

ARCHITECTURAL PRINCIPLES
IN THEORY AND PRACTICE:
THE NEW KINGDOM
NECROPOLIS AT SAQQARA
(EGYPT)

ZEVENENTWINTIGSTE KROON-VOORDRACHT

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(1868-1945)

Saqqara is the name of a modern Egyptian village which is situated on the left bank of the Nile, about 30 km south of Cairo. By extension, this toponym also designates the desert plateau which rises to a height of some 40 m directly behind the village. Throughout the pharaonic period, this stretch of high desert served as one of the main cemeteries of the Egyptian capital of Memphis, a large city which once spread over the floor of the Nile valley between the modern village and the bank of the river (Fig. 1). One should bear in mind that in the course of history the river-bed gradually shifted eastwards, away from the desert escarpment, whereas the city itself seems to have developed as a ribbon of semi-independent entities extending from close to the Fayum Oasis in the south to the tip of the Nile Delta in the north (Jeffreys 1985, 4-10, 48-55; Jeffreys & Smith 1988; Jeffreys & Tavares 1994, 154-159). This situation is still reflected by the location of the Memphite cemeteries, which likewise stretch along the valley edge for a distance of about 80 km between Meidum and Abu Roash. The ancient Egyptian urbanistic principles are still badly understood. Due to the virtual impossibility to excavate in the densely populated and water-logged Nile valley, where yearly inundations and the levelling of ancient mounds have wiped out most of the evidence, our means to recreate the original cityscape are very limited.

This circumstance explains the importance of the Memphite cemeteries, because they provide the main archaeological and epigraphic evidence for the daily life of the capital – rather appropriate because according to the ancient Egyptians death was nothing else than a continuation of life. The internal organization of these necropoleis (true cities of the dead), with the royal pyramid in the centre and the servants accompanying their deceased masters, reflects contemporary society. One of the reasons why the city was so extensive lay in the choice of a suitable burial-ground by each successive pharaoh. Both political, economic, and cultic reasons determined



Figure 1.

Reconstruction of the ancient landscape around Memphis. The city centre lies in the foreground, with the clearly recognizable enclosures of the chief temples. The necropolis of Saqqara lies at the edge of the desert in the background (drawing by J.-C. Golvin).

whether the king would construct his monument next to the pyramids of his predecessors or rather in a prominent location on virgin ground. In each case the private cemeteries and the capital's suburbs duely followed the monarch's whims.

The plateau of Saqqara lies directly opposite the heart of ancient Memphis, where the remains of the temple of the town-god Ptah and of two royal palaces (built by the pharaohs Merenptah and Apries) have survived. Memphis was founded by the legendary first pharaoh Menes around 3100 BC; however, the kings of the succeeding First Dynasty were still buried at their home-town of Abydos in Upper Egypt. The Second Dynasty pharaohs were the first kings to be buried at Saqqara, where the presence of a distinctive wadi shielded from the valley by a rocky escarpment

rather reminded of the grandeur of the royal necropolis at Abydos (Jeffreys & Tavares 1994, 150-151). Initially, the royal cemetery at the end of the wadi was kept quite separate from the private tombs of high officials which sprang up along the escarpment further north (cf. Fig. 2). In the course of the Old Kingdom (2575-2134 BC), this spatial segregation was gradually abolished, until by the end of that period considerable parts of the plateau were encroached by extensive cemeteries of *mastabas* (rectangular bench-shaped private tombs). Middle Kingdom tombs at Saqqara are rather rare, since the pharaohs of that period showed a preference for the southern sites between Dahshur and the Fayum. In the

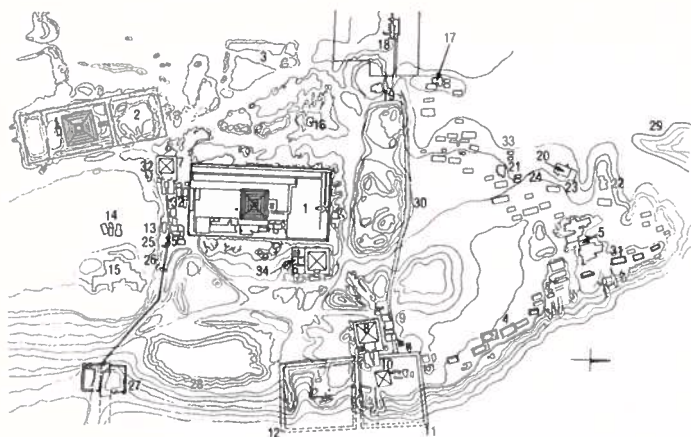


Figure 2.

Plan of the north half of the necropolis of Saqqara: 1. Step pyramid of Djoser; 7. Pyramid of Unas; 8. Pyramid of Teti; 9. Teti pyramid cemetery; 12. New Kingdom rock-tombs; 14. Concession of Leiden expedition; 26. Concession of Cairo University expedition (after *Dossiers de l'Archéologie* 146-147 (1990), 126-127).

following, I would like to concentrate on the next cultural period, the New Kingdom (1550-1070 BC), when the Saqqara necropolis witnessed a spectacular building activity (Martin 1991).

The first evidence for the presence of a New Kingdom necropolis at Saqqara came up with the exploitation of the site by European collectors and adventurers at the beginning of the 19th century. The site was robbed of statues, wall-reliefs, and exquisite objects, which found their way to numerous private and public collections all over the world. Here, they continued to intrigue and fascinate an audience of both dilettantes and scholars, until – about 150 years later – numerous expeditions set out to rediscover the archaeological context of these treasures. First and foremost was

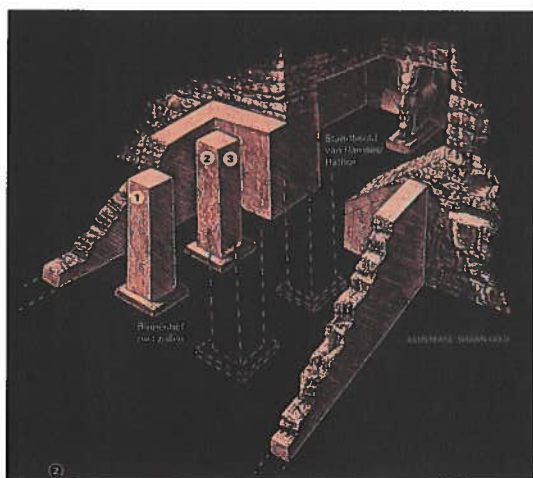


Figure 3.

Reconstruction of the rock tomb of Netjeruymes, with a pillared hall built onto the escarpment holding the rock-cut chapel (after National Geographic Magazine, October 2002, 35).

the joint mission of the National Museum of Antiquities in Leiden with the Egypt Exploration Society from London (1975-1998), later continued as a joint venture between the Leiden Museum and Leiden University (1999-present). Soon they were seconded in the field by French, Egyptian, Japanese, and Australian missions, all working for the common aim of unravelling the history of the Saqqara necropolis and, thereby, of New Kingdom Memphis. In the meantime thirty years have passed and we are now able to draw the first conclusions on the mechanisms which determined the spatial organization of the cemetery as a whole and the construction of the individual tombs in particular.

LAYOUT AND DISTRIBUTION

The Saqqara plateau as a whole is about 7 km long and 1.5 km wide, and is cut into different sections by a number of wadis running from west to east. As stated above, most of the area had already been overbuilt during the preceding periods. It is no surprise, therefore, that the officials of New Kingdom Memphis felt particularly attracted to the steep cliffs bordering the plateau in the east. In view of the predilection for free-standing *mastaba* tombs during the preceding periods, the escarpment was still virtually untouched, offering the possibility to cut out several levels of rock-tombs of a type familiar from contemporary cemeteries at Thebes and elsewhere. Just like these parallels, they occasionally possessed gateways and forecourts built in front of the cliff (Fig. 3), whereas the rock-cut tomb proper comprised at least an offering chapel and a shaft or stairway leading to the underlying burial-chamber. Although only a small section of the escarpment has so far been explored, it rather looks as if there was a continuous line of such rock-tombs along the foot of the plateau, which thereby were well accessible for those relatives who came from the city to bring food and drink to the deceased (Zivie 1990; Zivie 2000; Zivie 2003).

Elsewhere in Egypt, rock-cut tombs were the usual type at the time, both for private officials and for the kings; the New Kingdom pharaohs had given up the habit of constructing pyramids and were now interred in the Theban Valley of the Kings. The peculiar situation at Saqqara is that the top officials of the realm decided to be buried here, rather than around the contemporary royal cemetery at Thebes. At the same time, they developed a hitherto unknown type of funerary monument, viz. the private mortuary temple which is loosely based on the royal examples of the time (Fig. 4). It has therefore been postulated that the construction of the Saqqara monuments is an intentional demon-

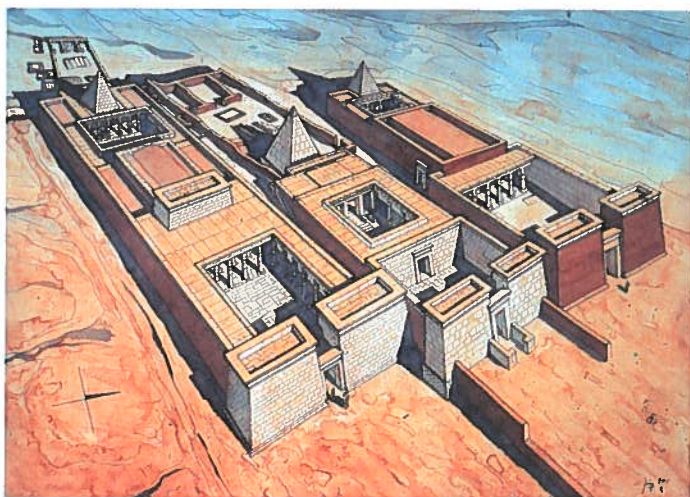


Figure 4.

Reconstruction of the tombs of Horemheb (left), Tia (centre), and Maya (right) as seen from the south-east (drawing by J.-C. Golvin).

stration of distrust in the monarchy and a usurpation of its privileges, phenomena which would have resulted from the failure of King Akhenaten's religious revolution (Van Dijk 1988; Van Dijk 1993, 189-204). However, this statement is untenable since recent evidence clearly shows that the new type of temple-tomb already existed during the reign of Akhenaten (1353-1335 BC), whereas the earliest tombs of top officials at Saqqara even predate this period. Thus, the dissociation of royal and private cemeteries may rather reflect the growing independence of the New Kingdom bureaucrats who were proud of their professional and military background (Memphis being the royal residence, but also a major garrison and naval base). The private temple-tomb could be a sign of the rise of personal piety and the greater stress on the bond between the deceased and the gods, especially Re (worshipped at nearby Heliopolis) and Osiris (who had a cult centre near Giza where the ancient Egyptians situated the entrance to the netherworld).

Accordingly, there was a renewed interest in the construction of free-standing tombs (although these should not be called *mastabas*, being of a quite different type). The only place where these could be built was on the high desert, and we have already mentioned that this was already quite full at the time. Recent investigations have demonstrated the presence of simple pit-graves dating to the mid-Eighteenth Dynasty (Van Walsem 1999); these could easily be squeezed in between the rows of Old Kingdom *mastabas*. In order to construct the more ambitious temple-tombs the contractors simply tore down earlier monuments, reusing the mudbricks and carved reliefs in foundations, pavements, and wall revetment (cf. Schneider 1996, 81-90; Van Walsem 2001, 19). Several sectors of the vast necropolis were favourite at the time. Thus, there is a cluster of New Kingdom tomb chapels around the Teti pyramid, towards the north end of the plateau. Another concentration is situated to the south of

King Djoser's step pyramid. This rather suggests that the contractors, and later the funeral cortèges and offering-priests, used the ruined remains of the Old Kingdom causeways of Teti and Unas as an easy means of access to the necropolis, and that pragmatic, rather than religious, reasons determined the choice of burial-ground (Raven 2000, 140). The same frame of mind characterizes the reuse of Old Kingdom tomb-shafts, originally belonging to dismantled *mastabas* and now appropriated by the new owners of the plots. In one instance (the tomb of Meryneith) even a *royal* subterranean complex of Second Dynasty date was usurped (Raven & Van Walsem 2003b, 98-100). The occurrence of yet another concentration of New Kingdom tombs towards Dahshur is still rather puzzling (Yoshimura & Hasegawa 2000).

In an earlier publication, I have already studied the various patterns of distribution which can explain the position of the individual tombs (Raven 2000, 136-138). It is quite clear that there were clusters of tombs belonging to people with the same professional background, for instance goldworkers near the Teti pyramid (Ockinga 2000) and directors of the treasury along the Unas causeway. In other cases, we can clearly observe how people were buried next to, or even within, the tombs of their superiors, thereby reflecting an age-old custom dating back to the royal tombs of the Archaic Period (cf. Raven 1991, 2). Finally, there were family connections and in some cases even dynastic considerations which influenced the choice of a burial-plot. The resulting pattern of the necropolis as a whole is extremely complex, especially because in the course of 300 years space became a problem and tomb-owners again started to dismantle and usurp parts of earlier constructions (cf. Martin 2001, 2). At the same time, there was the permanent need to respect older thoroughfares or to create new streets and alleys. The interpretation of all this conflicting evidence is not particularly easy, and the matter

is further complicated by the massive destruction of the monuments during later periods and by the incomplete excavation and publication of the tombs in recent years. This explains that we have booked less progress in this respect than in other fields of study.

ORIENTATION

Egyptian architecture is permeated by the concept that buildings had to be oriented in a specific way in order to conform to the ordering principles of the cosmos (Badawy 1968, 183-189; Arnold 1994, 180-182; Spence 1997). For funerary architecture, the royal pyramids and private *mastabas* of the Old Kingdom already set the example. Generally, these constructions were meticulously oriented on the four directions of the sky. The predominant cultic direction was one from east to west, because the entrance of the netherworld was situated towards the setting sun and accordingly the priest faced that direction in order to address the deceased. This is reflected by the position of the main cult chapel at the west end of the pyramid temple or *mastaba*, with the stela or false door drawn up against its west wall. In the royal pyramids, there was also a stress on the direction from south to north, especially in the internal galleries. This had clear stellar connotations and symbolized an exclusive bond between the deceased monarch and the polar star – a bond which was not felt to exist for ordinary mortals. Still, one can observe that the main axis of the private *mastabas* generally ran north-south as well.

In the New Kingdom tombs at Saqqara, however, the plan is dominated by a strong east-west axis (Fig. 5). The entrance pylon or gateway is on the east side, facing the rising sun and the land of the living from which the relatives of the deceased came up with their offerings of food and drink. It gives access to a courtyard with an offering chapel on its west side; this basic layout may

be extended by the accretion of other elements (such as vestibules, statue chambers, antechapels, or additional courtyards), but these are always strung out along the main axis of the tomb. Wall reliefs or paintings tend to stress this axial character, by showing rows of offering bearers, priests, and mourners entering the tomb and moving towards the deceased who is depicted at the far end, thereby giving the tomb a character not unlike that of contemporary processional temples (cf. Raven [in press 1], Section 3.11). Large-scale figures of the deceased may be represented as entering and leaving the tomb, or as praying to the rising and the setting sun and to Osiris, lord of the west. The presence of stelae with

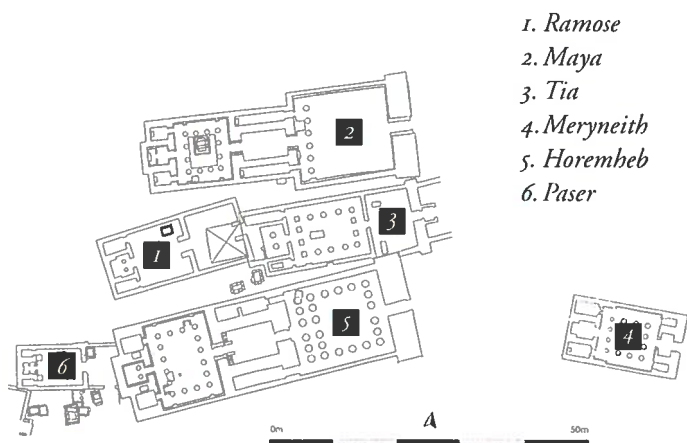


Figure 5.

*Plan of the New Kingdom tombs
 excavated by the (Anglo-)Dutch expedition.*

hymns to the sun or Osiris further stresses this aspect of solar orientation; one should realise that at the time the god Osiris could already be regarded as the nocturnal aspect of the sun god Re (Van Dijk, in: Martin 1989, 61-69; Van Dijk 1993, 133-150). The same message was proclaimed by the small pyramids constructed behind the tombs or on the roofs of their cult chapels, which must once have dominated the skyline of the necropolis. Texts and representations on the pyramidia stress their solar connotations (Fig. 6).

Although the orientation of the Old Kingdom pyramids is almost exact and was based on astronomical observations of true north, this is certainly not the case for the New Kingdom tombs. Even in those tombs that reused an Old Kingdom tomb-shaft, we can observe an intentional diversion from its often rather precise orientation in favour of an alignment that strikes us as being much



Figure 6.

*Pyramidion from the tomb of Pay, now Louvre N.362
(after J. Berlandini, Bulletin IFAO 77 (1977), pl. VB).*

more erratic. For instance, the axis of the tomb of Horemheb lies on a bearing of $71^{\circ} 41'$, which may be compared to the alignment of 67° for the tomb of Ramose, between 74° and $75^{\circ} 30'$ for Maya, approximately 77° for the tomb of Pay and about 81° for Iniuia's monument (K.J. Frazer, in: Martin 2001, 1; Raven [in press 1], Section 2.1). This raises the question whether the architects perhaps observed another natural phenomenon, for instance sunrise. Obviously, this would imply that the foundations of the various tombs were laid at different dates, and one wonders which events then determined the choice of date for such ceremonies. Clearly it was not the death of the tomb-owner, since the tomb was constructed already during his lifetime. In view of the fact that adjacent tombs have such widely divergent orientations, we can rule out the alternative solutions that they were constructed at straight angles to the Nile, or that their axis was directed towards a local landmark such as a major sanctuary (cf. Badawy 1968, 183-186). All this is very puzzling, and perhaps one should rather conclude that mere traffic considerations prevailed. With their almost parallel alignments, the monuments of Pay and Iniuia may have been parts of the same 'masterplan', which was intended to allow free access to the major construction of their much more important contemporary Horemheb. This kind of pragmatic considerations would be in keeping with what we know about the contemporary rock-tombs. Here the alignment of the natural cliff was the only element which determined the orientation of the tomb. For cultic reasons, one had always recourse to the principle of symbolic orientation: the use of specific symbols in order to orient the building in a different direction to its physical orientation (Spence 1997, 9-11). This is obvious in the case of the Saqqara rock-tombs excavated in the Bubastieion area, where the chapels are directed towards the north but display the usual symbolic images representing west instead (cf. Zivie 2000, Fig. 8).

Another aspect of orientation not dealt with before concerns the

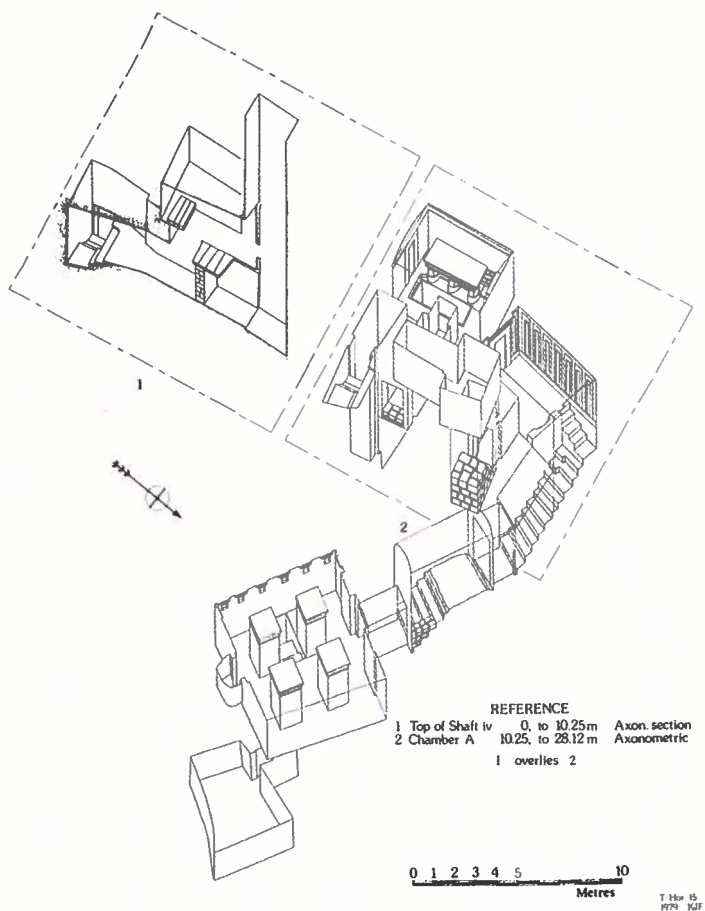


Figure 7.

Substructure of the tomb of Horemheb
(drawing by K.J. Frazer, after Martin 1989, fig. 25).

position of the body in the subterranean part of the tomb. Each of the New Kingdom temple-tombs possesses at least one vertical shaft giving access to the underground burial-chambers. The disposition of the various chambers varies a great deal, and it is not always clear which chamber was destined to take the coffin or sarcophagus of the chief tomb-owner. However, in a number of cases there are special sarcophagus-pits excavated in the floors, such as in the tombs of Horemheb (Fig. 7), Tia, Iurudef, and Paser. In other cases (such as the tombs of Maya and Pay) the specific format or construction of the chambers suggest how the sarcophagi were once positioned. All this evidence indicates that the body of the deceased was placed on a north-south axis. This accords rather well with traditional Egyptian burial customs as observed in cemeteries from prehistory down to the end of the Middle Kingdom. In the New Kingdom, however, an alternative east-west orientation developed which would become the predominant system in later periods. The interpretation of this conflicting evidence is rather problematical. Elsewhere, I have suggested that the north-south orientation of the body reflects Osirian notions (Raven [in press 2]). The usual decoration of coffins and sarcophagi indicates that the head was directed towards the north, and that this position ensured that the body of the deceased conformed to the directions of the universe. The alternative orientation along an east-west axis rather stressed solar notions, enabling the deceased to face the rising sun when he raised his head (which was positioned towards the west). Clearly, the Saqqara burials still adhered to the first symbolic system. Otherwise, the layout of the subterranean apartments again shows a very practical approach. The main concern seems to have been the need to keep the whole complex within the confines demarcated by the superstructure, so as to prevent the trouble of breaking into a neighbouring tomb. That this led to highly irregular and convoluted plans was obviously taken for granted.

METROLOGY

A comparative study of the various New Kingdom tombs so far excavated in the Saqqara necropolis clearly shows the presence of certain repetitive characteristics which betray the aesthetic ideals of the architects. Elsewhere, I have already demonstrated that these were formulated in concrete modular directions which determined the plan of the tomb as a whole (Raven 2003). During the foundation ceremonies of the tomb, these measurements must have been transposed onto the building-plot, as guidelines which had to be followed by the bricklayers and masons. Their execution of the architect's design can often be shown to be imperfect, and frequent changes of plan further detracted from the final effect. Thus, this field of study offers a vivid insight into the clash between architectural theory and actual practice.

A study of measurements soon reveals that the proportions of the various elements of these tombs were based on the so-called royal cubit, which was the equivalent of about 52.3 centimeters (cf. Clarke & Engelbach 1930, 63; Badawy 1965, 36; Arnold 1991, 7). Of course, this can be best observed in those parts of the tombs executed in limestone, such as doorframes, columns, or the revetment of the walls. Limestone can be worked to a great precision, and the presence of setting-lines scratched on the pavements reveals that the masons took considerable care to execute the design to the nearest fraction of the cubit (rather appropriately called a 'digit'). Thus, in the tomb of Horemheb we find doorways of 1.06 m or 1.56 m wide, clearly the equivalent of 2 or 3 cubits (Raven 2003, 61). The width of the statue chamber is 5.34 m (10 cubits), its length 10.76 m (20 cubits). It stands to reason that the dimensions of the brickwork are less precise. In the first place, the bricklayers had to work with the existing material which came in individual bricks of a standard size (37 x 17 x 10 cm or 42 x 21 x 13 cm in Horemheb's tomb: Martin 1989, 8). Secondly,

in their present shape the mud-brick walls survive in a much eroded and dilapidated condition, and one cannot always be sure which were the original (or at least the intended) measurements. Still, the exterior width of the tombs of Pay or Meryneith (about 10.25-10.50 m) must have been intended as the equivalent of 20 cubits. More precision could be realised in the 19th Dynasty tombs, which – unlike their 18th Dynasty predecessors – were built in limestone throughout. Thus the pyramid of the tomb of Tia (Fig. 8) measures 5.30 x 5.41 m, almost exactly 10 x 10 cubits (Martin 1997, 6; cf. Raven 2003, 67).



Figure 8.

General view of the tomb of Tia from the north-west, with the pyramid in the foreground.

These measurements already reveal that the Egyptian architects had a predilection for nice round figures. Closer scrutiny of the temple-tombs indicates the existence of aesthetic ideals also in the relationship between the various measurements. Clearly the monuments in question were meant to conform to a harmonic design (Badawy 1965, esp. 20-25). Thus we have reasons to assume that the tomb of Maya was originally designed as a structure of 20 cubits wide. The length of its west chapels, inner courtyard, and statue room adds up to 40 cubits, a ratio of 1 : 2 which is a well-known favourite in Egyptian temple design (Badawy 1965, 23 *sub* 3). Later, the tomb was extended with an outer courtyard and pylon gateway, resulting in a total length of 80 cubits and a ratio of 1 : 4. The more ambitious tomb of the general Horemheb was originally designed as a rectangle of 24 by 48 cubits, then extended to 72 cubits, resulting in ratios of 1 : 2 and 1 : 3 respectively. Similar harmonic proportions can also be found in architectural details, for instance Horemheb's statue chamber (1 : 2, see above) or Maya's vestibule which is 3 cubits wide, 6 long and 6 high. The latter case shows that these proportions were also observed for the third dimension; it is unfortunate, therefore, that due to the ruined condition of the monuments we hardly ever have enough data to reconstruct the height of the various elements. Apart from these plain arithmetic proportions there are also indications that the Saqqara architects made use of the golden section. For instance, the tomb of Pay was 20 cubits wide by a length of 32 cubits, a ratio of 5 : 8 which may be derived from that proportional system (Raven 2003, 65).

Usually, the Greeks and Romans are credited with the introduction of a modular grid in architectural design. However, it has long been shown that the ancient Egyptians, too, based the plan of their major temples on an accumulation of squares (Arnold 1991, 7). The basic unity of the constructional diagram can generally be derived from the size of the central sanctuary (Badawy 1965, 21). An appli-

cation of these rules to the Saqqara tombs – which can in fact be understood as private mortuary temples – has led to highly elucidating results. A comparison between the plans of the tombs of Maya, Horemheb, and Pay shows that in each case the central chapel is an almost perfect square with sides of 3.0-3.3 meters. In Egyptian measurements, this would be the equivalent of roughly 6 royal cubits. The preceding courtyard forms a larger square with sides three (Pay and Maya) to four (Horemheb) times that size. Constructing a grid based on a module of 6 x 6 cubits and projecting this over the plans of the various Saqqara tombs demonstrates that in each case the gridlines coincide with distinctive elements of the construction, such as the position of internal walls (Fig. 9).

In my previous article on this matter (Raven 2003), I have proved this to be the case for the tombs of Maya, Horemheb, Pay, and Tia. Therefore, I shall here limit myself to a brief discussion of the newly-found tomb of Meryneith (Fig. 10) which can be shown to conform to the same principles of design (Raven & Van Walsem

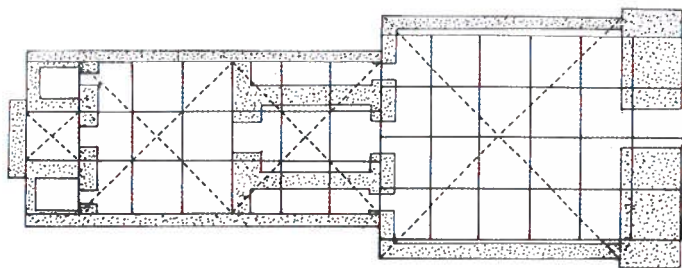


Figure 9.

*Plan of the tomb of Maya as based on a modular grid
(drawing by M.J. Raven).*

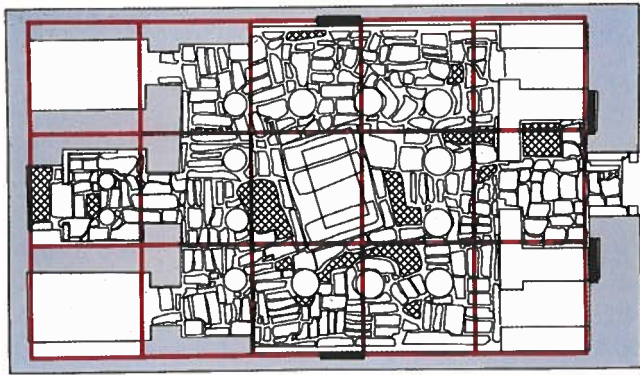


Figure 10.

*Plan of the tomb of Meryneith as based on a modular grid
(drawing by W. Beex).*

2003a, Fig. 2b). In this case, the execution of the design by the bricklayers has been rather careless. Thus the axis of the east entrance of the tomb has shifted a full 45 cm northwards with regard to the axis of the central western chapel. Even the midline between the two central columns of the west colonnade is already 15 cm off-centre. This implies that during the actual construction not all base-lines can have been indicated by strings or pickets, and that on the contrary the builders largely worked by eye (or not even that). However, if we take the internal width of the inner courtyard to represent three modules (as in the tombs of Maya and Pay), we can construct a perfectly convincing grid over the tomb. Its interior length proves to be the equivalent of 5 modules. Other gridlines define the length of the west chapels, the width of the west colonnade, and even the position of the four stelae that were part of the original design for the inner courtyard. When during a subsequent change of plan the two east chapels were

added, the walls separating these from the vestibule were again neatly aligned with the gridlines.

Interestingly, the application of such a grid over the plans also allows us to understand the principles guiding the various extensions made to the tombs. In the tomb of Horemheb, for instance, the existing gridlines of the west half were just continued eastwards to include the extensions made at a later stage. In Maya's tomb, however, the outer courtyard and pylon were added as a separate entity of 4 x 6 modules, although the phase I constructions were only 3 modules wide. Although the change of design resulted in an awkward stepped join between the two parts, it still respected the principle of a modular grid. Both in the tomb of Maya and in that of Meryneith the outer courtyard has been constructed at a conspicuous angle to the rest of the structure. This is probably due to pragmatic reasons. In the case of Maya, there may have been earlier constructions in the necropolis which impeded a regular extension of the tomb. For the tomb of Meryneith, we know that the architect of the forecourt simply linked the existing façade with the rear wall of a neighbouring tomb further east, even though this was standing on a different alignment (Raven & Van Walsem 2004, 7-15 and Fig. 1). Another example of similar practices is offered by the tomb of Pay; here the presence of a pre-existing tomb-shaft prevented the construction of a proper south-eastern chapel. Moreover, an adjacent monument further east stood in the way for an axial approach to the tomb. When Pay's son Raia wanted to add a forecourt, he had to take account of both these impediments, with the result that his construction is highly irregular in plan and has a doorway which is markedly off-centre (Raven [in press 1], Section 2.1). Again, this shows a clear compromise between the exigencies of theory and practice.

TYOLOGY

In an earlier article, I have already endeavoured to classify the various types of New Kingdom tombs in the Saqqara necropolis (Raven 2000, 141-143). Since then, some more information has become available and I would like to use the opportunity here to present an update of what was stated before. Unfortunately, reliable plans of the rock-cut tombs excavated by the French expedition are still not available, so that a proper classification of these, or a comparison between the rock tombs and the free-standing structures, is best left out of account. Detailed information is also lacking for those New Kingdom tombs found by an Egyptian expedition close to the Unas causeway (Tawfik 1991). On the other hand, some more details can now be given on two types of tombs which have not been analysed before, viz. pit-graves and 'burial-mounds'.

It rather looks as if during the earlier half of the 18th Dynasty there were extensive cemeteries of shallow grave pits on the Saqqara plateau. Many of these were found around the Teti pyramid during excavations at the beginning of the last century (Firth & Gunn 1926, 66-83; Quibell & Hayter 1927, 6-10), and several more have recently been uncovered by the Australian mission in the same area (B. Ockinga, personal communication). In view of the rather poor burial gifts (mainly pottery, jewellery, and toilet requisites) the owners obviously did not belong to the higher classes of society. There is a general lack of titles; the exception is a loose find of a shabti inscribed for the scribe of the treasury User (Firth & Gunn 1926, 82, pl. 43C). The poorly embalmed mummies were usually buried in anthropoid or rectangular wooden coffins, the latter often with gabled lids; some skeletons were wrapped in mats instead or had been interred without any further protection. The burials had been deposited in shallow pits in the layers of rubble and sand covering the earlier Old Kingdom

mastabas. Scarabs accompanying the burials give a range of dates from Ahmose down to Amenhotep III (c. 1550-1350 BC). Recently, some evidence came up which indicates that similar pit burials occur in the New Kingdom cemetery south of the Unas causeway. Just to the south of the tomb of Horemheb, two shallow grave pits were found during the 1999 season (Van Walsem 1999, 23-24, pls. 7-10). These were oriented east-west and each had a plain and uninscribed headstone marking its position above ground. The pits were 1.5-2.0 m deep and had been excavated through a stratum of rubble down to bedrock. One of these pits contained a gabled coffin, the other a beautiful anthropoid specimen (Fig. 11). The stylistic character of both coffins and grave



Figure 11.

Pit-grave found by the Dutch excavations in 1999.

gifts suggests a date in the reign of Amenhotep III. A similar burial seems to have lain under the outer courtyard of the tomb of Maya, where bones and sherds of early 18th Dynasty date were found scattered throughout the rubble foundations of the later monument (Raven 2001, 2). Probably many more of these earlier burials fell victim to the extensive building operations which started in this area from the reigns of Amenhotep III and Akhenaten onwards and continued down to Dynasty 20. Also in the Teti pyramid cemetery the position of a gabled coffin under the floor of the chapel of Ipuya (Quibell & Hayter 1927, 9, no. 2476) shows how much information on these earlier interments may have been lost due to the more ambitious constructions of the next period.

A previous analysis of the more characteristic free-standing tombs at Saqqara has already shown that the basic nucleus of these was the offering-chapel at the west end (Malek 1985, 125; Raven 2000, 142). Often this was surmounted by a small mud-brick pyramid on the roof, thereby constituting a combination of architectural elements which served as an icon for the tomb in contemporary representations of the funeral (Badawy 1948, 217-235). In its most common form, this nucleus was preceded by an open courtyard (Fig. 12), often provided with colonnades along its perimeter. This in its turn could be extended by the addition of a statue chamber, a range of east chapels, or even an outer peristyle courtyard and a pylon gateway. The aperture of the vertical shaft leading to the subterranean burial-chambers is usually situated in the centre of the inner courtyard. So far, these plans have generally been studied as if they were ready-made concepts of the architectural mind. However, it is much more elucidating to stress the fact that most of these tombs clearly grew in several stages. Obviously, the monument that we now see in its final form is merely the fortuitous result of a combination of factors: the tomb-owner's lifespan, his solvency and the vicissitudes of his career, and the genius and originality of his architect, sculptors, and painters.

A close study of details and construction will probably indicate that the construction of most of these tombs was started from the west. From a religious point of view, this was the most essential section of the tomb: in case of an untimely death, at least the burial-chamber and the offering-chapel would be ready for use. Accordingly, a stylistic and epigraphic analysis of the tomb of Meryneith has clearly shown that this part of the monument was decorated in the early years of king Akhenaten, whereas the rest followed later in his reign and under his successor Tutankhamun (Raven & Van Walsem 2003a, 79-86). The fact that the size of the central chapel determined the dimensions of the tomb as a whole – as we have seen above in our study of the metrology of these monuments – seems to corroborate our assumption that it was built first. The choice whether a single or a triple chapel was built was probably decided by the financial means of the tomb-owner; our excavations have also revealed the existence of intermediary



Figure 12.

General view of the tomb of Paser as seen from the east.

forms (e.g. an antechapel with two unequal rear chambers, such as in the tomb of Khay: Martin 2001, Fig. 4). Probably, most tomb-owners immediately built the plain brick enclosure walls of the preceding courtyard, in order to lay a claim to the grounds which were essential for the construction of the tomb's substructure and later for the proper enactment of the burial and offering rituals. Such plain walls can still be seen in the tombs of Paser (Martin 1985, Pl. 4) or Ramose (Martin 2001, Pl. 44), and in several tomb-chapels recently excavated in the Teti pyramid cemetery (Hawass 2003, 153, ill. on 156).

The tomb of Meryneith is a good example of the procedure how such a plain courtyard was later adapted in order to present a more grand appearance (Fig. 13). Here the courtyard originally had a plain floor of gypsum plaster; the mud-brick walls were decorated with four stelae in round-topped niches (cf. Fig. 10). There

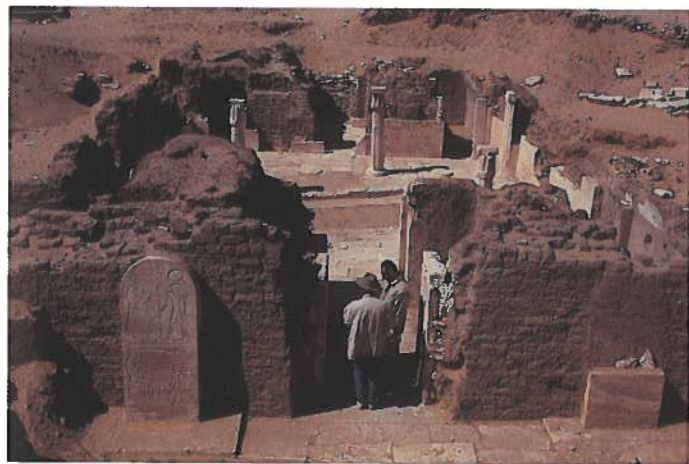


Figure 13.

General view of the tomb of Meryneith as seen from the east.

was only one paved colonnade along the west wall of the court, in front of the three adjacent offering-chapels. Later a complete peristyle was installed, the full extent of the floor was paved in limestone, and the side-walls received their limestone revetment with relief decoration. Moreover, two additional chapels were constructed in the former east corners of the courtyard, and the space in between was made into a proper vestibule. Clearly, this was an afterthought and not part of the original design. Thus the walls of the east chapels are not bonded with the rest of the structure, and their doors are on the west side because the massive east wall had already been built as part of the former courtyard. Finally, the tomb was extended outside its original perimeter by the addition of a forecourt (Raven & Van Walsem 2004, 7-15). This was constructed by connecting the tomb's original façade with the rear wall of the next-door neighbour, a makeshift solution that led to a highly irregular plan. Above, we have already observed how the tombs of Pay and Maya also obtained forecourts that did not conform to the metrology or the orientation of the rest of the monument. In other cases, such as the tomb of Horemheb, a comparable organic growth led to a more harmonious result (Martin 1989, 9-15).

After the construction of these pretentious temple-tombs of the late 18th and early 19th Dynasties, there was only a limited space available in the northern (Teti) and southern (Unas) cemeteries of Saqqara. Moreover, the circulation outside their rather forbidding walls must have been obstructed by large heaps of rubble excavated from the underground burial complexes and of chippings produced during the carving of the limestone elements. Accordingly, later constructions tend to be smaller in scale and often rather irregular in plan, and were obviously squeezed in between the pre-existing buildings. It can also be observed that their foundation trenches were not dug out down to bedrock, as in the case of the earlier tombs (Van Walsem 2001, 19; Raven & Van Walsem 2005,

6). Instead, these later tomb-chapels stand on massive strata of rubble which had obviously accumulated in the area as a result of the earlier building activities (Martin 2001, 10, 18). Preparation of the building site will have necessitated a certain amount of leveling of these earlier deposits. It is only recently that we have discovered that occasionally this redistribution of the previous builders' refuse led to a remarkable type of tomb best described as a burial-mound.

No less than three of these mounds were found in the area to the south of Horemheb's inner courtyard (Van Walsem 2001, 13-14). They consist of dome-shaped accumulations of rubble, sand, and



Figure 14.

Two of the intersecting burial mounds found by the Dutch expedition in 2000. The mound in the rear shows several concentric retaining walls and a central shaft.

numerous sherds of New Kingdom pottery. The steep sides are supported by retaining walls of roughly stacked chunks of rock and limestone, sometimes forming several concentric circles around the core of the mound (Figs. 14-15). The platform on the top accomodates the aperture of the tomb-shaft, and in one case also the foundations of a small offering-chapel. The three mounds intersect each other in such a way that they were probably visible from the outside. This is a rather unexpected phenomenon which has not been described before. Possibly, earlier excavations have

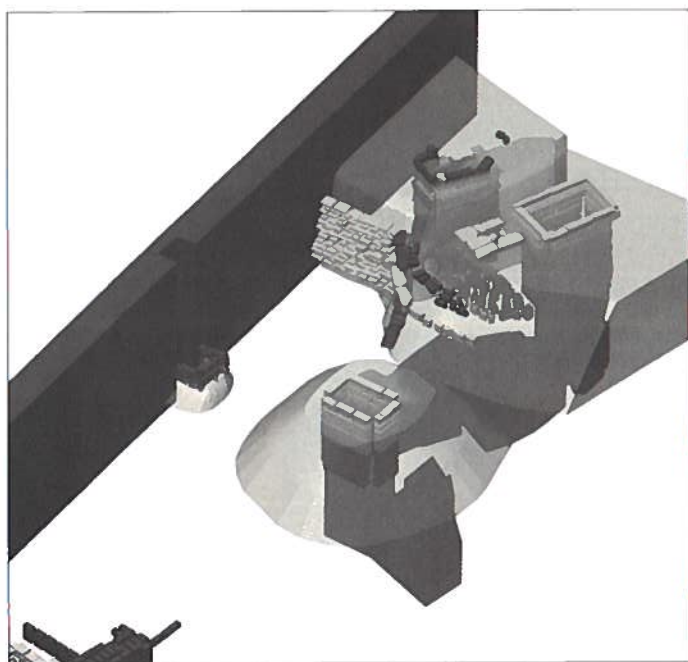


Figure 15.

Isometric drawing of three burial-mounds (drawing by W. Beex).

just missed these characteristic retaining walls; similar combinations of a shallow shaft and a simple chapel next to it on a bank of rubble have been observed in other places (Raven 1997, 76-77 and Pl. 4.2) and maybe these mounds were not so rare as they seem to be. The advantage of such structures would have been that they sufficiently raised these flimsy chapels so as not to be dwarfed by the surrounding constructions of previous generations.

Finally, the last empty pockets of the New Kingdom cemetery were occupied by a number of surface burials (cf. E. Strouhal, in Raven [in press 1], Sections 7.12 and 7.14). Most of these seem to concern children or adolescents. Burial gifts such as scarabs, items of jewellery, etc. indicate that these burials are datable to the Ramesside period. Although at first sight there is not much difference with the 18th-Dynasty pit-graves, the later New Kingdom burials show in fact an impoverished population. Instead of being properly coffined the poorly embalmed remains were often wrapped in mats made of the midribs of date-palm leaves, or were laid in the graves without any protection at all. From a stratigraphical point of view, it is quite clear that the later burials are positioned in the heaps of rubble deposited as a result of the construction of the temple-tombs, whereas the earlier grave-pits may be found at the level of their foundations. Moreover, the Ramesside burials clearly respect the earlier building-plots and are situated outside their walls. Thereby, they offer a marked contrast with the even later burials of Third Intermediate Period or Late Period date, which intrude in the courtyards, chapels, and shafts of the New Kingdom monuments and thus clearly betray that all property rights had been annulled by the passage of time.

IDEAL AND PRACTICE

There is perhaps no better means to explore the workings of an exotic culture than to study its architectural principles. Architec-

ture – the manner how man structures his environment – reflects the way how a specific culture appreciates the cosmos. Accordingly, it is in the spatial distribution of the various elements and their mutual proportions that one recognizes the underlying concepts of a civilization. At the same time, the physical execution of these principles will show to what extent a culture was prepared to subject the daily needs of its bearers to the realization of an abstract ideal.

The preceding analysis of the Saqqara tombs of the New Kingdom offers an excellent possibility to evaluate this perennial shift in balance between architectural theory and practice. The main conclusion must be that the ancient Egyptians were a very practical people with an open mind for the possibilities to save time, labour, and materials. Thus the New Kingdom cemetery at Saqqara developed in a rather haphazard manner because its location was conveniently close to Memphis, because there was easy access to the high desert in certain places, and because building materials from the ancient *mastabas* could be recycled for use in the new constructions. The layout of the pyramid cemeteries of the Old Kingdom had been governed by a strict hierarchy and uniform geometry. The New Kingdom necropoleis, however, grew organically around much more casual clusters representing a more varied interaction of professional groups, patrons and clients, and family associations. This suggests they were the outcome of a society less characterized by absolutism and more by personal initiative and private enterprise. This accords rather well with what we know about the more relaxed cultural climate of contemporary Egypt.

Although the layout of the cemetery as a whole was hardly organized by a central authority and therefore does not show much regularity, there were certain rules which almost everybody respected. Some of these were of a social or even legal character,

such as the need to provide for basic access and communication and to respect existing boundaries and private property; still, it is quite clear that a shortage of empty space tempted people to appropriate older burial-plots as soon as the concomitant offering cult started to be neglected (cf. Martin 2001, 2). Other principles were of a cultic or religious nature, such as the general consensus that free-standing tombs had to be oriented roughly east-west. Here again, the Egyptians showed a rather relaxed attitude, since with the surveying instruments at their disposal they could have done a much better job. Practical needs and local circumstances were obviously allowed to prevail over cultic precepts.

It is only in the design of the individual tombs that one gains an impression of the underlying principles which the architects (and their patrons) had in mind. Clearly, they aimed at the creation of a harmonic and aesthetically balanced environment, as is proved by the modular disposition of the plans, the arithmetic ratios between length, width and height, and the whole cubit measurements selected for numerous details. Similar principles dominated in the religious architecture of Ancient Egypt, and this supports our interpretation of the Saqqara tombs as private mortuary temples. It is tempting to go one step further and to interpret this kind of architecture as reflecting the Egyptian ideals of a supernatural or cosmic harmony. However, Egyptian texts corroborating such an assumption seem to be lacking, and perhaps our perception is rather biased by European concepts derived from Pythagoras, Vitruvius, and the architectural treatises of the Italian Renaissance (Arnold 1994, 194-195 s.v. *Planung*, 253-254 s.v. *Symbolik*; Wittkower 1988, Part IV). Moreover, similar proportions may occasionally be found in Egyptian domestic architecture, and perhaps this was not so much based on a premeditated plan as on an intuitive sense of harmony (Kemp 1989, 138). A fascination for round numbers and modular control was certainly a characteristic of the 'bureaucratic mind' of the ancient Egyptians

(Kemp 1989, 111-136), although we can be sure that at the same time they were aware of the wide gap which separated the 'complex and often chaotic reality' from the 'comprehensible order' on the writing-board (Kemp 1989, 130). In architectural practice, we have seen above that the actual execution of the harmonic ideal was often grossly imperfect, so that one wonders whether these monuments were really built according to an accurate building plan or just followed conventional tradition (Arnold 1991, 7-9). These imperfections – which one may regard as either irritating sloppiness or signs of an endearing humanity, depending on one's own moral standards – are probably as characteristic of ancient Egyptian culture as the other extreme of bureaucratic control.

REFERENCES

- ARNOLD, D. 1991.
Building in Egypt, Pharaonic Stone Masonry. New York/Oxford:
Oxford University Press.
- ARNOLD, D. 1994.
Lexikon der ägyptischen Baukunst. Zurich: Artemis.
- BADAWY, A. 1948.
Le dessin architectural chez les anciens Égyptiens. Cairo: Service
des Antiquités de l'Égypte.
- BADAWY, A. 1965.
Ancient Egyptian Architectural Design. Berkeley/Los Angeles:
University of California Press.
- BADAWY, A. 1968.
A History of Egyptian Architecture, III: The Empire. Berkeley:
University of California Press.
- CLARKE, S. & ENGELBACH, R. 1930.
Ancient Egyptian Masonry, the Building Craft. London:
Oxford University Press.
- DIJK, J. VAN. 1988.
'The Development of the Memphite Necropolis in the Post-
Amarna Period, in A.P. Zivie ed. *Memphis et ses nécropoles au
Nouvel Empire, nouvelles données, nouvelles questions*. Paris:
Éditions du Centre National de la Recherche Scientifique, 37-46.
- DIJK, J. VAN. 1993.
*The New Kingdom Necropolis of Memphis, Historical and
Iconographical Studies*. Diss. Groningen: Rijksuniversiteit.

FIRTH, C.M. & GUNN, B. 1926.

Teti Pyramid Cemeteries. Cairo: Service des Antiquités de l'Égypte (Excavations at Saqqara).

HAWASS, Z. 2003.

Secrets from the Sand, My Search for Egypt's Past. London: Thames & Hudson.

JEFFREYS, D.G. 1985.

The Survey of Memphis. London: The Egypt Exploration Society (Occasional publications 3).

JEFFREYS, D.G. & SMITH, H.S. 1988.

'Memphis and the Nile in the New Kingdom, a Preliminary Attempt at a Historical Perspective', in A.P. Zivie ed. *Memphis et ses nécropoles au Nouvel Empire, nouvelles données, nouvelles questions*. Paris: Éditions du Centre National de la Recherche Scientifique, 55-66.

JEFFREYS, D. & TAVARES, M. 1994.

'The Historic landscape of early Dynastic Memphis', *Mitteilungen des deutschen archäologischen Instituts Abteilung Kairo* 50, 143-174.

KEMP, B. 1989.

Ancient Egypt, Anatomy of a Civilization. London/New York: Routledge.

MALEK, J. 1988.

'The Royal Butler Hori at Northern Saqqâra', *Journal of Egyptian Archaeology* 74, 125-136.

- MARTIN, G.T. 1985.
The Tomb-chapels of Paser and Ra'ia at Saqqâra. London:
 The Egypt Exploration Society (Excavation Memoirs 52).
- MARTIN, G.T. 1989.
*The Memphite Tomb of Horemheb, Commander-in-Chief of
 Tut'ankhamûn, I: The Reliefs, Inscriptions, and Commentary*.
 London: The Egypt Exploration Society (Excavation Memoirs 55).
- MARTIN, G.T. 1991.
*The Hidden Tombs of Memphis: New Discoveries from the Time of
 Tutankhamun and Ramesses the Great*. London: Thames and
 Hudson.
- MARTIN, G.T. 1997.
*The Tomb of Tia and Tia, a Royal Monument of the Ramesside
 Period in the Memphite Necropolis*. London: The Egypt
 Exploration Society (Excavation Memoirs 58).
- MARTIN, G.T. 2001.
The Tombs of Three Memphite Officials, Ramose, Khay and Pabes.
 London: The Egypt Exploration Society (Excavation Memoirs 66).
- OCKINGA, B. 2000.
 'The Saqqara Tomb of the Overseer of Craftsmen and
 Chief Goldworker, Amenemone', in M. Bárta & J. Krejčí eds.
Abusir and Saqqara in the Year 2000. Prague: Archiv Orientální
 Supplementa 9, 121-132.
- QUIBELL, J.E. & HAYTER, A.G.K. 1927.
Teti Pyramid, North Side. Cairo: Service des Antiquités de
 l'Égypte (Excavations at Saqqara).

RAVEN, M.J. *et al.* 1991.

The Tomb of Iurudef, a Memphite Official in the Reign of Ramesses II. Leiden/London: National Museum of Antiquities/The Egypt Exploration Society (Excavation Memoirs 57).

RAVEN, M.J. *et al.* 1997.

'Preliminary report on the Saqqara excavations, season 1996', *Oudheidkundige Mededelingen uit het Rijksmuseum van Oudheden te Leiden* 77 (1997), 73-86.

RAVEN, M.J. 2000.

'25 Years of Work in the New Kingdom Necropolis of Saqqara: Looking for Structure', in M. Bárta & J. Krejčí eds. *Abusir and Saqqara in the Year 2000*. Prague: Archiv Orientální Supplementa 9, 133-144.

RAVEN, M.J. 2001.

The Tomb of Maya and Meryt, II: Objects and Skeletal Remains. Leiden/London: National Museum of Antiquities/The Egypt Exploration Society (Excavation Memoirs 65).

RAVEN, M.J. 2003.

'The Modular Design of New Kingdom Tombs at Saqqara', *Jaarbericht Ex Oriente Lux* 37 (2001-2002), 53-69.

RAVEN, M.J. & WALSEM, R. VAN, *et al.* 2003a.

'Preliminary Report on the Leiden Excavations at Saqqara, Season 2001: The Tomb of Meryneith', *Jaarbericht Ex Oriente Lux* 37 (2001-2002), 71-89.

RAVEN, M.J. & WALSEM, R. VAN, *et al.* 2003b.

'Preliminary Report on the Leiden Excavations at Saqqara, Season 2002: The Tomb of Meryneith', *Jaarbericht Ex Oriente Lux* 37 (2001-2002), 91-109.

RAVEN, M.J. & WALSEM, R. VAN, *et al.* 2004.
'Preliminary Report on the Leiden Excavations at Saqqara,
Season 2003: The Tomb of Meryneith', *Jaarbericht Ex Oriente
Lux* 38 (2003-2004), 5-23.

RAVEN, M.J. *et al.* [in press 1].
The Tomb of Pay and Raia at Saqqara. Leiden/London:
National Museum of Antiquities/The Egypt Exploration Society
(Excavation Memoirs).

RAVEN, M.J. [in press 2].
'Egyptian Concepts on the Orientation of the Human Body',
Journal of Egyptian Archaeology.

SCHNEIDER, H.D. 1996.
*The Memphite Tomb of Horemheb, Commander-in-Chief of
Tut'ankhamûn, II: a Catalogue of the Finds*. London/Leiden:
The Egypt Exploration Society/National Museum of Antiquities
(Excavation Memoirs 60).

SPENCE, K. 1997.
Orientation in Ancient Egyptian Royal Architecture. Cambridge:
unpublished thesis.

TAWFIK, S. 1991.
'Recently Excavated Ramesside Tombs at Saqqara, 1:
Architecture', *Mitteilungen des deutschen archäologischen Instituts
Abteilung Kairo* 47, 403-409.

WALSEM, R. VAN, *et al.* 1999.
'Preliminary Report on the Saqqara Excavations, Season 1999',
*Oudheidkundige Mededelingen uit het Rijksmuseum van Oud-
heden te Leiden* 79, 19-35.

WALSEM, R. VAN. 2001.

'Preliminary Report on the Dutch Excavations at Saqqara, Season 2000', *Jaarbericht Ex Oriente Lux* 35-36 (1997-2000), 5-25.

WITTKOWER, R. 1988.

Architectural Principles in the Age of Humanism. London: Academy Editions.

YOSHIMURA, S. & HASEGAWA, S. 2000.

'The New Kingdom Necropolis at Dahshur: the Tomb of Ipay and its Vicinity', in M. Bárta & J. Krejčí eds. *Abusir and Saqqara in the Year 2000*. Prague: Archiv Orientální Supplementa 9, 145-160.

ZIVIE, A. 1990.

Découverte à Saqqarah, le vizir oublié. Paris: Éditions du Seuil.

ZIVIE, A. 2000.

'La résurrection des hypogées du Nouvel Empire à Saqqara', in M. Bárta & J. Krejčí eds. *Abusir and Saqqara in the Year 2000*. Prague: Archiv Orientální Supplementa 9, 173-192.

ZIVIE, A. 2003.

Les tombeaux retrouvés de Saqqara. Paris: Éditions du Rocher.

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