping Giza Plateau, a location that is vulnerable to erosion, not from rainfall itself as Schoch advocated, but from rainfall run-off - a process that, in the right conditions, will follow heavy rain. Heavy rains are known to have been experienced throughout Egyptian history, with the resulting run-off leading to choking of tombs in the Valley of the Kings and, at Giza, to late Old Kingdom damage of mudbrick structures, as Reisner found at Menkaure's valley temple.[13] Indeed Lehner has provided evidence of run-off within the Sphinx enclosure, in the form of a shallow drainage channel eroded into the rocky enclosure floor.[14]

[13] Reisner, 1931, 44.

[14] Lehner, 1992, Figure 10.

The Giza Plateau rises from the former limit of Nile flooding in the east, to a watershed some 600 m west of the pyramid of Khafre, a catchment of over 1.5 km. Heavy rain falling on the fine grained rocks of the plateau is likely to have led to saturation of the ground surface, leading in turn to the discharge of the excess water downslope. In the vicinity of the Sphinx, such run-off will have discharged over the western walls of the enclosure eroding the limestone surface and scouring any exposed joints.

Independently, Selwitz has remarked on the contribution of heavy rainfall to the erosion of the Sphinx, having observed what is presumably small scale run-off discharging along erosion channels exposed at the surface. The same author notes, however, that "This analysis has to be viewed against meteorological data which indicates that between 1931 and 1981, annual rainfall averaged only about 25mm a year."[15] The implication of this is that, although the geomorphology of the exposed limestones supports the principle that the Sphinx has been subject to erosion by rainfall, the current climatic conditions do not support such a theory.

When attempting to reconstruct the history of the Sphinx, it is important to note that simply using the present climatic conditions as a key to understanding the historic degradation can be misleading. Available data indicates that before the late Fifth Dynasty, conditions in Egypt were generally wetter than at present, suggesting that

[15] Selwitz, 1990, 857.

before this time, increased annual rainfall will have been encountered.[16] Although not the heavy, sustained rains of 7000 to 5000 B.C. cited by Schoch,[17] the wetter conditions before the late Fifth Dynasty are likely to have been characterised by a seasonal rainfall distribution. Seasonal run-off from the plateau with its associated erosion, will have been separated by more arid conditions in which chemical weathering will have continued to degrade the exposed faces. This cyclical pattern of weathering and erosion will have rapidly led to the selective degradation of the western Sphinx enclosure walls and, it is argued, the development of a pattern of degradation which is fully consistent with what can be observed on site.

As both the climatic data and the late Fifth Dynasty flood damage to Menkaure's valley temple at Giza demonstrate, however, the erosion of the Sphinx by rainfall run-off does not, in itself, require any reconsideration of the Fourth Dynasty age of the Sphinx.

Fourth Dynasty development at Giza

Although rainfall over an intact Giza Plateau is likely to produce a substantial volume of run-off, the natural surface drainage of the plateau was severely disrupted in the early Fourth Dynasty by quarrying undertaken for the construction of the pyramids.

A short distance upslope of the Sphinx enclosure is the eastern limit of a quarry worked, according to Lehner, during the reign of Khufu (Fig. 1).[18] The presence of this quarry can be seen today as a rubble and sand filled depression.

Quarrying on this scale will have had a significant impact on the surface hydrology of the plateau, with the open quarry simply intercepting any run-off from the higher ground in the west. The permeability of the backfill that eventually accumulated within the quarried depression, is likely to have been too great for the generation of any significant run-off. Even when backfilled, therefore, the quarry will have acted as a soak-away, intercepting run-off from the higher plateau in the west. The effect of this quarrying, therefore, will have been to protect the Sphinx from further run-off from up-slope, bringing an end to the erosion of the western enclosure walls.

That the characteristic erosion of the western Sphinx enclosure is attributable to the effects of rainfall run-off is consistent with the pre-quarrying topography of the Giza Plateau. Furthermore, no other process of weathering or erosion has yet been identified which can fully explain both the distribution of the degradation within the Sphinx enclosure and the fact that these features of more intense degradation are, otherwise, generally absent from the necropolis. The anomalous degradation of the Sphinx enclosure must, it is argued, have developed before the Fourth Dynasty quarrying began, when run-off generated across an intact Giza Plateau, was able to discharge downslope, over the western walls of the Sphinx enclosure.

It is concluded, therefore, that the construction of the Sphinx pre-dates the construction of Khufu's pyramid complex and the associated quarrying.

The evidence of the sphinx Temple

There is, however, further geoarchaeological evidence to suggest that the conventional age of the Sphinx may need to be re-assessed. By far the most compelling evidence for a pre-Fourth Dynasty date for the original construction of the Sphinx comes from a low excavation into the Member I limestones, which run around the base of the Sphinx enclosure, to the north and west of the Sphinx.

Generally, this cut face exhibits significant degradation, however, at a point opposite the north fore-paw of the Sphinx, there is an abrupt change in the condition of the exposure (Fig. 4). From this position to a point that aligns with the eastern face of the Sphinx Temple, the exposed limestone exhibits comparatively little degradation.

This little-degraded face was cut, according to Lehner[19] in the Fourth Dynasty, probably to facilitate a northward extension of the Sphinx Temple, part of a second phase of Sphinx Temple construction.[20] The comparative lack of degradation along this Fourth Dynasty excavation, clearly identifies it as a later cutting into an existing excavated face. The more intense degradation of the limestone beyond this Fourth Dynasty excavation indicates not only the greater age of the original excavation of the Sphinx, but also illustrates the relatively benign influence of post-Fourth Dynasty chemical weathering on these particular Member I beds.

There is, therefore, a strong geological case to indicate a pre-Fourth Dynasty age for the construction of the Sphinx. But is it necessary to consider the early Sphinx as an isolated structure or is there evidence that the Sphinx was part of wider development at Giza?

Pre-Fourth Dynasty development at Giza

Studies of the fossil assemblage of the limestones from which the Sphinx was carved have shown that the masonry used to construct the Sphinx Temple was quarried from within the Sphinx enclosure, strengthening

[16] Butzer, 1971, 32.
[17] Schoch, 1992.
[18] Lehner, 1985a, 124.
[19] Lehner et al, 1980, 16.
[20] Ricke, 1970.

Fig. 4. The western limit (arrowed) of the Fourth Dynasty excavation (foreground) in Member I rocks within the Sphinx enclosure. Note the more heavily degraded Member I strata (background). Author's photograph.

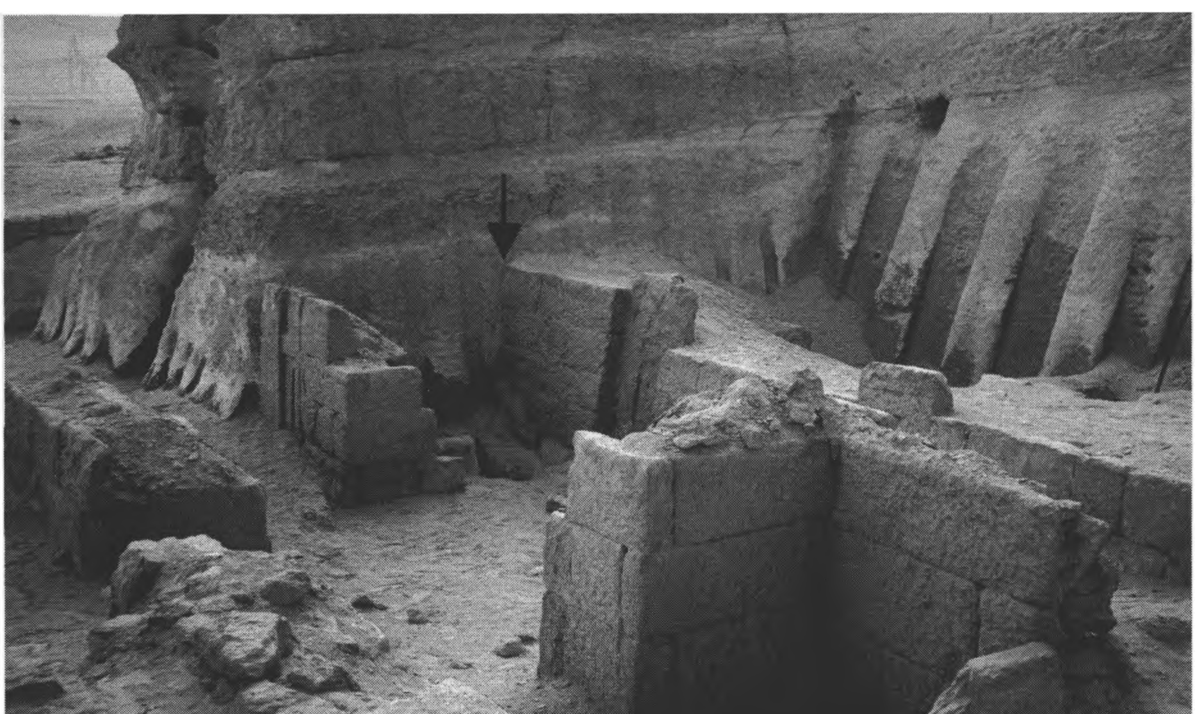

Fig. 5. Tombs, with architecture typical of the Fourth Dynasty at Giza, built against the east-facing façade of the tomb of Kai. At the position arrowed, the niched façade of the tomb of Kai had undergone significant degradation before apparently Old Kingdom tombs were constructed. Author's photograph.

the argument made above that the two monuments were built at the same time. The same studies, however, were unable to establish with any certainty the source of the stone used in the construction of Khafre's valley temple.[21]

Khafre's causeway and the southern Sphinx exposure share a common alignment, suggesting that the two features may be of the same age. Does this common alignment suggest that, like the Sphinx, the causeway may also pre-date the Fourth Dynasty?

Khafre's causeway was not built from masonry but was actually quarried from *in situ* limestone and, therefore, excavated from the plateau itself. The development of the causeway is, therefore, linked to the quarrying of this area of the plateau. The northern quarry has already been referred to, in relation to the effect of quarrying on run-off and on the age of the Sphinx. Lehner has argued, however, that in order to satisfy demand for stone, Khufu extended quarrying into the Central Field area, to the south of what later became Khafre's causeway (Fig. 1).[22]

Under the conventional chronology, however, in which the reign of Khufu pre-dates that of Khafre, this sequence of quarrying appears to provide an additional anomaly. The development of quarrying reported by Lehner requires us to accept that Khufu's workmen went to the trouble of opening up a second quarry rather than remove the ridge of limestone which forms Khafre's causeway. The difficulty with this hypothesis is that, at the time of Khufu's development, two reigns before Khafre, this causeway would have served no known purpose.

My interpretation of the actual sequence of development at Giza, however, is that the causeway was present, or at least the alignment of the causeway was established, before Khufu began the construction of his pyramid complex. Under this scenario the causeway limited the extent of the later quarrying works.

At the western end of the causeway is Khafre's mortuary temple and, with respect to this structure, two issues are particularly notable. Firstly the temple is built in two distinct architectural styles, the western end of the temple is constructed from low, well-squared, typically Old Kingdom blocks and, in plan, much of the temple is open space. By contrast, the eastern end of the temple is only some 40% open space and is constructed in large, poorly-squared, cyclopean masonry.

Also notable is that the cyclopean masonry is built on one of the highest points on the Giza Plateau, with ground levels falling away gently to the west, towards Khafre's pyramid, and sharply to the east, towards the Sphinx. In fact, the cyclopean portion of the mortuary temple is built on a more prominent location than even Khafre's pyramid; being situated on a low knoll that before the construction of the pyramid occupied a prominent position on the western Giza skyline.

On the basis of these observations it is argued that, like the Sphinx, Sphinx Temple and the alignment of Khafre's causeway, the cyclopean portion of the mortuary temple (the proto-mortuary temple) also pre-dates Khufu's development of the site.

There is one other feature that adds some weight to this grouping of structures. A feature that is shared by the Sphinx Temple and proto-mortuary temple and, to my knowledge, by no other temple at Giza. When building the Sphinx Temple, it was necessary to excavate up to 3 m into the sloping plateau to form a level floor. Rather than excavate the floor and then build internal walls from mudbrick or masonry, the lower courses of the walls in the west of the Sphinx Temple were fashioned from the *in situ* limestone strata – in effect these walls were carved out of the plateau itself as the excavation of the Sphinx Temple progressed. Other than the Sphinx Temple, the only other location where this architectural technique has been noted is in the eastern part of the proto-mortuary temple.

Towards an absolute date for the sphinx and associated structures

The use of stone in the Sphinx and associated structures, suggests that whoever undertook this construction had developed a competence in working stone and most significantly, with respect to the Sphinx Temple and proto-mortuary temple, a competence in the working of stone masonry. It is proposed, therefore, that the use of stone masonry in Egypt can be used to establish a timeframe into which the pre-Fourth Dynasty development at Giza can be placed.

Recent excavation at Helwan suggests that by the late First or early Second Dynasty, skills had developed in the use of stone in tomb construction.[23] On a larger scale, masonry was used in the construction of the Gisr el Mudir, which most probably dates from the Second Dynasty.[24] On the basis of the distribution of degradation within the Sphinx enclosure and the known use of stone masonry in Egypt, the excavation of the Sphinx and the construction in stone of the associated temples is tentatively dated to the second half of the Early Dynastic Period (Early Dynastic Period being the 1^{st}-3^{rd} Dynasties). However, other than a number of peripherally located Early Dynastic mastabas, such as Petrie's First Dynasty Mastaba 'T', located to the south of the necropolis[25], the Giza Plateau is not generally considered to have been a site of any importance until

[21] Lehner, 1985b, 140.
[22] Lehner, 1985a, 121.
[23] Kőhler, 1998.
[24] Mathieson et al, 1997.
[25] Petrie, 1907.

Khufu began the construction of the Great Pyramid in the Fourth Dynasty. Other than the evidence cited already in this paper for the age of the Sphinx and associated structures what, if any, evidence is there for pre-Fourth Dynasty activity at Giza?

Artefacts from what may be late Predynastic burials have been found at Giza, close to the Great Pyramid. [26] Wilkinson discusses this evidence, arguing that material of this type, from the Maadi culture of Lower Egypt, has been found at a number of locations in the Memphite area. Stating that "Although most of the sites are situated on the east bank of the Nile...there are recent indications that the west bank too was used for settlement and/or burial in the Pre-dynastic period." He then goes on to substantiate this by adding "Excavations within the modern settlement of Giza for the Cairo Waste Water Project uncovered a number of pottery vessels of the 'Maadi Cultural Complex'...confirming that Giza witnessed at least a limited degree of activity long before the Fourth Dynasty."[27] Although written to challenge the claim for pre-Fourth Dynasty development at Giza, Wilkinson's conclusion actually offers some support for the assertion that Giza was in use and, it is argued, a site of at least local importance during the Early Dynastic Period.

Given the extensive Fourth Dynasty construction activity that took place at Giza, however, it should not be surprising that few Early Dynastic monuments have survived. Large areas of the necropolis were cleared down to the limestone bedrock to allow the construction of pyramids, temples and mastabas. Areas not set aside for construction were selected for quarrying. These are both rather destructive activities and will have left little of the plateau undisturbed.

In the 1970's, excavation in the south of Giza encountered tipped debris, which had been cleared from the area of the pyramids during the Old Kingdom construction.[28] This debris was found to contain late Pre-Dynastic, First, Second and Fourth Dynasty material. Further evidence that there was Early Dynastic activity at Giza may, however, come from within the necropolis itself, particularly the Central Field area.

Both the lower rock-cut element of the Khentkawes tomb and the nearby rock cut mastaba of Kai[29] (Fig. 1) bear two groups of features that are of considerable interest for the present discussion. Firstly, these two tombs are remarkable in that, like few other exposures at Giza, the upper limestone beds are cut by features of erosion which resemble those on the western Sphinx enclosure walls. It is considered that these features were formed before the large scale Fourth Dynasty development of the site disrupted the pattern of surface drainage upslope of these tombs.

Remarkably, on these two tombs, the features of probable pre-Fourth Dynasty erosion are accompanied by a second set of features which also suggest an Early Dynastic origin for this construction. On the lower walls of these rock-cut tombs are the remains of niched or palace façade decoration, a typically Early Dynastic architectural device.

The niched façade features on the tomb of Khentkawes have been recognized by others,[30] and are limited to the lower part of the southern wall of the tomb, facing the Main Wadi. Given that, in its completed Fourth Dynasty state, the Khentkawes tomb was faced throughout with a limestone casing, which will have obscured the rock-cut niches, it is argued that the niched façade was part of an Early Dynastic development, which was usurped for the Old Kingdom burial of Khentkawes.

In the case of Kai, the remains of the niched facade extend along the southern and eastern faces of the superstructure, facing both the Main Wadi and the Nile valley itself. When compared with the tomb of Khentkawes, the excavated niches on the eastern face are better preserved, extending to a greater height up the external walls of the tomb. This better preservation can be readily explained; it is the result of protection from degradation provided by a number of tombs constructed against the eastern face of the mastaba.

Unlike the Early Dynastic architectural style represented by the niched façade, these additional tombs are characterised by the austere architectural style adopted throughout the Giza Necropolis in the Fourth Dynasty. An assessment of the eastern face of the mastaba of Kai suggests that the original rock cut tomb, with its niched façade, had been completed and exposed to degradation for some time before the addition of the overlying Old Kingdom construction. In places it can be seen that the niched façade had undergone significant degradation before the Old Kingdom masonry was added (Fig. 5).

Conclusion

The Sphinx was regarded by the ancient Egyptians as the guardian of the gates of the underworld on the eastern and western horizons, the points of sun-rise and sunset. According to Edwards[31] this association dates back to remote antiquity and suggests, it is argued, a solar association for the early Sphinx and associated structures. For example, situated on the western Giza skyline, the proto-mortuary temple was perhaps linked to the setting sun. Was it Giza's established link with worship of the rising and setting sun that led Khufu to build his pyramid

[26] Mortensen, 1985.
[27] Wilkinson, 2001, 161.
[28] Kromer, 1978.
[29] Hassan, 1932, 31.
[30] Maragliogio and Rinaldi, 1967, 170.
[31] Edwards, 1993, 122.

at the site, at a time when the sun god, Re, was achieving national prominence? If so, this may explain the name the ancient Egyptians gave Khufu's pyramid, for they called it "the pyramid at the place of sunrise and sunset"[32] a name which accords with the role of the site as discussed in this paper.

The Sphinx complex may not, however, have been the only Early Dynastic development at the site. The evidence for other structures that may pre-date the Fourth Dynasty is mounting, however, given the scale of the Fourth Dynasty development of the site, little further evidence may be forthcoming. The nature of the major construction projects undertaken during the reigns of Khufu, Khafre and Menkaure may mean that the legacy of this earlier activity has, to a large degree, been removed from the archaeological record.

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[32] Baines and Malek, 1980, 140.

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