

# The Egyptian Inscriptions at Jebel Dosha, Sudan

*W.V. Davies*

Jebel Dosha, a sandstone promontory situated a few kilometres (about three miles) north of Soleb on the west bank of the Nile between the Second and Third Cataracts (**Figs 1–5**), is an interesting but little-known ancient site. Literature records the presence there of a rock-chapel of Thutmose III and three other rock-cut monuments, comprising a royal stela, dedicated to King Seti I, and two private stelae, one showing ‘A scribe worshipping Amen-re (?) and Satis’, the other ‘Three men, one Si-abeshek...Priest’ (PM vii, 167; cf. Hein 1991, 60, 173 and 175). The only publication of the monuments based on original work is that of Lepsius, who visited the site in 1844 and published copies of parts of the decoration inside the chapel (LD iii, 59, d-e; cf. Budge 1907, 594–7, with figs) together with a section of the Seti I stela (LD iii, 141,k). I recently (late 2003) had the opportunity to visit Jebel Dosha, finding it to be a considerably richer context than I had anticipated. Pending a more detailed survey of the site, I offer here, with the permission of NCAM,<sup>1</sup> a few preliminary observations, with special reference to the Egyptian inscriptions.<sup>2</sup>

## Chapel of Thutmose III

This is a rock-cut chapel overlooking the Nile, situated a couple of metres or so above the path which passes in front of the jebel and separates it from the river bank (LD i, pl. 123 [lower]; Breasted 1908, 96–7, fig. 53; Wilkinson 2000, 231; **Figs 5–6**). Part of a substantial building programme undertaken by Thutmose III in Nubia, the Jebel Dosha chapel is similar in type and content to the contemporary chapel once located at Ellesya just north of the Second Cataract and now preserved in the Egyptian Museum, Turin (PM vii, 90–1; Desroches-Noblecourt et al. 1968; Gundlach 1994; Laboury 1998, 98–100, C6; Curto 1999; in general: Jacquet 1967; Wildung 1977, 162–3; Schade-Busch 1997). It consists of a transverse hall and rectangular inner chamber with the remains of three seated statues cut out of the back wall (**Fig. 7**, after LD i, pl. 115; Laboury 1998, 90–1, C2). The small niches cut into the back and side walls of the inner chamber are later additions. The chapel has suffered some damage, much of it as the result of its re-use as a dwelling and shelter.

The left half of the façade has almost completely disappeared together with the lintel above the door and the bottom half of the right jamb. The latter (**Figs 8–9**) was originally decorated in sunk relief with a column of hieroglyphs, reading right to left, consisting of the king’s titulary, beginning with the title ‘good god’. It was later at least partly recut, with the hieroglyphs facing towards the door. Modification to the original decoration is also possibly to be seen in the presence of the figures of two officials, perhaps viceroys, in the area to the right of the column, one small (kneeling with arms before

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<sup>2</sup> This report was originally published, with a subset of the images reproduced here, as Davies 2004.

him) and one large (upper part of head only with remains of fan), both in sunk relief. These changes probably date to the 19th Dynasty, more precisely to the reign of Seti I, whose viceroy, Amenemipet (Habachi 1980, 633, no. 16; Hein 1991, 86), was active at this site (see below).

The wall-decoration inside the chapel, all in raised relief of good quality, is in a poor state, with most of it lost. The decorative programme consisted mainly of scenes showing Thutmose III offering to various deities. The fragmentary scenes in the Hall recorded by Lepsius, though now further eroded, are still recognizable, including one, on the east wall, where the king offers to the deified Senwosret III (LD iii, pl. 59, d; Fig. 10). Additionally, there are remains of decoration, obscured by soot, on the walls of the inner chamber, yet to be documented. The statues at the rear (Figs 11–12) are badly mutilated and their subjects difficult to identify (cf. Laboury 1998, 90–1, C2). The central figure is almost certainly that of Thutmose III, perhaps wearing the white crown; the figure to the left appears to have been shown wearing a headdress with two long plumes, in which case it is probably Amen-Ra; the figure to the right is more damaged than the others and its identity remains unclear.

## Stela of Seti I

The stela of Seti I, executed in sunk relief, is situated several metres higher and a short distance to the left of the chapel (Fig. 13). It is rectangular in shape and measures about 1.5 m in height. It bears at the top a horizontal register (LD iii, 141, k; Figs 14–17) with a scene of Seti I offering to the deities of the cataract region, Khnum, Satis and Anket (Valbelle 1981, 43, no. 328, 109, para. 32, and 126–7, para 46). Below the register on the left is depicted a kneeling figure of Seti I's viceroy of Kush, Amenemipet (Figs 18–19), who was responsible for creating the monument. The rest of the stela is taken up with fifteen horizontal lines of inscription, reading from right to left, whose content remains to be fully recorded and studied (Kitchen 1975, 100–1, no. 48; 1993a, 84–5, no. 48; 1993b, 80–1, no. 48; Hein 1991, 60, 81–2, and 86; Brand 2000, 293 [3.148] and 364). Parts of it are damaged, especially a section on the right where there is a large gash and several holes, but much of it is in good condition (Fig. 21). Far from being 'badly cut' (Breasted 1908, 96; cf. Kitchen 1993b, 80, no. 48), the stela displays workmanship of high quality, with the figures in particular rendered with considerable elegance, and the hieroglyphs, where they are preserved, being perfectly legible.

## Groups of Striding Figures

Several metres to the left of the stela of Seti I is a group of three male figures (Figs 20, 22), each approx. 40 cm high, shown as if striding around the *jebel*, their arms raised in obeisance, towards the stela, with which they are almost certainly contemporary. They are carved in deep sunk relief. This is the group of three men cited in PM vii, 167 (see above). Placed before each of them is a column of hieroglyphs, reading right to left, giving their title and name. The first figure is identified as '[Pri]st, Sa-abshek', the second as 'Scribe of Forms, Neb', the third, who is located at a slightly lower level, as 'Priest, Mai-mes' (Figs 23, 25). This Sa-abshek recurs elsewhere at Jebel Dosha (see below) and the name is known from several other sites (Roeder 1911, 181–2, pl. 119, d; *PN* i, 280, 16; PM vii, 8; Dewachter 1971, 108–9; Zibelius 1972, 37, V E b 80, 52, VI E b 10, and 77; Žába 1974, 231–2, A16; Colin 1998, 92–4). Neb may well be the same man as the 'Scribe of Forms, Neb of Nekhen' known from Sehel and Sabu (Gasse and Rondot 2003, 45–6, pl. 17, col. pl. xxvii).

A second, equivalent group of three officials, previously unrecorded, is located to the right and

below the Seti I stela, shown with arms down, as if walking away from the stela (Fig. 24). The name of the first figure is lost, but his title began with the element 'Iry...' The second is identified as 'Priest, Sa-abshek' (cf. first group above). The hieroglyphs accompanying the third figure, which are arranged horizontally, are a little unclear and require further study.

### **Stela of Amenemipet with Khnum and Satet**

A short distance to the right of the second group of figures is a fine little round-topped stela, carved into the rock and decorated with figures and inscriptions in sunk relief and incised work (Fig. 26). It consists of two horizontal registers. The upper, which is the more important, bears a scene showing the 'King's Son of Kush, Amenemipet' standing and offering to two seated deities, identified as Khnum and Satet (cf. Morkot 1988, 162). In the lower register, two secondary officials are depicted, standing with arms raised in obeisance. The columns of inscription accompanying them are somewhat effaced and difficult to read but progress should be possible in optimum lighting conditions.

### **Stela of Keny**

Further again to the right is another small rock-cut stela (Fig. 27) done in similar style with a single scene, showing on the left an official identified as 'Scribe, Great of ...?', Keny' worshipping before two standing deities, the first identified as 'Amen-Ra of the Pure Mountain', the second as 'Satet' (Valbelle 1981, 43, no. 329). This stela is cited in PM vii, 167 (see above). It is possible that the 'Pure Mountain' here refers to Jebel Dosha (cf. Kitchen 1993b, 81; Valbelle 1981, 109, para. 32).

### **Stela of Sebakhou (?)**

Beyond the stela of Keny, roughly on the north-east corner of the jebel, is a finely carved scene, in sunk relief (Fig. 28), showing in the centre a man standing facing right (height: about 23 cm) with his arms raised; behind him is a large offering-vessel on a stand and in front of him a group of hieroglyphs, reading right to left, giving his title and name 'Bearer of Buhen Khauseba' or 'Sebakhou', a name known from elsewhere in Nubia during the early Ramesside Period (Kitchen 1980, 119, no. 67; 2000, 81, no. 67; Spencer 1997, 164, 220, with n. 11, pls. 117, a-c and 151; Kitchen 1980, 130, no. 80, 1-5; 2000, 88, no. 80, 1-5). Possibly the same man is attested in a curious rock-inscription at Ibrim (Caminos 1968, 92-3, pl. 42.1).

### **Stela of Amenemipet (?) with Lunar God and Satet**

Several metres to the left of the chapel of Thutmose III, on a rock shelf about a metre or so above the river-bank path, are the remains of a stela, done in sunk relief of very good quality (Fig. 29). It shows on the left the kneeling figure of an official facing right, offering to two standing deities facing left (height about 35 cm), the scene surmounted by a winged sun-disk. The identity of the first deity, evidently a lunar god, remains to be determined as the hieroglyphs here are unclear; the second deity is the goddess Satet. The official's title is lost and his name almost completely gone, but the quality and style of the piece suggest that this is probably another representation of the Viceroy Amenemipet.

## Miscellaneous

A number of other stelae once decorated the face of the jebel for many metres to the right of the Thutmose III chapel, but unfortunately their inscriptions are no longer preserved. Also noticeable is a series of deep rectangular holes which extend in a line rightwards from a point just above the present height of the entrance to the chapel (Figs 5, 8 and 30). These were probably designed to hold wooden beams but their exact function and date are uncertain. Similar holes were associated with the chapel at Elesya (Desroches-Noblecourt et al. 1968, 3, pls. 3–6; Jacquet 1967, 73, n. 4; Curto 1999, 39 [plate], 42 and 57).

## Conclusion

Jebel Dosha has many more Egyptian inscriptions than previously recorded, and there is every possibility that others remain to be discovered. On present evidence, the site appears to have been first exploited by the Egyptians during the reign of Thutmose III, a presence that was renewed and much enhanced under the direction of Seti I's Viceroy of Kush, Amenemipet. All the non-royal inscriptions observed hitherto on the jebel appear to date to the reign of Seti I or at least to the early Ramesside period. Full documentation of the site's monuments, which overall are in reasonable condition, may be expected to yield a considerable amount of new prosopographical, historical and iconographic data, leading to a more detailed understanding of the site's function and meaning and of its role in Egypt's appropriation of Nubia. Ideally, in view of the ever-mounting pressures of modern development, such a project should not be too long delayed.

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## Abbreviations

- LD = C. R. Lepsius, *Denkmäler aus Aegypten und Aethiopien*. 12 vols. Berlin 1849–59.
- PM vii = B. Porter and R. L. B. Moss (eds), *Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs and Paintings*, vii. *Nubia, the Deserts, and Outside Egypt*. Oxford, 1951.
- PNi = H. Ranke, *Die ägyptischen Personennamen*, i. Gluckstadt, 1935.

All photographs are by W.V. Davies except for figs 4, 20 and 29 which are by D.A. Welsby.

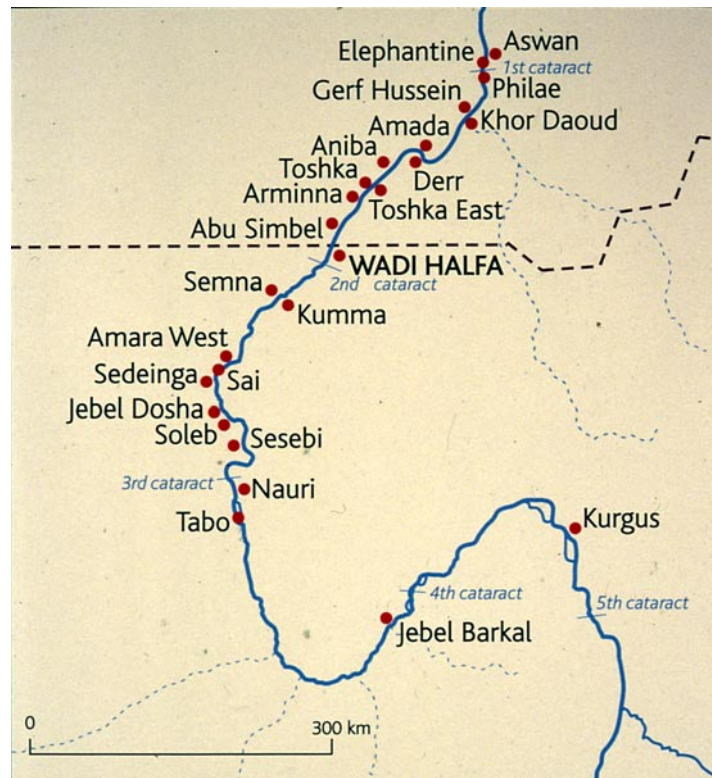


Fig. 1 Map showing location of Jebel Dosha.



Fig. 2 View of Jebel Dosha (promontary extending from sand dune on left) approaching from the south-west.





Fig. 3 View of Jebel Dosha from the south.



Fig. 4 Jebel Dosha seen from across the Nile. The chapel of Thutmose III is masked by the vegetation on the island in the foreground.





Fig. 5 View of Jebel Dosha from the north, with chapel of Thutmose III on left.



Fig. 6 Chapel of Thutmose III and, above to the left, stela of Seti I.



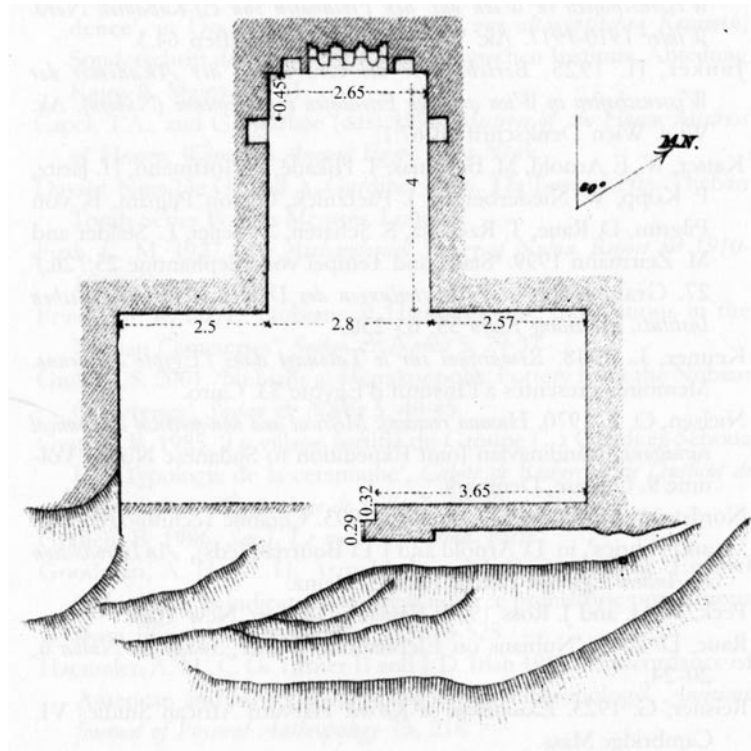


Fig. 7 Chapel of Thutmose III, plan (after LD i, 115).



Fig. 8 Chapel of Thutmose III. Remains of entrance and right façade.





Fig. 9 Chapel of Thutmose III. Remains of decoration to right of entrance.



Fig. 10 Chapel of Thutmose III, hall, east wall. Remains of decoration including cartouches of the deified king, Senwosret III.





Fig. 11 Chapel of Thutmose III, interior, inner chamber.



Fig. 12 Interior of Thutmose III chapel, with remains of three rock-cut figures in rear wall.





Fig. 14 Royal stela, detail. Figure of King Seti I.



Fig. 13 Stela of King Seti I.





Fig. 15 Royal stela, detail. Figure of King Seti I before offering table.



Fig. 16 Royal stela, detail of offering table and figure of Khnum.





Fig. 17 Royal stela, detail. Figures of three deities, Khnum, Satet and Anket.



Fig. 18 Royal stela, detail. Figure of viceroy Amenemipet and accompanying inscriptions.





Fig. 20 Examining the figures and inscriptions to the left of the royal stela.



Fig. 19 Royal stela, detail. Figure of viceroy Amenemipet.



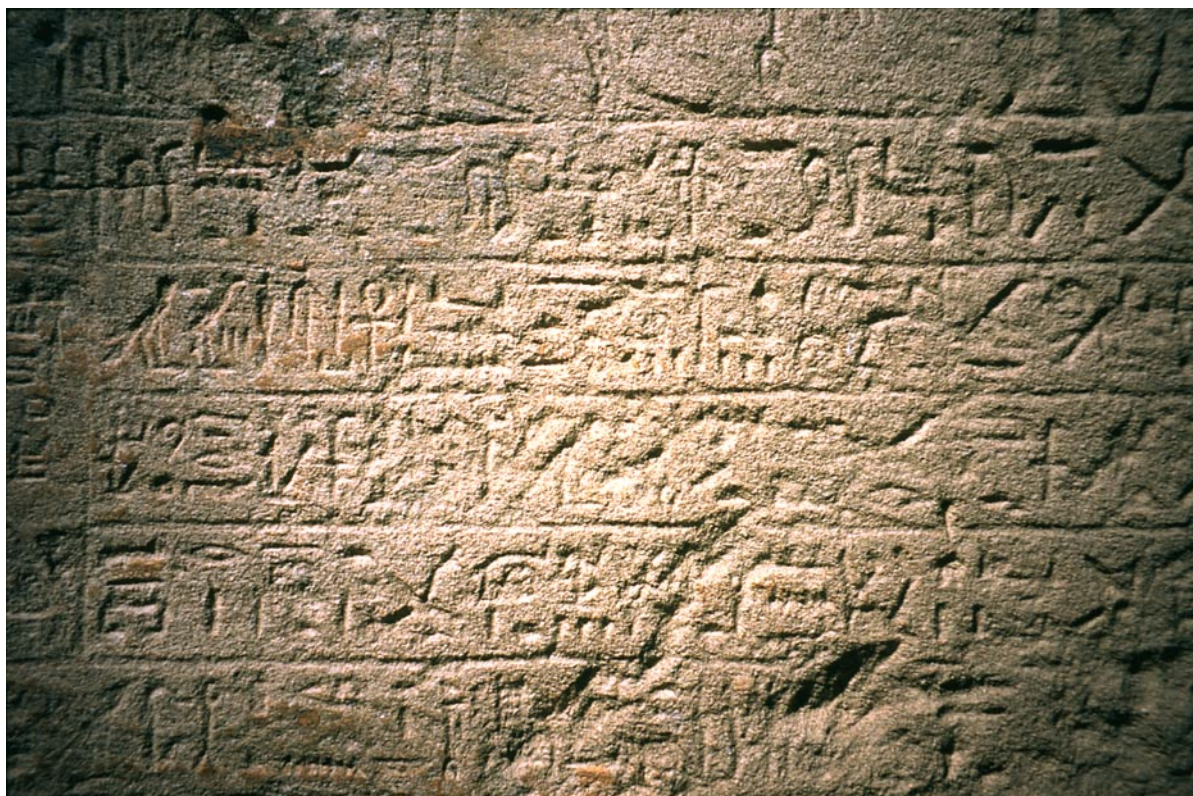


Fig. 21 Royal stela, detail of main inscription.



Fig. 22 Group of three male figures, located to left of royal stela.





Fig. 23 Two male figures, located to left of royal stela.

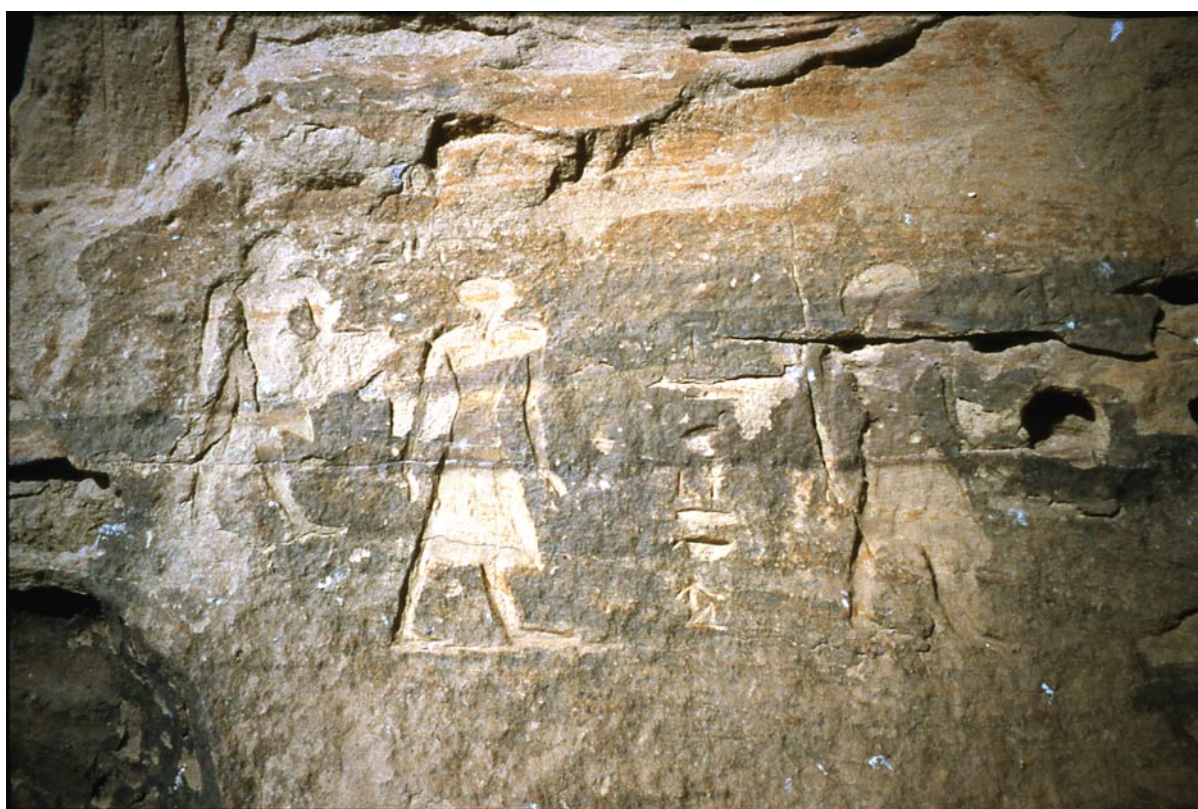


Fig. 24 Group of three male figures, located to right of royal stela.





Fig. 26 Stela showing the viceroys Amenemipet before two deities.



Fig. 25 Figure of the priest, Maimes.





Fig. 27 Stela showing the scribe, Keny, before two deities.



Fig. 28 Scene showing an official named Sebakhou(?).





Fig. 29 Stela showing an official kneeling before two deities.



Fig. 30 Rock face to right of Thutmose III chapel, with remains of stelae and series of rectangular holes.



# The Subsidiary Temple of Nekhtnebef at Tell el-Balamun

*Jeffrey Spencer*

In spite of the extensive building programme of the Thirtieth Dynasty, the documented temples fail to reflect adequately the extensive resources expended at this period on the redevelopment of religious sanctuaries.<sup>1</sup> There are several reasons why this is so. Many temples have fallen victim to stone quarrying, not only in the Delta where much of the building programme was concentrated, but also in Upper Egyptian urban centres such as Ashmunein, Abydos and Koptos. Elsewhere, Thirtieth Dynasty structures often consist of added elements within an older sanctuary, which fail to attract the attention engendered by an entirely new monument, despite the fact that some of these additions in themselves constituted an outlay of resources greater than that needed for the construction of many a complete temple. Where Thirtieth Dynasty temples were constructed, the demands of the building programme seem to have been such that their decoration sometimes remained to be completed by later rulers, as at Ashmunein, where the Thoth-temple founded by Nekhtnebef (Nectanebo I) was inscribed under Philip Arrhidaeus.<sup>2</sup> It is probable that some temples regarded as belonging to the Ptolemaic Period on the grounds of their decoration may have been initiated during the Thirtieth Dynasty. This collection of circumstances has left a lack of well-preserved material for the study of Thirtieth Dynasty temples, as a stage in the evolution of Egyptian religious architecture.<sup>3</sup> The description of a temple of Nekhtnebef at Tell el-Balamun which follows is a contribution to filling this gap, since in spite of its destroyed condition, it is one of the few which has been excavated in sufficient detail to permit some analysis of its construction and probable design.

The subsidiary temple of Nekhtnebef at Tell el-Balamun (Temple B) was one element of a major Thirtieth Dynasty refurbishment of the temple complex, which also included rebuilding the main temple of Amun and its processional approach, adding what was very likely a Mammisi and surrounding the whole sacred area with a new brick enclosure wall.<sup>4</sup> As a self-contained individual monument, the subsidiary temple, which was established in the traditional location of a barque-station dependent on the temple of Amun, is the most suitable element in the complex for the study of original Thirtieth Dynasty architecture. Information about this temple was gathered during the excavation seasons of 1992, 2001 and 2004 and is sufficient to establish not simply the dimensions and date of the building, but also some idea of its appearance. Although intended as a barque-station subordinate to the main temple of the site, the subsidiary temple was actually a very substantial monument. The nominal width of the pronaos foundation is 44.5 metres. The size of pronaos which could be built on this foundation

<sup>1</sup> For a list of temples of the period, see Niederberger, *Elephantine XX*, 134.

<sup>2</sup> Spencer, et al., *Excavations at El-Ashmunein*, II, 71–3; Bailey, Davies and Spencer, *Ashmunein (1980)*, 4; Bailey and Snape, *The Great Portico at Hermopolis Magna*, passim.

<sup>3</sup> Niederberger's detailed treatment of the temple of Khnum at Elephantine is a most welcome example of the wealth of information which can be revealed through careful study of the surviving monuments: Niederberger, *Elephantine XX*.

<sup>4</sup> Spencer, *Tell el-Balamun, 1991–1994*; id., *Tell el-Balamun, 1995–1998*; id., *Tell el-Balamun, 1999–2001*.

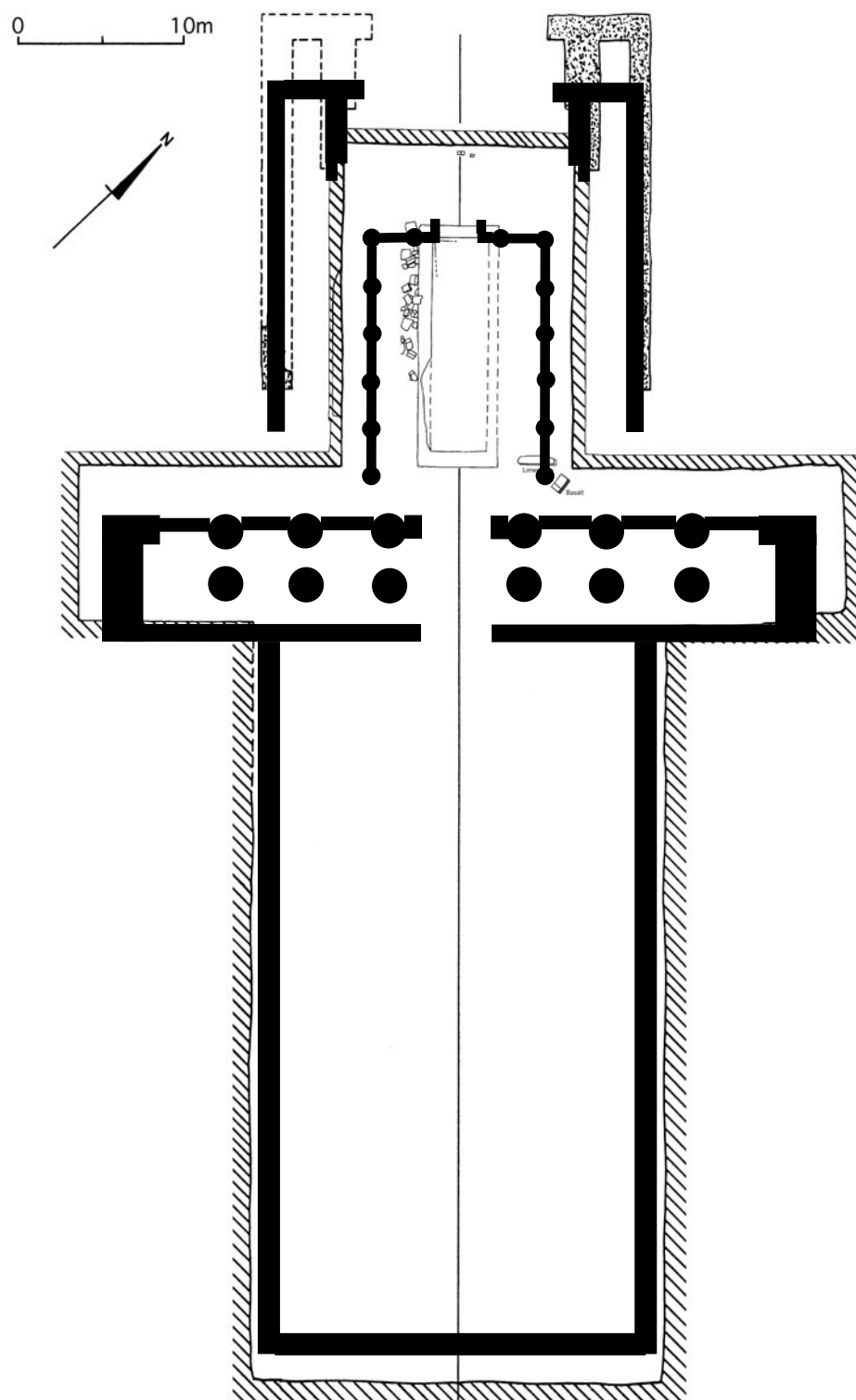


Fig. 1 Plan showing the outline of the foundation superimposed with a reconstruction of the temple.

would be slightly narrower, to allow for the inevitable construction gaps at each end, but even allowing a generous interval of a metre on each side, the width of the pronaos would still amount to 42.5 m (Fig. 1). This dimension is almost equal to the width of the pronaos of the Ptolemaic temple of Dendera (43 m)<sup>5</sup> and exceeds that of the pronaos at Edfu (40 m), although those examples possess greater depth. The proportions of the pronaos of Nekhtnebef at Balamun are discussed further below.

In common with almost all temples of the later dynasties, the foundation of the temple consisted of an enormous pit which reflected the full size and shape of the monument to be built above. This foundation method, driven more by ritual considerations than practicality, produced a depth of foundation which was far greater than that actually needed. Temples of the New Kingdom were built with much less elaborate substructures but have, nevertheless, often survived in good condition. The total depth of the Thirtieth Dynasty foundation pit is not known and remains inaccessible, since it descends well below the modern water-table. According to ancient ritual requirements recorded in the Edfu texts,<sup>6</sup> the builders were supposed to excavate the foundation down to the water table, which in antiquity would have been far lower than its present-day level. The measurable depth of the surviving foundation from the highest point on the edge of the pit at the present surface to the maximum depth attained in the subsoil water was 2.60 m. Given that the area of the foundation is 1,712 square metres, even this depth would constitute a volume of 4,451 cubic metres, all of which was filled originally with clean sand as the 'pure medium' for the basis of the temple. Much of this sand remains in place, although the present level of its upper surface varies from place to place depending on the extent to which it has been removed by later pitting. Originally, it rose to the level of the top of the foundation, which has itself been degraded by erosion. The sides of the pit were lined all around with a retaining wall of black mud bricks; the highest part of this lining lies at the outer end of the north-east wing of the pronaos where it attains a relative level of 221 cm over datum, but more typical levels around the perimeter fall between 140 and 180 cm. The bricks in all parts of the foundation were in the size range 38–41 × 19–20 × 12–14 cm. The earth extracted in the original cutting of foundations of this kind would have provided material for the creation of the earth embankments used to raise masonry during construction, but subsequently must have been removed from the site.

The level of the top of the foundation must once have been equal on all sides to present a flat construction site for the temple platform, but the contours of the surrounding ground have created a pattern of erosion which has imparted a slope to the area, descending towards the south west. Surface pitting has done more damage than erosion. The majority of the pits seem to date from Late Roman times when all the temple sites at Balamun were used as stone-quarries, but there are also some deep holes of vaguely rectangular shape which have the appearance of early, unsystematic excavation trenches. One of these lies in the centre of the pronaos and another at the front of the temple. Nearby to the south are some substantial dumps which could well have come from these trenches, but there is no record of when and by whom this work was done. The dumps are visible on the photographs of the site taken by Howard Carter in 1913, but were not created during his work, and so may date from the

<sup>5</sup> Obtaining reliable and accurate measurements for Egyptian monuments is still problematic. Some of the recorded dimensions differ from each other and in many cases the only sources available are very old publications. The size of the Dendera pronaos, for example, is given variously as 42.6 × 26 m (Arnold, *Encyclopaedia of Ancient Egyptian Architecture*, 180; 43 × 26 m (Cauville, *Le temple de Dendera*, 29; 42.49 × 24.8 m (Mariette, *Dendarah*, tome 1er., pl.2).

<sup>6</sup> Le Maquis de Rochmonteix, *Le Temple d'Edfou*, I, 23, 4–5.

late nineteenth century.<sup>7</sup> The effect of all the pits and trenches on the site of the temple has been to replace the upper part of the sand-bed with a mixture of stone rubble and mud.

The shape of the foundation of the temple is illustrated in **Fig. 1**, with a suggested reconstruction of the monument overlaid upon it. The latter is discussed below, but the foundation exhibits three basic components: a large rectangular naos area of 43.5 m × 24.7 m at the back, the wider section for the pronaos and a smaller rectangle in front for the gate and courtyard. The presence of the latter element, only discovered in 2004, helps considerably in understanding the design of the temple. Beyond the edges of this part of the foundation are two narrow sand-filled trenches, one on either side, which had been found in 1992 and considered at that time to be all that existed of building evidence in front of the pronaos. The fact that part of the main foundation-pit extended between these trenches shows that there was more substantial construction at the front of the temple than previously thought. The three sections of the foundation listed above will now be considered individually.

### The Naos Area

The limits of this area were first investigated in 1992 when the size of the rectangular space was defined as being 24.7 × 43.5 m.<sup>8</sup> The foundation was not physically subdivided; the sand bed ran continuously from the naos area through the pronaos to the front. Below the disturbed upper level, which contained evidence of Roman activity, clean sand was found to remain in place at various depths. The date of the temple was established by the recovery of two foundation-deposits, both disturbed to some extent by Roman pitting, from the sand in the rear angles of the naos. These have been fully published elsewhere,<sup>9</sup> but the dating evidence came solely from the eastern corner in the form of two faience plaques inscribed with the prenomen and nomen of Nekhtnebef. The objects in the deposits lay between relative levels 102 and 70. In the corners of the pronaos and at the front of the temple the undisturbed sand did not survive this high, which might explain the absence of any additional deposits at these locations.

Originally, the sand-bed provided a level surface for the laying of the stone blocks which constituted the temple platform, here in the naos and also in the other sections towards the front of the building. A few blocks of stone were found lying displaced above the sand at the rear east corner, two of limestone and one of basalt, and no doubt there are numerous others scattered within the unexcavated parts of the naos area. The destruction of the temple platform has removed one of the main sources of evidence concerning the positions of the walls and columns within the temple, as these would have been indicated by mason's setting-out marks on the top course of the platform. So far as the design of the rear part of the temple is concerned, it may be assumed that there would have been a central sanctuary, probably containing a monolithic naos. Part of a block of quartzite was noted near the axis which might have come from a plinth below the naos.

<sup>7</sup> Notes of the work of Howard Carter at Tell el-Balamun are kept at the Griffith Institute, Oxford. See Malek, *RdE* 36, 181–5.

<sup>8</sup> Spencer, *Tell el-Balamun 1991–1994*, 43.

<sup>9</sup> Spencer, *Tell el-Balamun 1991–1994*, 43, 84 and pl. 90.



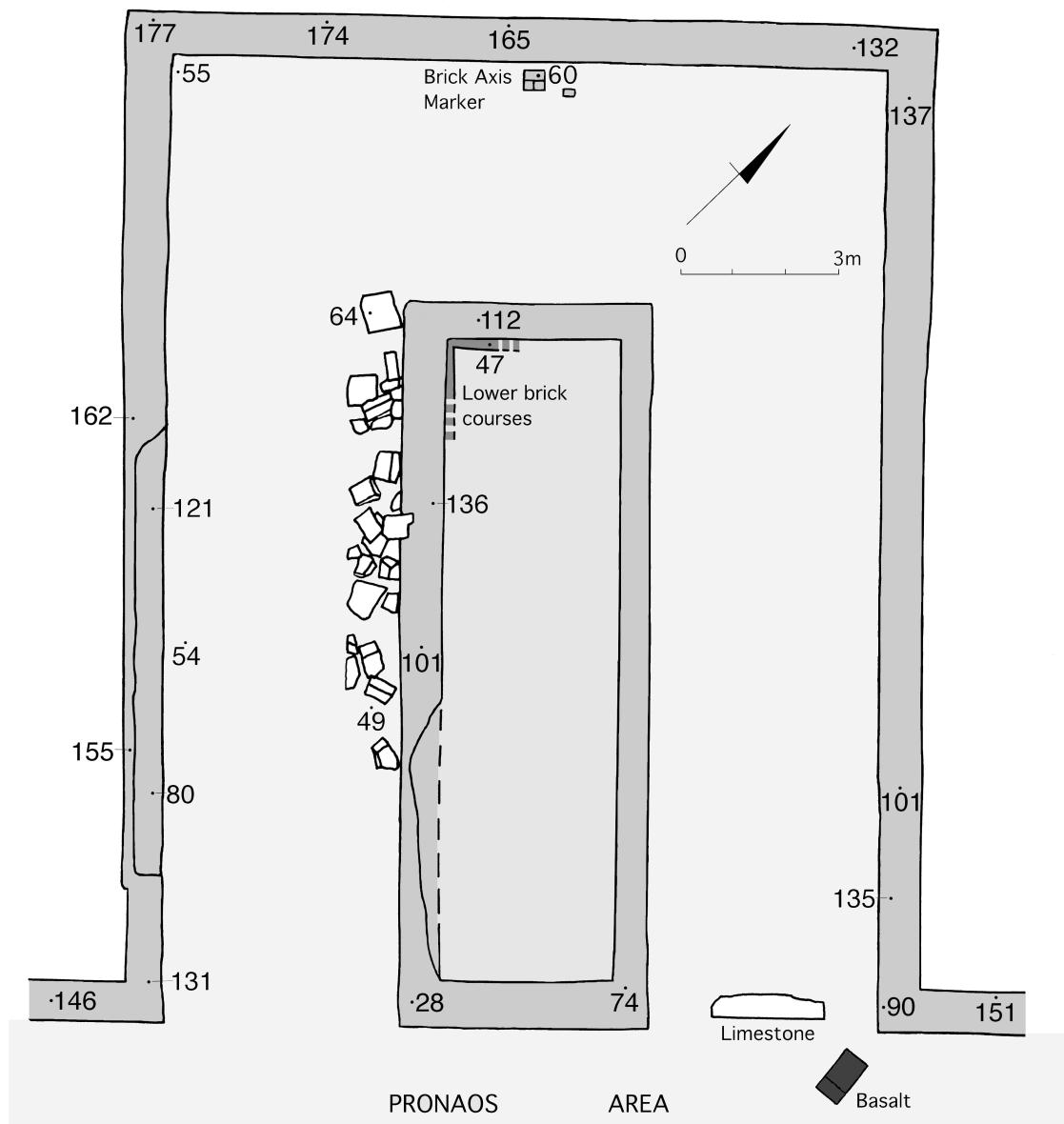


Fig. 2 Plan of the front part of the temple foundation, excavated in 2004, showing the central brick-cased element within the sand-bed.

### The Pronaos

The edges of the pronaos were identified in 1992, primarily through work on the north-eastern side, while tracing the opposite half only from surface traces.<sup>10</sup> Excavation of the south-west side in 1999 confirmed the dimensions to be similar on each side.<sup>11</sup> Finally, in 2004 some additional work was

<sup>10</sup> *ibid.*, 44.

<sup>11</sup> Spencer, *Tell el-Balamun 1999–2001*, 32.

done at the north-east, re-checking the front corner and excavating beside the inner angle where the foundation turns towards the front of the temple. The re-excavation of the front outer corner of the north-east wing in 2004 allowed the foundation sand to be checked for a possible foundation deposit at greater depth than achieved in the cursory excavation of 1992, but nothing was found. The clean sand was encountered at a relative level of 69, contained by exceptionally fine brick lining of the adjacent retaining-walls (Fig. 4). The excavation in 1999 of the angles at the outer end of the opposite wing of the pronaos had likewise proved negative in the search for foundation deposits, probably, as mentioned above, because of the removal of the upper part of the sand through ancient pitting.

The distance from the front to the back of the pronaos foundation in this temple is quite shallow, measuring only around 8.5 m across the ends. Although the central portion of each wing widens to about 9.5 m, the size of the structure which could be built on the foundation is determined by the minimum dimension. Given that any foundation pit is generally somewhat wider than the building it supported, the *external* depth of the stone structure of the pronaos cannot have exceeded eight metres, and was probably more in the region of 7.5 m. Once the thickness of the stone walls at front and back is taken into account, the interior space must have been quite limited, certainly sufficient for no more than a single row of columns in addition to a façade row of engaged columns. The width of the pronaos would suggest that three columns could be accommodated on either side of the axis, as is most common in the preserved pronaoi of other temples.

At the angles where the foundation of each side of the pronaos met the foundation of the naos area and of the portico, the brick lining had been carefully assembled to create good approximate right-angles. The continuous nature of the brick lining emphasised the unity of the foundation as a single construction project. Close to the angle between the inner end of the north-east wing of the pronaos and the front section of the foundation lay two large pieces of masonry, one of limestone and the other of basalt (Fig. 5). Although both had been disturbed, it seemed probable that they had not been moved far from their original locations. They lay on the remaining sand of the foundation, enveloped in redeposited pit-fill, immediately in front of the former position of the facade of the pronaos, as if thrown down during quarrying and then abandoned. The limestone block consisted of a slab, 212 cm long and 85 cm high, with a thickness of 50 cm. The basalt block was more readily identifiable as part of the upper section from one jamb of the doorway of the pronaos, cut to include a short split lintel (Fig. 6). The dressing of the block was unfinished, with a quantity of excess stone remaining below the right-angle where the lintel was to be created. The angle to be cut had been marked out on the faces but never dressed back along the thickness. In the base of the block a dovetail-cramp slot, stained with bronze corrosion, showed that this end had been joined to a lower course of the doorpost (Fig. 7). The joined surface also bore an area of roughened stone measuring 38 × 32 cm to form a key for mortar. The existence of this block shows that the central door of the pronaos, set between the innermost pair of columns of the facade, conformed to the type which became standard in Ptolemaic temples, with a split lintel at a level equal to approximately two-thirds of the height of the columns. The presence of bronze staining at the join shows that the block really was once linked to a lower one, suggesting that the doorway was actually built, but the lack of final dressing and of inscriptions shows that the temple remained incomplete. Since surface dressing was regularly done after construction, this is not surprising. The block was 98 cm high and measured 46 × 52 cm at its base, with the overhanging split lintel designed to project 18 cm beyond the vertical face of the doorjamb.

## The front part of the foundation

As mentioned above, the existence of this part of the temple substructure was unknown until 2004. It presents an unusual feature in that it is not simply a rectangular area full of sand, but contains a separate sub-foundation in its centre, the purpose of which is not entirely clear. During excavation, the south-west retaining wall of the foundation was the first to be identified, then traced from its corner with the pronaos until the front limit of the foundation was reached, a distance of 18.3 m. The front retaining wall and parts of the north-east side were then revealed, except for the central part of the latter which had been cut by a large pit. The excavated areas were sufficient to determine the full shape of this part of the foundation, as illustrated in the detail plan (Fig. 2). Lying in the sand in the middle of the foundation, just 8 cm from the inner face of the front brick revetting, were two mud bricks (Fig. 8), which were found to be precisely on the axis of the temple. They were presumably a temporary marker used by the builders as a reference point during construction. These bricks consisted of exactly the same dark clay as those of the lining-walls and they measured 40 × 19 × 14 cm. The sand in which they lay was clean of other inclusions right across the front part of the foundation (Fig. 9), but a search deep into the subsoil water in both the front corners for deposits proved negative (Fig. 10).

Above the level of the remaining sand within the foundation the many pits of Roman and later age, created during the quarrying of the temple masonry, were clearly evident. Remains of this activity were present in the form of heaps of limestone chips and some larger blocks of limestone, lying in a confused scatter as left by the quarrymen (Fig. 11). One of these blocks was found to be decorated on one surface with part of a scene and hieroglyphic inscription, cut in sunk relief (Fig. 12 and Fig. 3). On the left there had been a relief of a seated god holding a *was*-sceptre, probably Amun to judge from the epithets in the text, but only part of the knee and arm of the figure had survived. Above the figure are the lower ends of four vertical columns of hieroglyphs, the first of which (on the right) concluded with the epithet of Amun, 'Lord of the Thrones of the Two Lands.' The remaining columns are difficult to interpret owing to their fragmentary state, but seem to contain parts of the names of divinities. The signs in the first column, with a seated figure determinative, seem to stand for a divine name, 'Pehty', rather than an epithet. The next line contains a writing of the name of Sekhmet, and the effaced signs in the final line may be part of the name of Nefertem.

To the right is a vertical column of hieroglyphs running the full height of the block, reading: '[...] jars of water. Recitation: "twofold purification for Amun-Ra, Lord of the Thrones of the Two Lands..."'. The same text also occurs in the first of two columns on the lower right portion of the block, whilst the second column reads: 'Offerings for the Lord of records' (an epithet of the god Thoth). Above these two short texts is a panel containing, on the left side, repeated occurrences of the phrase, 'all purification', followed by a Thoth-ibis on a standard. It is not clear whether the latter sign stands for the god Thoth or the Lower Egyptian Hermopolite nome, although the lack of a place-name determinative suggests that the god is intended. The opposite side of this panel probably possessed a similar text, but ending with a hieroglyph of a falcon with extended wings above a sign reading 'island of Amun'. If the falcon is being used as a late writing for the definite article, then this would be a writing of the name of the city, Paiuenamun. This block, together with many others lacking inscriptions, was found beside a wall of mud brick located about two metres to the south-west side of the axis of the temple (Fig. 13). Lying amongst the rubble was part of a pottery jar filled with hardened gypsum plaster, presumably a relic of the construction process abandoned by the ancient workers (Fig. 14).

The brick wall was later found to be one side of a rectangular sub-compartment along the axis, built

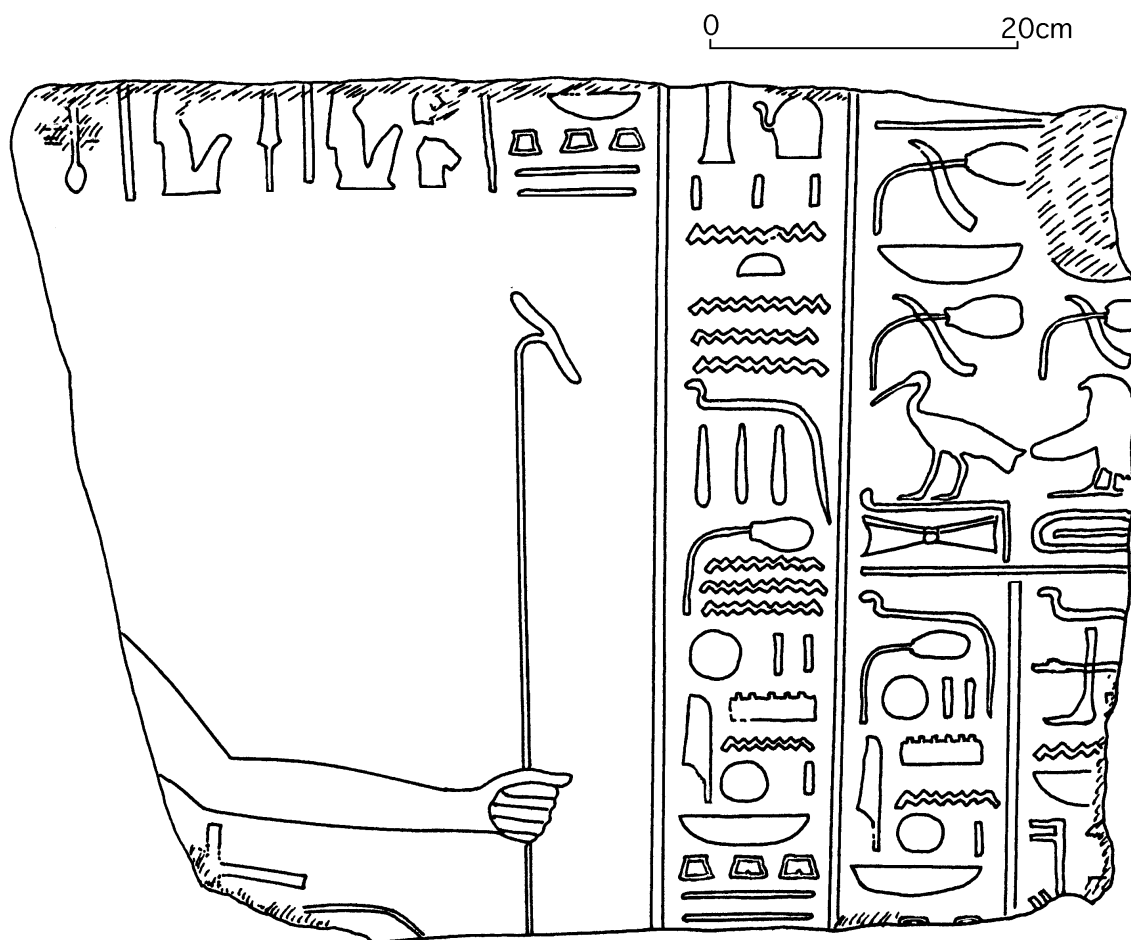


Fig. 3 Copy of a hieroglyphic inscription from a block found in the quarry debris of the foundation.

in the middle of the main foundation-pit. Excavation showed this feature to be 13.6 m long by 4.7 m wide, with the width divided equally across the axis of the temple (Fig. 2). The thickness of the perimeter wall varied from 85 cm on the south-west to 65 cm at the north-east, all built of large black mud bricks of the same sizes as those which lined the main foundation. Fig. 15 shows the west corner of the brick rectangle. The south-eastern end of the feature had suffered considerably from the cutting of a deep robbers' pit, which had removed much of the upper brickwork and subsequently been filled gradually with rain-washed mud. Fortunately, some of the lower courses of bricks remained unscathed, with clean foundation sand in place against the exterior. There was evidence to show that the walls had been built in at least two stages, as the lower courses of bricks were not precisely aligned with those above. Evidence for this was noted at the west and east angles and also at the middle of the south-west wall. It would seem that the walls of this structure had been increased in height incrementally to match the level of the sand filling of the foundation. Although this sand filled the entire area of the foundation around the central brick rectangle, there was none inside it, where the original material seems instead to have been finely-crushed limestone. The purpose of this separate brick-cased foundation on the axis of the building is not clear. In the usual design of an Egyptian temple there was only a pathway along the axis at the front of the building, and it is difficult to explain why this should need an independent

substructure when the pavement could just as well have been laid on the sand-filling of the main foundation. The only suggestion which seems possible is that there might have been a ramp approach to the door of the pronaos.

Outside the limits of the principal foundation lay the two narrow sand-filled trenches found in 1992. The inner edges of these lay ten metres from the axis of the temple, but the two trenches were not of equal width. The dimensions obtained in 1992 were reconfirmed in 2004, when portions of these trenches were again excavated to check their relationship to the new area of foundation discovered at the front of the temple. The two-metre width of the less well-preserved south-western trench as compared with a dimension of only 1.2 to 1.3 m at the north east shows that accuracy was not particularly significant for these foundations and all that was required was a serviceable wall-trench. Since any stone-built features laid on these trenches would almost certainly have been identical on either side of the temple axis, the thickness of the masonry would have been constrained by the lesser width at the north east and so must have been no more than 1.2 m wide, and probably less. The more generous width of the opposite foundation trench would simply have been surplus to requirements. As noted in 1992,<sup>12</sup> the depth of the sand in these trenches was only 90 cm, making them much shallower than the main foundation of the temple. The fact that these trenches doubled back on themselves at the front was already known, but a new detail brought to light in 2004 was that the ends of the return sections impinged directly on the lining of the front of the main foundation-pit. This effect was best preserved at the north-east side (Fig. 16), although sufficient traces of sand were observed at the south-west to confirm that both sides had been the same. This integration of the lightweight sand-trenches with the principal foundation shows that all the elements are part of a single design. Another new discovery was the fact that the sand-trenches did not extend right up to the front of the pronaos as originally thought, but ended three metres distant from it. If the sand-trenches mark the locations of vanished screen-walls, as suspected, then the existence of the gap suggests that there were openings through them beside the façade of the pronaos, possibly service entrances. This discovery necessitates a correction to the information and plan previously published,<sup>13</sup> which indicated these trenches extended 21.5 m from the face of the pronaos. In fact, this dimension is just the length of the trenches themselves and the three-metre gap is extra, so the true positions of the western or front ends of the trenches lie 3 m further from the pronaos than suggested. The corrected configuration is shown here in Fig. 1.

### Reconstruction of the temple

The information collected through the excavation of the temple permits some conclusions to be drawn about its layout. The close similarity between the probable width of the pronaos and that of the temple of Dendera indicates that the building was of significant size in spite of being subsidiary to the temple of Amun. The latter monument was some 150 m long and was also rebuilt as part of Nekhtnebef's ambitious building programme for Tell el-Balamun. The limited depth of the pronaos hall of the subsidiary temple, noted above, is typical of the Thirtieth Dynasty and early Ptolemaic Period, before the development of much deeper halls with up to four rows of columns. Parallels for shallow pronaos, with a one row of engaged columns at the facade and a single row in the interior, are recorded from Ash-

<sup>12</sup> Spencer, *Tell el-Balamun 1991–1994*, 45.

<sup>13</sup> Spencer, *Tell el-Balamun, 1991–1994*, 45 and pl. 19.



munein and Elephantine. The Ptolemaic pronaos of the temple of Khnum at Elephantine was quite modest in scale, and measured externally  $36.75 \times 13.65$  m, or  $70 \times 26$  cubits.<sup>14</sup> The Ashmunein example, founded by Nekhtnebef and decorated under Philip Arrhidaeus, consisted of a particularly fine hall with papyrus-cluster columns, all destroyed before 1826 apart from some of the column bases.<sup>15</sup> The width of this hall was particularly large, measuring 110 cubits according to the foundation-text of Nekhtnebef.<sup>16</sup> This is equivalent to 57.75 m, whilst the depth of the hall was only about 21 m (40 cubits). The design of this pronaos has been studied by Dieter Arnold, who proposed a spacing between the column centres of 12 cubits, expanded to 12.5 cubits at the outermost rows, with a span of 15 cubits across the axis.<sup>17</sup> It is likely that the pronaos at Balamun was of similar proportions but smaller in scale. Assuming a pronaos some 42.5 m in width, the spacing in cubits between the column centres might have exhibited the following sequence across the hall: 9.5 - 9 - 9 - 15 - 9 - 9 - 9.5. This has been used as a basis for the reconstructed plan in Fig. 1, which is shown overlaid on the outline of the foundation. The slightly greater width of the outermost rows of columns not only produces the correct total figure for the width of the hall, but also matches the same feature in the suggested reconstruction of the Ashmunein pronaos. The pronaos of the temple of Dendera, as mentioned above, is of almost the same width to the inferred size of that at Tell el-Balamun and therefore provides an interesting comparison, in spite of its later date and different proportions. The external width of the Dendera pronaos is actually recorded in an inscription on the temple as  $81 \frac{2}{3}$  cubits;<sup>18</sup> in metric measurements it is 43 m, which gives a cubit value of 0.526 m. It is interesting that the ancient dimension is not a round number and it is not clear where the fraction was absorbed: possibly in the thicknesses of the side walls or the spacing of the outermost columns. The distance between the column centres running across the width of the hall, however, would seem to best suit a spacing of either 9 or  $9 \frac{1}{3}$  cubits, not dissimilar from the suggested layout for Tell el-Balamun. The possible size of the Balamun pronaos of Nekhtnebef is determined by the dimensions of the foundation, leaving little chance that the column spacing could have been other than the suggested figures. In spite of the complete destruction of the monument, the full study of the foundation has supplied the key to the interpretation of its design.

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<sup>14</sup> Rieke, *Die Tempel Nektanebos II in Elephantine*, 17–8, Plans 1 and 4. Niederberger, *Elephantine XX*, 104, gives the external width of the Thirtieth Dynasty courtyard replaced by the Ptolemaic hall as 36.79 m, calculated as 70 cubits and 2 palms with a cubit value of 52.308 cm.

<sup>15</sup> See above, n.1.

<sup>16</sup> This text is on a stela found at Ashmunein in 1939. Roeder, *ASAE* 52, 316–442, especially 375–426.

<sup>17</sup> Arnold, *MDAIK* 50, 13–22.

<sup>18</sup> Cauville, *BIFAO* 90, 105–6, 111.

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Fig. 4 Brick revetting at the front outer corner of the north-east side of the pronaos.





Fig. 5 Limestone slab and basalt block at the inner front corner of the northeast side of the pronaos.



Fig. 6 The unfinished basalt block from the upper part of the doorjamb of the pronaos.





Fig. 7 Copper staining in the dovetail cramp-slot at the base of the basalt block.



Fig. 8 Mud-brick axis-marker in the sand at the front of the foundation.





Fig. 9 View across the front of the foundation, showing the sand within the retaining wall.



Fig. 10 Sand in the west corner of the foundation at the front of the temple.





Fig. 12 Decorated block found in the quarry debris of the foundation.



Fig. 11 Rubble beside the central brick-cased sub-foundation.





Fig. 14 Fragmentary pottery jar full of set gypsum plaster, abandoned in the foundation.



Fig. 13 View along the southwest side of the brick-cased sub-foundation on the axis.





Fig. 16 The north front corner of the main foundation. At the rear is the green sand in the separate high-level trench (partly cut in section), where it impinged on the main foundation.



Fig. 15 The west corner of the central brick-cased sub-foundation.





# Electronic publishing: the example of BMSAES

*Nigel Strudwick*<sup>1</sup>

*Informatique et Egyptologie* has tried to place itself in the forefront of encouraging developments in information technology (*informatique*, *Informatik*) into use in Egyptology. Issues which have been addressed, and which continue to be addressed, include databases, hieroglyphic word-processors, and the Internet. The stress over the past twenty years has very much been on encouraging developments to aid research, but the group has paid relatively little attention as to how this research should be disseminated and how the technologies we espouse so readily in other spheres might be turned to this end. It is now time for us to lead the way in publishing material via electronic media, since all work which has no publication might, in many ways, have been not done at all.<sup>2</sup>

What is an electronic publication? In theory the term should refer to any document produced electronically and available in some way for public viewing, free or at cost. In practical terms I am thinking rather of completed work which traditionally would see the light of day in print.

The most common method these days for presenting the results of research is via a web page, either as a complete web site, individual articles or a journal-like publication available over the Internet. A CD ROM which fits the criteria of distribution just mention is another method, which these days tends to concentrate on large datasets and lends itself particularly to data which is not likely to be modified. It is not difficult to quote examples of both, particularly web sites, the latter of which lend themselves well also to publishing interim material on the way to the final report. The best example of a CD-ROM for our purposes is the AEB, but it might also prove an interesting adjunct to publish some of the raw data for a book in this way too.

Today the move is for material to be available on the Internet, although much of what I have to say below is applicable to any electronic format. My aim is to survey the advantages and problems of the concept, and to look at some possible solutions. I wish to draw the reader's attention to two particular publications which illustrate some of the concepts of electronic publication within the archaeological and Egyptological area.

Archaeology has one principal electronic journal, *Internet Archaeology* (<http://intarch.ac.uk/>), located within the University of York in the UK. This publication has been active since 1996, and has been accepted as a mainstream publication among the archaeological community. Within the Egyptological sphere there is at present only *Internet-Beiträge zur Ägyptologie und Sudanarchäologie* (IBAES—<http://www2.rz.hu-berlin.de/nilus/net-publications/index.html>), published in the Humboldt-Universität in Berlin. IBAES is less of a journal and more of a forum for longer papers and specific collections, but the underlying principal of publication by electronic means is the same.

<sup>1</sup> Readers should note that there are many URLs in this paper, and several will wrap over onto the next line. It should, however, be possible to access them directly by clicking. These URLs were checked at the end of August 2002.

<sup>2</sup> An editorial in *Antiquity* 75 (2001), 233–9, especially pp. 234–6, well describes this situation as a form of iconoclasm (also available at <http://intarch.ac.uk/antiquity/75-288editorial.html>).



## Advantages of electronic publication

The following is a summary of some of the principal advantages:

- Greater speed and increased frequency and flexibility of appearance.
- Potentially reduced cost. This will largely depend on how an electronic project is financed, but the printing costs are removed, and the main consideration has to be the time of the editor and setter of the work.
- Potentially greater availability due to the widespread use and penetration of computers and the Internet.
- Ability to present types of content which cannot be realised on paper, for example, interactive databases, video, and virtual reality. I have demonstrated some of these media in the course of previous *Informatique et Egyptologie* meetings, and I shall mention some other examples later.

Some of these issues, and particular problems, I discuss further below.

## Problems and issues of electronic publications

However, electronic publication would not belong in the real world if it did not bring along its own problems and raise issues which we have never had to confront before. Some of these are technical, but others are in the minds of the potential users.

*How seriously are electronic publications received in the academic world?*

In the UK in the early 1990s a report was commissioned by various higher education funding bodies into issues raised with reference to library provision by recent expansion in undergraduate numbers. The report, which appeared at the end of 1993, became known as the Follett Report after the name of the chairman of the review group which produced it, Professor Sir Brian Follett.<sup>3</sup> As one of the subjects examined was how technology can be used to the advantage of the library, electronic publication figured in this report.<sup>4</sup> I attended a presentation of the report in Cambridge and recall particularly that it was felt at that time that academics had some way to go in accepting digital materials as the equivalents of print publications. This was in part due to innate suspicion of computers and 'new media' among some sections of academia, and most of those who have worked in conjunction with *Informatique et Egyptologie* over the years will sympathise with this. In 2002, the evidence is that this is changing. Electronic publications, properly reviewed, are now accepted for Research Assessment Exercises in British universities, and *Internet Archaeology* is now an accepted vehicle for academic communication. What is clearly needed is more electronic publications.

However, it cannot be denied that the question of the acceptability of electronic writings is above all a problem for the humanities; scientists have for far longer accepted all manner of electronic publication. Compare this: I recall when Helen Strudwick and I discussed the possibility of excavation data being placed on-line in 1993 during a discussion at the 'Thebanischen Beamtennekropolen' symposium in Heidelberg,<sup>5</sup> the idea was received with not a little scepticism. Some might argue that the days

<sup>3</sup> Full report at <http://www.ukoln.ac.uk/services/papers/follett/report/>

<sup>4</sup> The specific section is paragraph 283 of <http://www.ukoln.ac.uk/services/papers/follett/report/ch7.html>

<sup>5</sup> See J. Assmann, E. Dziobek, H. Guksch, F. Kampp (eds), *Thebanische Beamtennekropolen. Neue Perspektiven archäologischer Forschung* (SAGA 12, Heidelberg 1995); this informal discussion is not recorded in the publication.

of the printed paper are in fact numbered in the sciences, perhaps in part because so much science has less of a 'shelf life', and partly because scientists rarely publish primary material in the manner of Egyptology.

*The question of accessibility*

Much is often made of the so-called 'digital divide'. This term has been coined to express the potential for exacerbating the economic and social divides between various parts of the world as a result of variable access to high technology. The argument runs along the lines that if the 'First world' continues with its progress towards ever more sophisticated computer systems, we will be producing material (in our case publications) which are inaccessible to the majority of people on this planet as they are unable to afford the necessary computers and network infrastructure.

There is no doubt that in regard to certain aspects of technology this is very true. However, in terms of publication there is a contrary side to it, especially in relation to our subject; let us term it the 'financial divide'. Consider the cost of printed books today, in particular the cost of publications of primary material. How many libraries outside the 'First World' can afford to buy every relevant publication? [For that matter, how many libraries *in* that world can afford to?] Library purchasing budgets are often among the first to suffer cutbacks. Take the example of Egypt. The libraries of most Egyptian universities or SCA inspectorates are hard-pushed to have collections of basic books in the subject, never mind a working library. One of the most interesting developments in Egypt is the spread of computers around the country, and the purchase of such machines is usually far better funded than libraries, because of the many uses to which they can be put. Thus a student or colleague in Egypt may well have a better chance of accessing an electronic publication through a nearby computer with a modem than finding a book in a library.<sup>6</sup>

*Survival of the publication*

Once a conventional journal or book is printed and distributed, it physically exists as an object, and looking after it is the responsibility of the library or owner of the individual copy. Specialised libraries, or copyright collecting institutions, can also be relied on to maintain copies should others be threatened. The Internet publication, on the contrary, is a virtual object, usually only existing as a series of magnetic impulses which are made into something readable each time they are sent out to a computer which requests them. Thus the source host of the publication has to be constantly watched and maintained by its owner to ensure the publication's survival.

Among readers of this paper there will be few who have not suffered the exasperation of attempting to access a Uniform Resource Locator (URL), only to find that it has moved or simply 'disappeared into cyberspace'. I find this while maintaining Egyptology Resources (<http://www.newton.cam.ac.uk/egypt>). Sometimes this is because the original creator has given up maintaining the site on which the publication resides, but at other times it can be due to problems such as economic failure of the service provider. This is a major problem which has to be resolved, and there are various systems coming into operation to try and deal with it, some of which I mention below.

<sup>6</sup> In 2001 I used an Internet shop on the West Bank at Luxor near the mortuary temple of Sety I, and most users were Egyptians. The Internet first reached Luxor in about 1997/8, was first seen at the ferry landing on the West Bank in 1999 and has now penetrated inland. Home use is relatively uncommon however, inhibited by the availability of suitable computers and telephone lines.



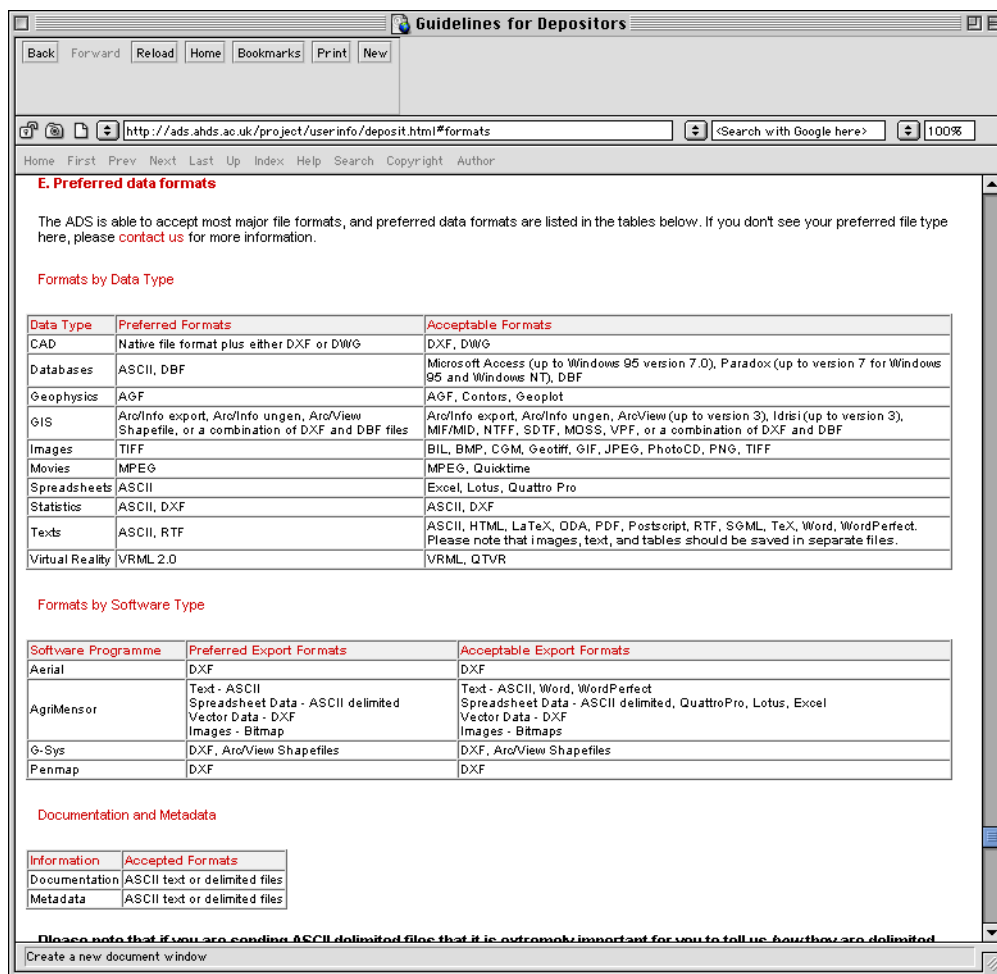


Fig. 1 The Archaeology Data Service preferred file formats.  
<http://ads.ahds.ac.uk/project/userinfo/deposit.html#formats>

### *Ensuring permanence and archiving*

Books are preserved through storage in secure buildings called libraries. If a book shows signs of decay it can be dealt with by a binder or conservator. As yet, there is little in place for the preservation and maintenance of electronic publications.

As an example, I have had contact with the Legal Deposit section of the British Library, who have the right to request copies of all publications produced in the UK. At present they do not have a policy on the collecting of Internet journals etc, although their instinctive reaction is to say 'send us a copy', just as they would with a book or even a CD-ROM. Logic perhaps dictates that they should collect URLs, since electronic publications of this type do not really exist outside the URL; and yet it can be argued that their collecting hard or electronic copy could help ensure the survival of the work. Legislation in the UK has yet to be passed which will bring electronic materials under the Legal Deposit system.

The concepts of 'Uniform Resource Names (URN)' and 'Uniform Resource Identifiers (URI)' have been proposed to resolve the problems of URL changes.<sup>7</sup> However, searching for information about them on the World Wide Web in fact illustrates the problem perfectly, since many of the links offered

did not in themselves work any more. I find it particularly intriguing that those who write about the (im)permanence of URLs do not see the irony of their writings becoming inaccessible.

Actual applications on these lines are being developed. The Handle System (<http://www.handle.net/>) sets out a method whereby these aims can be achieved, and an example of its implementation is the Digital Object Identifier system (DOI—<http://www.doi.org/>). These are all well worth following as future developments.

A related issue for the future would be this: what should happen if an electronic journal ceases publication? With paper journals, this is not a particular problem, as libraries would hold the published parts of the series anyway. But electronic material, as indicated earlier, theoretically ceases to exist when it is not accessible via electronic means. Would we have to fall back on archive copies?

This issue conveniently leads onto the question of archiving and indexing. The second is a requirement of any journal, but the library metaphor requires that all earlier/older material be accessible through the method of presentation—traditionally it would be bookshelves or shelves, and for electronic material let us assume that it is the Internet. This means that editors of electronic publications will have to ensure that there is adequate storage space available on their servers and that the design of the site permits easy access to this older material. These are relatively straightforward technical issues.

A matter which is less than straightforward is the maintenance of electronic data in usable formats. This is a very significant issue; how many users of computers in the early 1980s are now easily able to access that data, unless they looked to the future and made a point of converting it from one software program or operating system to another as they became obsolete?<sup>8</sup> There is always likely to be somewhere in the world where data can be updated (or ‘refreshed’ in the horrible terminology of the age), but it will be none of easy, immediate and cheap. I do not deny that the simplification of the number of computer operating systems and file formats since the 1980s makes it easier now for the ordinary person to keep their data current, and these problems are a major argument for ensuring that electronic publications are at least stored somewhere in mainstream file/software formats. The latter are most likely to survive in some form, or at least translators and converters for them will be readily available. Physical storage has to be treated carefully, since no-one can be sure of the future of the storage devices of today.<sup>9</sup>

Specialist data services, both profit-making and not, have been set up to make this storage and updating of electronic material easier. It would appear that the most promising method is for this to be handled by some sort of appropriate national authority in each country.

I should like to base my further discussion of this point using the UK as my example. There is there the ‘Digital Preservation Coalition’ (<http://www.dpconline.org>) which proposes to oversee initiatives

<sup>7</sup> See for example this article by Ian Peacock in the electronic magazine *Ariadne* for a description: <http://www.ariadne.ac.uk/issue18/what-is/intro.html>

<sup>8</sup> My own experience is salutary here. My doctoral thesis was written on an IBM mainframe computer, and was transferred to a Xerox word-processor in 1983 for printing the final copy. This machine used 8 inch discs, which are now obsolete. The text was then transferred to 140k discs (5.25 inch size) for an Apple IIe computer, and the published version was produced with an early version of Wordstar. I cannot locate those discs although I am sure I could find a way of transferring the data should they come to light. In the unlikely event of my producing a second edition of the book, it might be just as easy to scan the pages and use optical character recognition to extract the data. On the other hand, I did successfully transfer the raw database data of Old Kingdom names and titles which resides on my computers in ASCII text files. After the Pisa conference I noticed an article on the BBC web site making the same point in a more ‘popular’ manner: <http://news.bbc.co.uk/go/em/fr/-/1/hi/technology/2207297.stm>



for archiving and updating data. Specifically relating to the humanities is the 'Arts and Humanities Data Service'; within that one finds, for archaeology, the 'Archaeology Data Service' (ADS—<http://ads.ahds.ac.uk/>). This is at present primarily concerned with archiving and preservation of datasets as opposed to publication of discursive items,<sup>10</sup> but as electronic publication increases in importance, it will no doubt be able to fulfil the same function. The ADS both stores and 'refreshes' data in up-to-date formats.

It is worth for a moment perusing the list of supported data formats in Fig. 1. It is divided into those which are preferred and those which are possible. There is no doubt that the list errs on the side of caution, preferring those which are not proprietary, such as basic ASCII text, but realistically accepting most mainstream formats.

Another approach to the preservation of data is 'Open archiving', whereby sites are available on which authors can deposit papers freely, either as a location for publication or as a storage backup. As usual, scientists have been doing this for some time; see for example the heavily used and long-standing site <http://xxx.lanl.gov>. This is a little unsystematic and orientated to the sciences, and thus others are being developed closer to home. One example is being implemented in the UK at the University of Nottingham.<sup>11</sup> The idea here is that material can be accessed on a subject-by-subject basis.

Of course, the merit of such services is based on their constant and ready availability. If a site is commercially funded, there is always the chance that the income will be inadequate and the site has to close. Agencies funded on a nationwide basis are perhaps less vulnerable, but what would happen if government funding were removed or drastically curtailed, for example by a change of government or government policy? Governments have a habit of setting up initiatives in the hope that they will ultimately fund themselves—what happens when that aim is not realised?

I do not think this problem is insoluble, but it needs to be monitored carefully, and the actual copyright holders should also take all steps possible to preserve and 'refresh' their data. As hinted earlier on, this requires a change of mindset, in that none of us would normally think that it was our duty to preserve our books for the future. Presently, once something appears in print we abrogate all but the intellectual responsibility for our work; in the future, the unpredictability of the world may come back to haunt us. Nonetheless, in any medium we are still responsible for our archives which, in the case of excavation material, may include data which, although unpublished, may still need to be consulted further. We may thus soon have to be responsible for both published and unpublished material.

<sup>9</sup> At the risk of over-elaborating the point, let us remind ourselves of some of the hardware formats which have come and gone. The 8 and 5.25 inch discs are history now, although readers for the latter are probably still available. It is debatable how long the 3.5 inch disc will last; Apple Computer abandoned fitting it into Macintosh computers as far back as 1998, although the PC world has yet to follow suit. Increasing file size is the 'kiss of death' for some of these smaller formats, although data without illustrations is likely to fit on floppy discs for many years to come. A number of other higher-capacity formats have failed to achieve acceptance. CDs, presently one of the favoured removable storage formats, could be replaced by DVDs. It is to be hoped that manufacturers will at least allow some backwards compatibility for a number of years until the average user can reasonably ensure the survival of his data.

<sup>10</sup> It is now normal in the UK for grant-awarding bodies to stipulate that data resulting from the supported project be placed with the appropriate data service.

<sup>11</sup> <http://www-db.library.nottingham.ac.uk/eprints>

*Acceptance of the validity of electronic publication*

I have already considered above the background to question of validity of electronic publication. This problem with the Internet is exacerbated by the existence within it of so much material of questionable merit, in particular relating to the broad subject of Ancient Egypt. It is necessary for the editors of electronic publications to convince their authors and readers that *their* electronic publication is different. This can be achieved by proper review of contributions, and such publications being run by reputable institutions. But it also requires colleagues to submit material for publication, and this is going to be a problem as long as the 'paper fixation' remains, in other words, that proper publication has to be on paper only. This was a concern of the Follett Report, although it does appear that it is in the process of changing, but probably only among a certain generation of user.

I regret very much having to draw attention to this, but one reason that the papers from the Würzburg conference were never published was concerns from the organisers whether, if they were published electronically, they were 'proper' publications. *Informatique et Egyptologie* should be taking the lead on this sort of thing, and if our papers cannot be published electronically, then who in Egyptology should do so? Fortunately publication of the Pisa meeting was already planned in advance.

There are examples on the net of self-published papers in Egyptology which, if they have not been subject to the scrutiny of others, can add to this low opinion held by colleagues of the academic credibility of the medium. More or less anyone can place material on the net now, and those who might do that should be encouraged to have it properly reviewed. This still is true of paper publications, but the relatively difficulty of paper publication (or rather its expense) means that only the most determined or wealthy will self-publish. Vehicles need to be put in place which will permit responsible electronic publication.

*Copyright*

The issue of copyright has reared its head from time to time at *Informatique et Egyptologie* meetings. However, the legal aspect of copyright is the same whether the publication is a paper or electronic one; the major difference is the ease of stealing material from electronic publications. I do not feel that we have to discuss the issue of copyright further.

**The example of BMSAES (Fig. 2)**

The electronic journal project *British Museum Studies in Ancient Egypt and Sudan* was suggested by Vivian Davies in 2000 to take advantage of the Internet and the possibility it offers for speedier publication. A considerable amount of time was spent taking opinions on how best to implement it. These involved finding out the experiences of others, notably *Internet Archaeology*, and giving consideration to many of the issues discussed previously. From this a set of practices has evolved, and I should like to consider the main issues. The journal is still in an early stage and these practices themselves must surely evolve.

*Review process*

The matter of peer review is an issue which has nothing especially to do with electronic journals, but which has to be present to maintain credibility of the journal and its contents. The small-subject nature of Egyptology has meant that the formal process of review practised by scientific journals has been slow to come to the subject, and for many years the wide ranging abilities of the editor were thought to



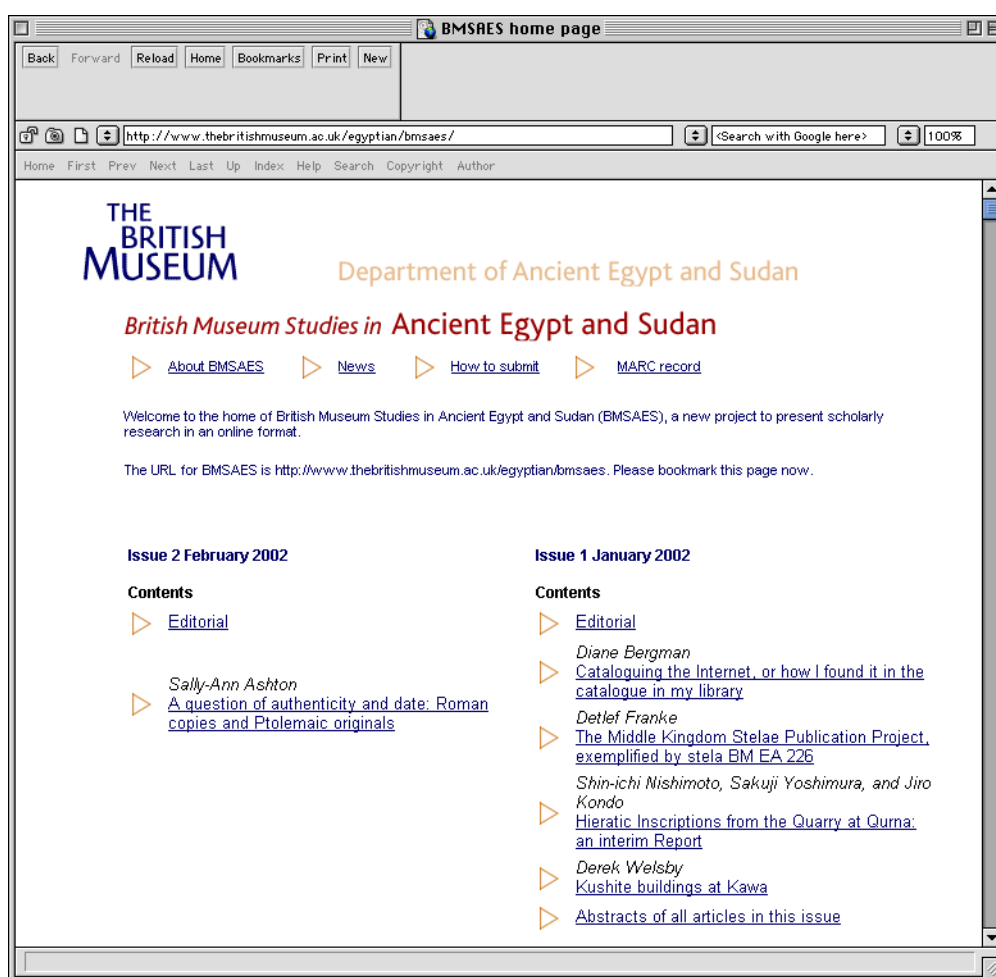


Fig. 2 Top screen of *BMSAES* in August 2002.  
<http://www.thebritishmuseum.ac.uk/egyptian/bmsaes/>

suffice. With the more technical nature now of so many contributions, and the greater time constraints on editors, it is now much more difficult for the editor alone to fulfil these requirements.

The process of review is not without its problems. The journal which has most prominently adopted it, the *Journal of Egyptian Archaeology*, seems to have suffered a significant drop in the number of contributions from senior scholars. Whether this is because of the (real or perceived) lengthy wait for publication or the fact that scholars may object to their work being reviewed, or whether for some completely unrelated reason, I do not know. I understand that the *Journal of the American Research Center in Egypt* is now heading in the direction of peer review.

The Internet-only nature of *BMSAES*, however, makes the concept of review essential, to maintain the credibility of the journal as there is so much unreviewed and hence potentially unreliable material otherwise available on the Internet. For *BMSAES*, a gentler approach has been adopted to the problem of reviewing, by doing as much as possible of it within the British Museum, and going outside only when particular expertise is needed. Much of the process is also done electronically to speed matters along.

### *Frequency of appearance*

Print journals tend to have a certain number of pages to be filled for an issue, and when that number is reached, articles usually have to be held over for the next issue unless a larger than usual issue is approved by the editor and publisher. The size of an issue is thus set by largely economic factors. Production of an issue revolves around a publication date, and for various reasons it can take a few months to three years for an article to appear. One of the aims of *BMSAES* is to take advantage of technology to move away from this.

For a start, an electronic journal does not need a certain large number of text pages to be viable; it is only necessary to set a critical number of articles for publication to proceed, and this can be as low as one paper. In fact the second issue of *BMSAES* did only consist of one paper, whereas there were four in the first. It has now been decided that two articles is probably a good minimum, and such a level of workload fits into and around other work projects. It is hoped that the third issue can be produced in Autumn 2002; there has been more material, but, after the initial acceptances, there have been a number of rejections. This suggests to me that we are succeeding in maintaining standards.

### *Library and cataloguing data*

I took advice from librarians as to their bibliographical requirements for electronic journals. This again is something about which everyone is learning. An International Serial Number (ISSN) for *BMSAES* has yet to be organised, but Diane Bergman, Assistant (Griffith) Librarian at the Sackler Library of the University of Oxford, stressed that a MARC record should be produced for the publication, and she in fact contributed the record and an article on the subject to the first issue.<sup>12</sup>

A MARC record (MAchine-Readable Cataloging record) is an electronic form containing all the fundamental bibliographic data which can be downloaded and added to a proper library database (see Fig. 3).<sup>13</sup> In keeping with the wish of making *BMSAES* as electronically-orientated as possible. Diane Bergman's MARC record for *BMSAES* is available for download from the web site.

### *Format*

The initial idea was to produce the articles for a web-based electronic journal using HTML.<sup>14</sup> This is, after all, the primary format of the web and that adopted by *Internet Archaeology* among others. However, further thought indicated that this could be problematic for a two major reasons:

- Web pages, even if used in conjunction with Cascading Style Sheets, can still display variably on screen and print even less reliably. The ability to print and store articles reliably is essential if traditional paper readers are to be convinced of the merit of the format.
- How is one to sub-reference articles? There are few reliable pointers which can be set in an HTML article; sections can be numbered, but what happens if, as is normal practice, a longer article is spread over a number of different HTML pages?

<sup>12</sup> Bergman, D., 'Cataloguing the Internet, or how I found it in the catalogue in my library', *BMSAES* 1 (2002), 1–6; <http://www.thebritishmuseum.ac.uk/egyptian/bmsaes/issue1/bergman.html>

<sup>13</sup> Description and proper definition of MARC available at the Library of Congress web site: <http://www.loc.gov/marc/>

<sup>14</sup> Two formats which were not considered are often used for on-line scientific papers. These are plain Postscript files or TeX files. I consider the former to be too unwieldy, as well as only being really useful for printing; the latter is favoured primarily for its ability to represent scientific equations, but its output is otherwise poor.



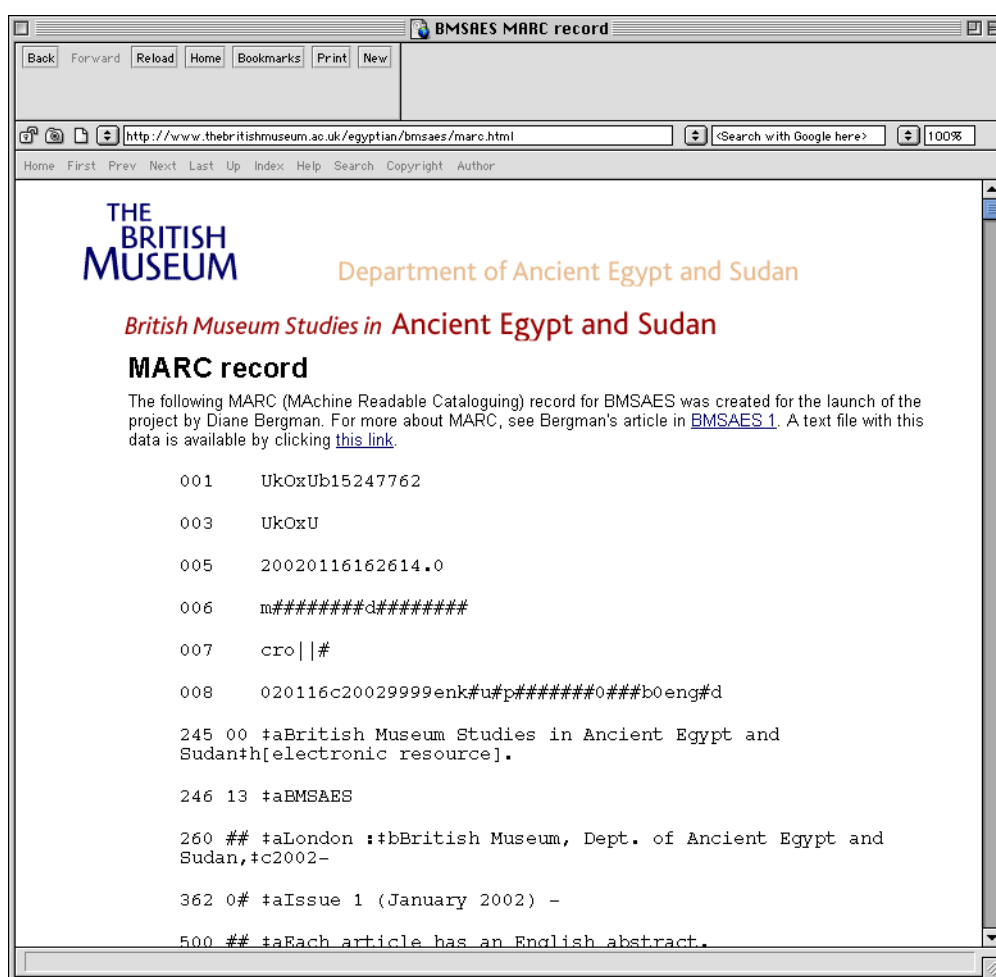


Fig. 3 Part of the MARC record for *BMSAES*.  
<http://www.thebritishmuseum.ac.uk/egyptian/bmsaes/marc.html>

A lesser problem was also the limited layout features of HTML, leading to printed pages which are unsubtle and not good to read.

The need for good print quality and to address traditional structure and referencing led only in one direction, Adobe's Portable Document Format, or PDF.<sup>15</sup> PDF is supposed (like HTML) to be operating system independent, but unlike HTML, a document is expected to look the same regardless of the screen or printer involved. Also unlike HTML it cannot be hand-coded. The PDF format was originally targeted at the 'paperless office', whereby documents could be easily passed around in an administrative environment without the need for excessive printing, but it never really became popular in the area for which it was designed.

However, in the second half of the 1990s its potential for publishing documents was realised, and it is now firmly gaining dominance as the preferred method for submitting text both for printing and for high-quality on-line documentation. One reason for this is that the ability to embed fonts in documents means that the need for the printer to have this or that font is a thing of the past; another

<sup>15</sup> A simple description of PDF is available via Adobe's web site <http://www.adobe.com>

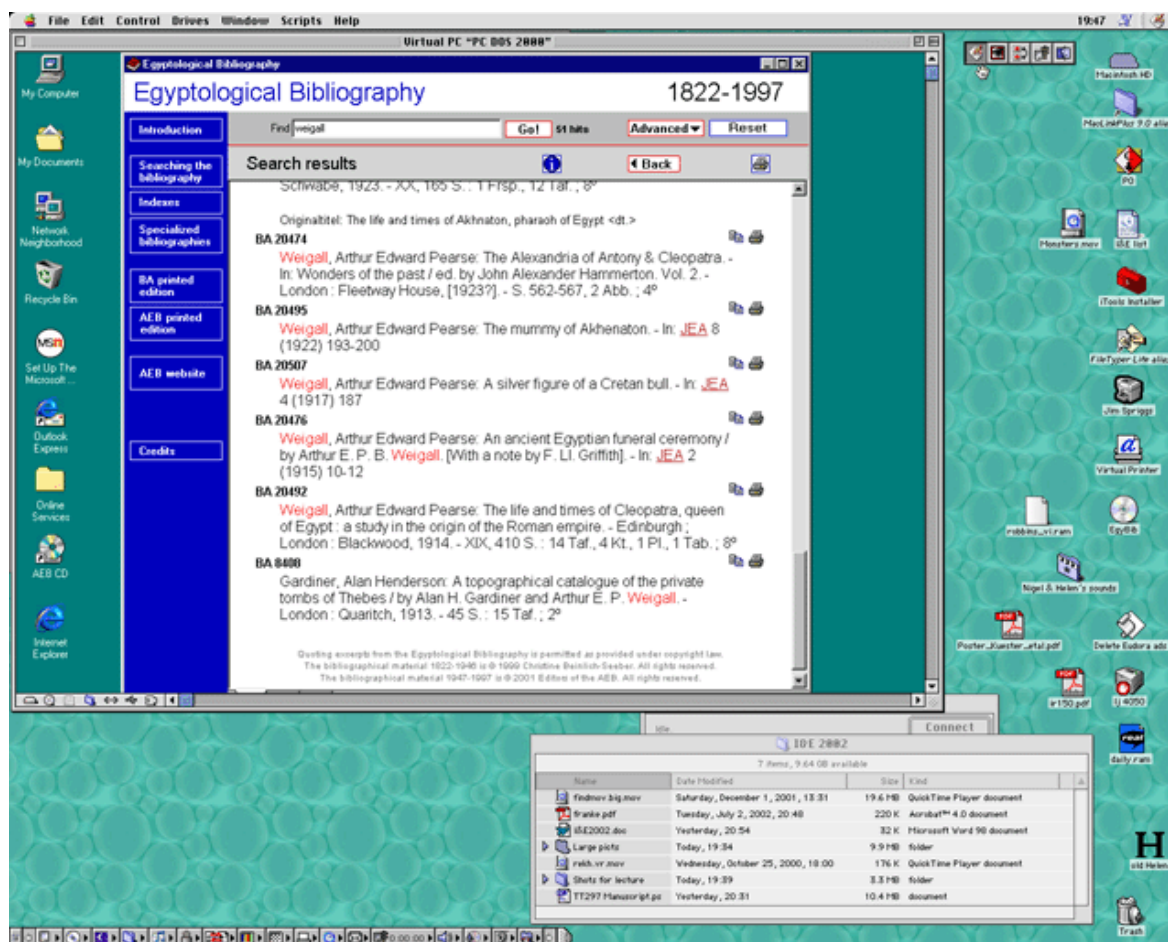


Fig. 4 The *Egyptological Bibliography* running on a Macintosh computer.

reason is that the files can be edited to a limited extent to deal with minor last-minute errors. The software used to read PDF is principally Adobe's Acrobat Reader, a free product available for Macintosh, Windows and UNIX systems. To produce PDF files one of the increasing numbers of PDF creators is needed, pre-eminent among which is still Adobe's Acrobat suite of programs, the centre of which is Acrobat Distiller.

PDFs can be created in a number of ways, and now a number of programs are creating them directly without having to purchase separate software like Distiller. But the classic, and most controllable, way of production is to create a Postscript file and run it through Distiller. Once a PDF file has been produced, the full Acrobat program can be used to make small editing changes, and other media formats like video can be added to the file. There are many further features of Acrobat and PDF files which cannot be enumerated here.

PDF files can be highly compressed, which is ideal for combining text and graphics in small files. As always, what takes up space is images. Controlling the size of the original images combined with varying the compression directly relates to the output file size. While highly compressed images will work well on a screen with its roughly 70–90 dpi resolution, and download reasonably quickly over a modem, the same images will not print all that well. The solution adopted for *BMSAES* is, for papers with images, to offer two versions of the paper, one lower resolution (for viewing primarily on screen)



and one higher resolution (for print). This is easily done from the same Postscript file by running the file twice through two different sets of saved settings for Distiller.

For the future, XML (Extensible Mark-up Language) theoretically holds out hope as a web-based

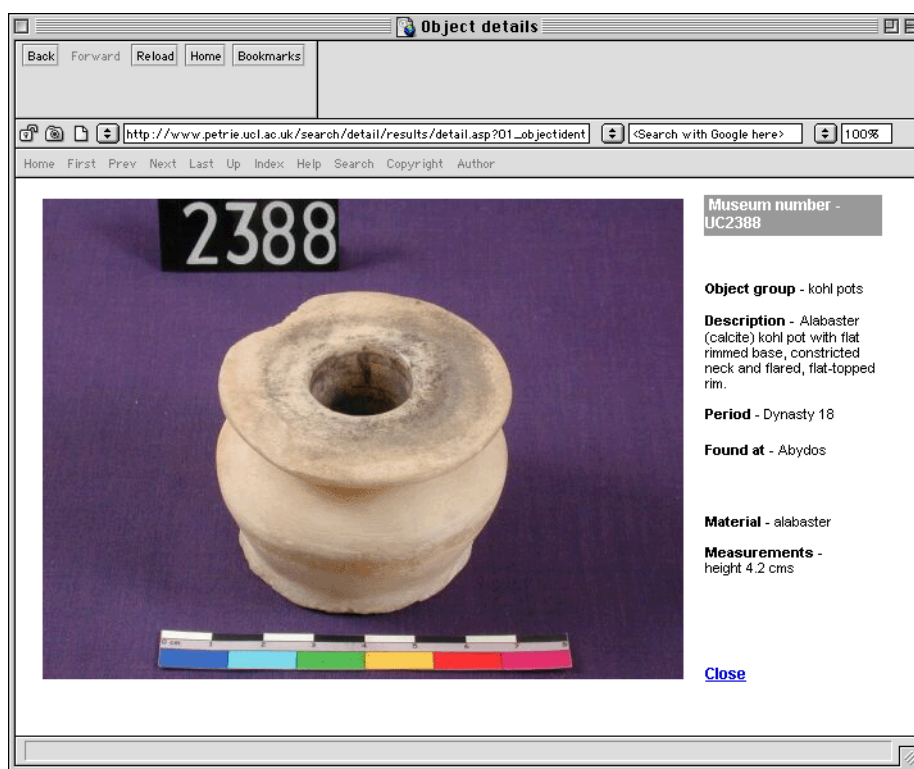


Fig. 5 Petrie Museum object UC 2388.  
[http://www.petrie.ucl.ac.uk/search/detail/results/detail.asp?01\\_objectident=UC2388](http://www.petrie.ucl.ac.uk/search/detail/results/detail.asp?01_objectident=UC2388)

format that also offers high-quality output and reliable formatting (see other papers from the Pisa conference). However, most of us have yet to come to terms with it, or do not have access to software which can write it for us; its verbosity means that it also produces much larger files.

## Conclusions and the future

### *Publishing on-line types of material which cannot work in print*

I have thus far not stressed one of the other great advantages of electronic publishing, the ability to publish the results of work in media types which just cannot work on paper. Databases are an obvious example; the most widely useful to Egyptology is the combined AEB/BA CD ROM named *Egyptological Bibliography* (Fig. 4). It is to be hoped that this will eventually exist in a web version. But databases can also be more complex and include a wealth of image information. The obvious CD ROM publication to quote in this context is the 'Egyptian Treasures in Europe' Project.<sup>16</sup> Other obvious data types which do not work outside an electronic context are video and virtual reality; for the former see for

<sup>16</sup> Information available at <http://www.ccer.theo.uu.nl/ccer/et.html>

example the material pertaining to my own excavations at <http://www.newton.cam.ac.uk/egypt/tt99/video.html> and for the latter see the paper presented by Robert Vergnien in these proceedings.

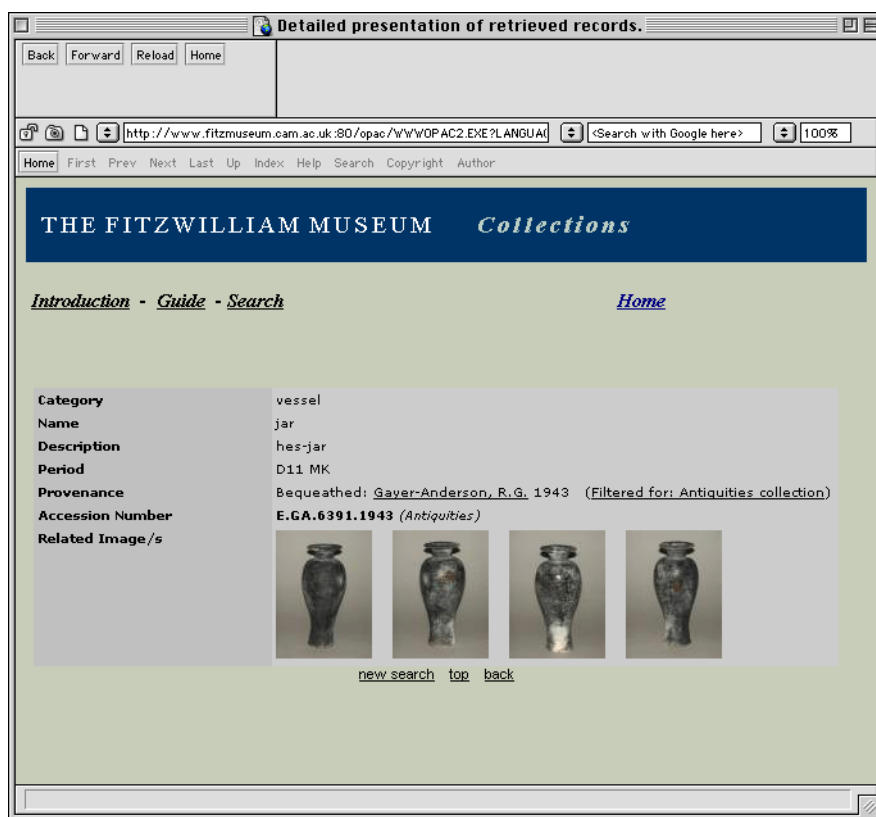


Fig. 6 Fitzwilliam Museum OPAC, object EGA 6301.1943.

Various elements of museum collections can be placed on-line with numerous photographs and other types of media. For example there is the Museum of Fine Arts in Boston's 'Digital Giza' project (<http://www.mfa.org/giza>). In the UK, various digital initiatives are in place; two of the most ambitious are to put much of the Petrie Collection ([http://www.petrie.ucl.ac.uk/digital\\_egypt/Welcome.html](http://www.petrie.ucl.ac.uk/digital_egypt/Welcome.html)) and the Fitzwilliam Museum on-line (<http://www.fitzmuseum.cam.ac.uk/opac/public/info.htm>).

The days of the large museum catalogue are perhaps over; a digital version allows more flexibility and permits publishing of material which is now just too expensive for paper. The difficulty is going to be to persuade museums to do this. The Petrie and Fitzwilliam Museums already have some objects in this format (for example, Fig. 5 and Fig. 6), and the 'Egyptian Treasures in Europe' series has done much for several important collections.

The British Museum has a popular version of 500 Egyptian objects available through its Compass system (<http://www.thebritishmuseum.ac.uk/compass/>). These were written and edited for the public but they do provide a number of objects available which were not so before, and there was some new photography commissioned for them. It is presently not easy to link directly to a URL for a specific object (Fig. 7).



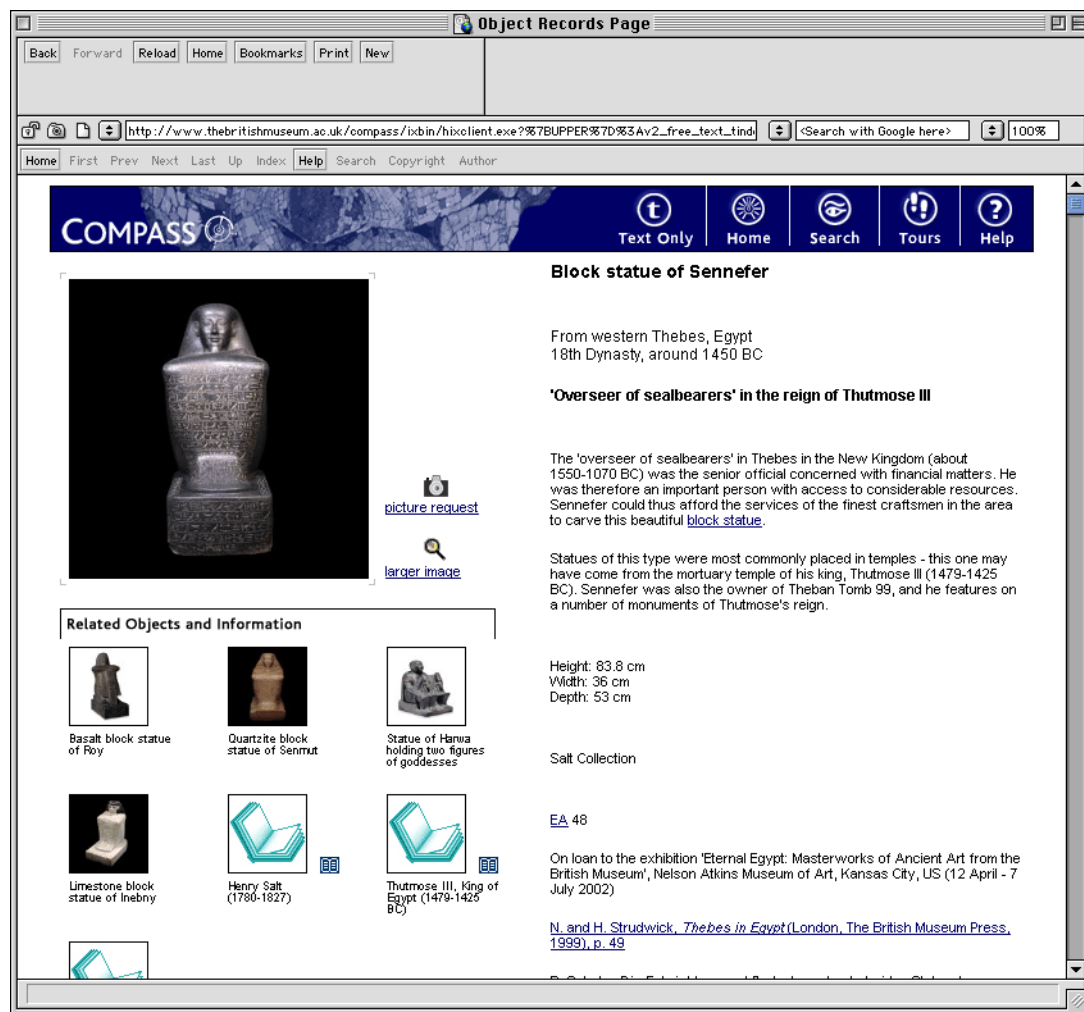


Fig. 7 British Museum Compass system, object EA 48.

### *Ways of reducing costs of publications*

Cost can mean that in some subjects academic output is controlled and even restricted by commercial publishers. I think Egyptology is reasonably fortunate insofar as it is not as affected by this as the larger scientific disciplines, in which publishers of a number of widely used journals have greatly increased the cost of subscriptions to 'milk' the market because of the guaranteed audience and library standing orders. This is having the (perhaps self-defeating) effect that, in these days of non-expanding library budgets, many institutions are not renewing subscriptions. This self-perpetuating decline has resulted in a number of initiatives for the development of consortia to advise and develop publishing of journals on a not-quite-so-large profit system.

One such is SPARC *Scholarly Publishing and Academic Resources Coalition* (<http://www.arl.org/sparc>). These methods include cheaper ways of publishing on paper and also through electronic media. There is usually some co-operative venture involved to reduce the profit motive.

I believe this is not so much of a problem in our subject since no Egyptology journal is a real 'cash machine', and very few of them are published completely on a commercial basis—most are published

by societies or institutes who aim to cover costs or make just a small margin. Our journals are not attractive to the publishers!

Nonetheless, if a journal is to survive it has to at least cover its costs. Various charging models are in the marketplace, per paper, an annual subscription just to quote two of the more common. Some scientific journals give free access for 30 days after publication 'to aid authors'.<sup>17</sup>

*So, where now?*

I do not foresee Egyptology making major advances into the on-line area for some time to come, but the fact that there are electronic publications around such as *IBAES* and *BMSAES* will help point the way forward to some extent. Apart from anything else, better and faster Internet connections will be needed for Egyptologists to make better use of the medium. Far too many producers of electronic projects appear to forget that most home users are still accessing the Internet through modems, and, until broadband access is more generally available and more affordable, the concept of switching on one's computer and accessing needed material in a few seconds is rather an ideal. It should however be that for which we aim.

*Informatique et Egyptologie* has tried to place itself in the forefront of pushing developments in information technology into use in Egyptology. As I said at the beginning of this paper, I think we need to be leading the way in publishing material via electronic media, since all work which has no publication might, in many ways, have been not done at all.

## Acknowledgements

I wish to thank Mario Andrenucci and Sara Andrenucci for organising the meeting and the publication of the proceedings, as well as for permitting me to use their computer during the presentation of this paper. Diane Bergman and Alison Sproston have offered invaluable help with library matters, while Judith Winters was generous in sharing her experiences from *Internet Archaeology*. I am grateful to my colleagues in the British Museum for their help and advice, particularly Vivian Davies and Derek Welsby. Lastly I thank Helen Strudwick for reading this paper and offering many useful comments, both on the paper and the subject of electronic publication.

<sup>17</sup> The following editorial in *Internet Archaeology* dealt to some extent with just this subject: <http://intarch.ac.uk/journal/issue11/editorial.html> Note: this URL may not be available depending on whether or not the users' site has access to *Internet Archaeology*.