

# SUDAN & NUBIA

The Sudan Archaeological Research Society



*Bulletin No. 15*

2011

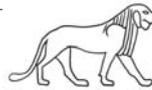




The map reflects the new territorial situation following the independence of South Sudan in July 2011.

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## Dangeil 2010: Meroitic wall paintings unearthed and conservation strategies considered

*Julie Anderson and Salah eldin Mohamed Ahmed*

The 2010 field season of the National Corporation for Antiquities and Museums, Sudan, at Dangeil ran from mid October until the beginning of December.<sup>1</sup> Dangeil is a Kushite site situated south of the Fifth Cataract, just north of the city of Berber. This season excavations were conducted in two areas, the first being in the 1<sup>st</sup> century AD Amun temple, a building which dominates the site and is situated in the centre of a large temenos enclosure, and the second in the associated Kushite cemetery, designated WTC, which dates between the 1<sup>st</sup> century BC and 1<sup>st</sup> century AD (Plate 1).



*Plate 1. Google Earth image with the sites of Dangeil and the associated WTC cemetery encircled.*

Excavations within the Amun temple concentrated on clearing the remaining unexcavated portion of the temple in the south-west part of the building (Figure 1). The objective was to complete the plan of the complex by uncovering the southern half of the temple's main pylon entrance and the remainder of the first court. The fill of this area was extremely dense and consisted of lime plaster, mud-brick and red-brick rubble which originated from the collapse of the southern half of the pylon and from the columns within the

<sup>1</sup> The team consisted of Julie Anderson, Salah eldin Mohamed Ahmed, Aurore Ciavatti, Maha Abbas Mohamed, Mahmoud Suliman, Julian Reade, Rihab Khider, Adam Giambone, Nasreen Abdel Hadi, Suzan Benjamin, Marcel Metry, and Yassin Mohamed Saeed. The mission is grateful to The British Museum, Archeology4All, Fundacja Ochrony Zabytków, N. Oppenheim, and an anonymous donor for their support.

hall, along with drift sand and pot sherds. Over 2.5m of fill was removed from a 10 x 15m square to expose the remains of six columns and a large part of the southern half of the first court, which as expected, was the mirror image of the northern half.

The first court is a substantial room with its interior measuring 10.8m east-west by 27m north-south. A doorway (1.58m wide), leading to the temple exterior, was located in the south-east corner of the room and again a similarly situated entrance was located in the northern half of the court. The columns were distributed in two rows. The drums were constructed of red-brick quarter-circles mortared together with mud and then plastered on the exterior with mud and lime plaster to form columns 1.25m in diameter that rested on square foundations. This technique was used elsewhere in the temple; however, the columns in the first court are by far the largest. The various stages in the collapse of the building were clearly visible in the baulk which ran parallel to the east face of the southern entrance pylon (Plate 2).

The two southern columns (H770, 773) had collapsed one on top of the other (Plate 3), likely due to instability resulting from the collapse of the roof and the subsequent infiltration of rainwater following the structure's abandonment. This collapse is sizeable measuring over 3.5m long and ranging in width from 1 to 2.5m. The upper part of the central column in the western row (H761) had slipped and rotated roughly half a metre eastwards during its collapse, yet this upper section remained intact and stood upright with much of its plaster still preserved (Plate 4).

At the end of the season, excavation stopped just above the floor surface and the southern entrance pylon remained unexposed. The fill above the floor consisted of debris attesting to the temple's destruction by fire and included charcoal, ash and charred dom palm roof beams.



*Plate 2. Southern half of the first court of the Amun temple at the end of excavation.*

The lime plaster on the column bases and lower sections of the walls was fire-reddened and charred. Further evidence of



Figure 1. Plan of the Amun temple, Dangeil. Scale 1:1000. Areas of 2010 work shown in red.



Plate 3. Column collapse.

this event has been found elsewhere in the building (Plates 5 and 6).

The few objects that were found during excavation of the court largely were confined to grinding stones, ceramic drain spout fragments and beads; however, a carved and painted sandstone block bearing an ankh on one side and Meroitic hieroglyphs on another face was also recovered (Plates 7 and 8). It may have been part of an abacus that supported the roofing. It is likely that the abaci were stone in order to separate the columns from the wooden roofing as the mud mortar in the columns would have otherwise provided an ideal conduit for termites. A ceramic baboon head (5/10) was found on the site surface to the west of Kom H and



Plate 4. Rotated column H761.

so unfortunately lacks a stratified context, but it is rather uncommon and may have been a handle or rim ornament on a large jar (Plate 9).

Remnants of Meroitic wall paintings were discovered on two of the columns (H761, H762) and on the face of the south wall providing some insight into the decorative programme of the temple complex. Comparable temple wall paintings of this date have been recovered for example, from Meroe City, specifically from M292 'the Augustus Head Temple', temples M720, KC104, and KC102 (Bradley 1981; 2003), at Naqa (Hesse 2006; Wildung 2011, 38-41), and a great distance downstream of Dangeil, between the First and Second Cataracts, in the Meroitic temple at Qasr Ibrim



*Plate 5. Burnt column base.*



*Plate 6. Charred palm roof beam in situ.*



*Plate 7. Abacus (?) face with Meroitic hieroglyphs.*



*Plate 8. Abacus (?) face bearing an ankh.*



*Plate 9. Ceramic baboon head (5/10).*

where 53 small fragments were recovered (Pyke 2007, 44-68). Overall these paintings appear to follow rather standard iconographic programmes that include beautifully dressed members of the royal family standing or processing before a god who is either standing or seated upon a throne. Often a winged goddess, perhaps Isis, stands behind the throne. Temple M720 depicts what has been interpreted as a procession to Arensnuphis by members of the royal family (Bradley 2003, 66-69). Along with evidence of an offering procession, prisoners were also depicted in Meroe M292 (Shinnie and Bradley 1981) but this is likely related to the specific celebratory purpose of this structure. Essentially, the corpus of painted plaster fragments from temples of Meroitic date is not large and the material is fragmentary. Another issue is that while many Kushite gods appear familiar and are taken from the Egyptian pantheon, little is really known about the extent to which the Kushites incorporated and adopted Egyptian religious practices or adapted them to suit indigenous rituals and beliefs nor ultimately how this was then translated into the decorative programme used within the temples.

Because analogous examples of paintings are few and

some material for comparison or analogy but these are less satisfactory as the funerary purpose for which they were created differs from the religious function of an Amun temple. The south wall of the tomb chapel of Queen Shanakadakhete (Beg.N.11) dating to the 2<sup>nd</sup> century BC, now in the British Museum (EA 719), provides one such example for comparison (Plate 10). The queen, who is the tomb owner,<sup>2</sup> is depicted sitting on a lion throne with the prince behind her. Both are protected by the wings of the goddess Isis. Several small registers of attendants bearing palm fronds stand before the larger royal figures.

The Dangeil paintings were quite fragile and poorly preserved. Initially, the red-brick columns were covered with mud plaster, then white-washed with lime. This technique served to hide imperfections, smooth the column surface and prepare it for painting. The mineral pigments were then applied to a dry white-washed surface. It does not appear that these were frescos. These pigments were blue, red, yellow or black, with the yellow and red identified as ochres (hematite and goethite) and the blue as the artificial pigment Egyptian blue, a copper silica compound (CaCu(S14O10)). Green has



Plate 10. South wall of the tomb chapel of Queen Shanakadakhete (EA 719, © The British Museum).

fragmentary, it is necessary to look cautiously at other decorative mediums for comparable scenes. For example, relief scenes carved on the temples at Musawarrat es-Sufra and at Naqa show members of the royal family standing or processing towards various gods. Within the Dangeil temple itself, carved on the door jambs of the south sanctuary, are a series of small registers showing the queen on the south jamb and king on the north jamb offering to various gods. Similar scenes may be found inside the Amun temple at Naqa (Wildung 2011, 22-29).

Relief scenes found in Meroitic tomb chapels also provide

been identified at other sites, such as Qasr Ibrim (Pyke 2007, 44) but has not been found at Dangeil as yet. The colours are matte in appearance rather than glossy, suggesting the paint was tempera, but it is uncertain as to the material used for binding the pigments. Similar suggestions have been made for the painting fragments discovered at Qasr Ibrim (Pyke 2007, 62). The nature of decay of these pigments over time and any

<sup>2</sup> The tomb owner, rather than a god or goddess, is shown as the recipient of the offering procession and adoration; however, the degree to which Kushite rulers themselves may have been viewed as gods remains unclear.



potential associated colour changes have not been studied. A sample of the lime plaster was analysed and its chemical composition determined. The lime plaster was found to contain high amounts of calcium (Ca) and silicon (Si).<sup>3</sup>

The lower register of column H762 (Plates 11 and 12) depicts a fecundity god with blue legs,<sup>4</sup> wearing a yellow kilt,



Plate 11. Fecundity god on lower register of column H762.



Plate 12. Close-up of painting of the fecundity god on column H762.

striding forward. The figure was initially outlined in red and then the base paint applied. Details within the painting were defined in red and applied on top secondarily. Thus far, no evidence has been found to suggest that a proportional grid

<sup>3</sup> A Centaurus backscattered electron detector in a Hitachi S-3700N variable pressure scanning electron microscopy (VP-SEM: 20kV, 20Pa) was used in this study. The analysis was completed by Satoko Tanimoto of the Department of Conservation and Scientific Research, The British Museum. See further Sweek, Anderson and Tanimoto, in press, and Sweek, Anderson, Tanimoto and Salah eldin Mohamed Ahmed, in press.

<sup>4</sup> It has been suggested that the blue skin of the fecundity figures relates to the role of these gods as 'personifications of fertility' (Wildung 2011, 38).

was drawn on the column prior to the drawing of the figure. Similarly, fecundity gods were carved on the lower registers of the sandstone columns and painted on the lower registers of the walls in the sanctuary. These figures embody the Nile ensuring water, life and fertility.

The neighbouring column H761 (Plate 13) was displaced from its original position. It is remarkable that in spite of this displacement, the plaster and upper courses of bricks remained intact. The painting is of a striding figure, wearing a kilt and bearing a staff in the left hand. The skin is blue, while the kilt and staff are yellow with the details highlighted in red. The figure was also initially outlined in red. It is possible that this is the god Amun; however, as the head is missing it is difficult to be certain. This figure is larger in size than the fecundity figure on the other column (H762) although the painting technique used is the same. It is probable that the upper registers on the columns depicted various gods such as Amun, possibly receiving offerings or adulations from the Kushite rulers.

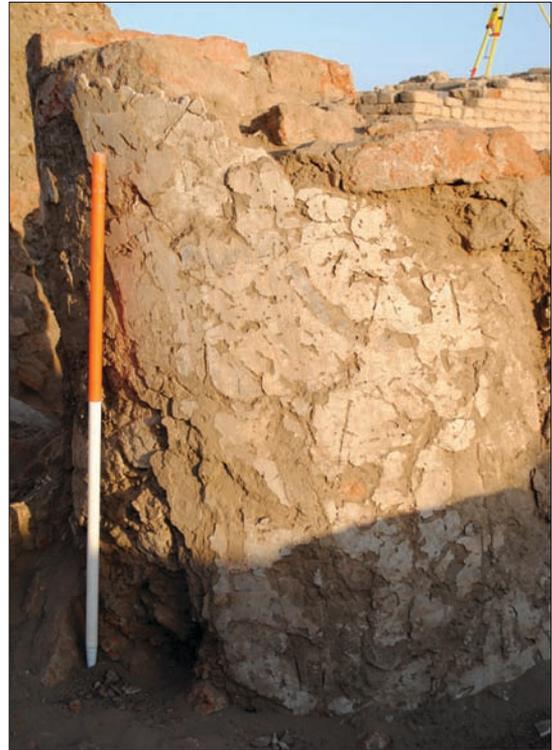


Plate 13. Painting of god (Amun?) on upper register of column H761.

Remains of a long painted scene could be seen on the southern wall of the hall (Plate 14). As with the other paintings, it was very poorly preserved and difficult to interpret. Part of this was due to fire reddening and charring of the plaster face. The scene appears to depict a procession of at least three small figures striding westward, possibly through a building or structure, towards perhaps a larger figure. The smaller figures can be distinguished largely by pairs of striding red legs. The individual in the centre appears to be a priest as he is depicted with a tail hanging behind his kilt, while the faint remains of a yellow kilt are visible on the

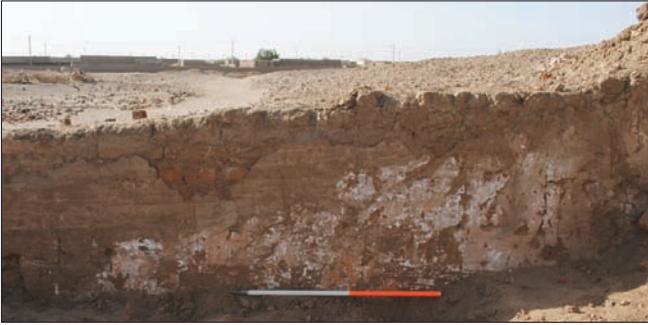


Plate 14. Painted scene on the southern wall of the first court

leading figure. The background is light blue. The left side of the painting is also unclear and may also represent part of a building or some sort of table of offerings. Unfortunately, the longer one looks at these fragments, the more creative the interpretations become.



Plate 15. Structure (?) towards which the smaller figures are striding.



Plate 16. Three small figures with red legs striding westward.  
The priest is the central figure with the tail of his garment indicated by the blue arrow.

At the end of the season, all surfaces were backfilled with sand to a level which would facilitate the evacuation of rain water from the temple during the rainy season. The excavated columns were sealed inside temporary red-brick enclosures capped with local water proofing as were the wall paintings.

## Cemetery WTC

A component of our rescue programme involved the excavation, by Mahmoud Suliman, of 14 tombs in Kushite cemetery WTC 5 and 8 (Wad Toum Cemetery, 1<sup>st</sup> century BC – 1<sup>st</sup> century AD). This cemetery is situated less than a kilometre to the north of the main site of Dangeil and was discovered in 2003 during the excavation of a drainage canal. There are no archaeological features visible on the surface. The site is endangered by the expansion of the modern Moslem cemetery. The goal of the mission is to excavate the area surrounding the Moslem cemetery in order to save the Kushite graves from destruction caused by the digging of modern graves.

The Kushite graves excavated this season were located along the southern boundary of the Moslem cemetery and all showed traces of plundering in antiquity. Incidental finds suggest that the Kushite cemetery might have extended over a much wider area, particularly towards the river. The area remained in use during the Post-Meroitic period with the cemetery expanding to the north towards and beneath the modern village of el-Fereikha.

The Kushite tombs were comprised of east-west orientated shafts that descended into oval, north-south orientated burial chambers (Plate 17). The entrances to these



Plate 17. Kushite tombs in WTC 5, facing west.

chambers were sealed with mud bricks or red bricks or a combination thereof (Plate 18). Grave goods recovered included numerous large beer jars (Plate 19), which were usually placed at the tomb entrance just inside the blockage wall, several small, wheel-made red-ware bowls, a painted fine-ware cup from WTC 5, tomb F (Plate 20), beads, and a faience vase which was found nestled up against a beer jar in WTC 8, tomb 1 (Plate 21). A glass flask was found among the poorly preserved skeletal remains in WTC 5, tomb M (Plates 22 and 23). This tomb also contained a small copper-alloy jar (Plate 24). Many of the human remains and organic material from the cemetery were in poor condition due to the presence of salt and water seepage, factors which are exacerbated when tombs have been robbed and disturbed.



Plate 18. Brick blocking of the tomb chamber.



Plate 21. Faience vase from WTC 8, tomb 1.



Plate 19. Beer jars situated behind the brick blocking

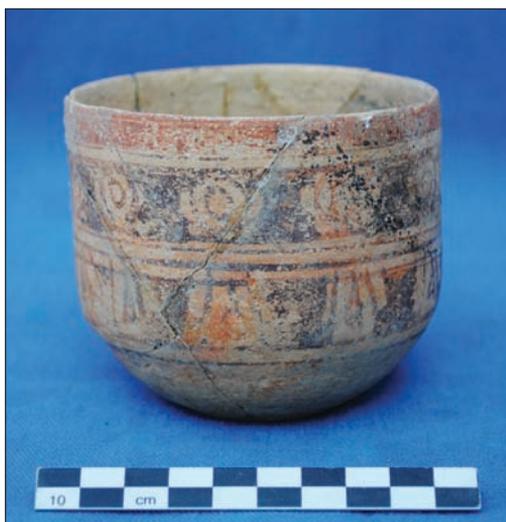


Plate 20. Fine-ware cup from WTC 5, tomb F.



Plate 22. Glass flask among the skeletal remains in WTC 5, tomb M.



Plate 23. Close-up of glass flask from WTC 5, tomb M.



Plate 24. Copper-alloy jar from WTC 5, tomb M.

### Conservation within the temple

Conservation work, led by Tracey Sweek from the British Museum's Department of Conservation and Scientific Research, was conducted on the northern half of the of the sanctuary entrance (H205) in the Amun temple (Figure 1). Local workmen were trained to mix mortar with the correct proportions of lime, various grades of sand and water; in the cleaning of archaeological surfaces for the application of sacrificial brick layers; and in appropriate bricklaying and packing techniques. The conservation tests initiated in 2009 were also evaluated.

The goals of the mission's conservation project are to preserve, conserve and protect the Dangeil site for the future using affordable locally-sourced materials and a trained local labour force. Ultimately at the request of the National Corporation for Antiquities and Museums, the site and preserved archaeological structures will be made accessible to visitors in the form of a site museum, thus promoting an understanding of the site's cultural and historic significance. In order to accomplish these goals, a strategy for conservation and protection work was devised and the following principles were established: materials used in the site's conservation or maintenance must distinguishable from the ancient materials; all materials used must be sympathetic to the original structures and be sourced locally; the conservation work could be continued and executed by a local work force in the future, after appropriate training.

It was also important that any work could be removed easily without compromising the ancient structures (Sweek, Anderson and Tanimoto, in press). It is recognized, however, that any time any intervention is made an original structure is changed, even if only slightly. Fired red brick, mud brick, sandstone and lime plaster are the materials requiring conservation within the temple.

Consolidation and repairs to the sandstone floors have been quite successful, with missing sections of the floors filled with red bricks and lime mortar after cleaning and preparation of the area (Plate 25). The edges of the ancient flooring are protected. There is a clear, yet non-intrusive dif-



Plate 25. Conservation and consolidation of a sandstone floor.

ference between ancient and modern material. The additions are removable, wear well and are locally sourced. Similarly, the application of lime mortar consolidated the ancient bricks in the stairwell of the northern half of the main entrance pylon successfully (Plate 26). Lime rendering applied as a sealant to a column did not work, but subsequent chemical analyses of the various local supposed lime products led to the discovery that some contained no lime whatsoever, and thus the lime rendering initially used on the column actually contained no lime. This problem has since been addressed.



Plate 26. Conservation and consolidation of the staircase in the northern half of the entrance pylon.

The greatest challenge faced is the conservation of the temple walls. These walls have red-brick foundations, are faced on the exterior with fired red brick, and have mud-brick cores. The penetration of rain water into the mud-brick masonry leads to the explosion and subsequent collapse of these walls; thus leaving the walls in their original state of discovery would lead to the rapid deterioration of the building. There is an ongoing loss of original material due to environmental and human factors.<sup>5</sup> Various trials using locally sourced material to create a water-proof, protective and sacrificial capping for these walls have been conducted and are ongoing. Currently, the red-brick wall exteriors are reconstituted using modern bricks and lime mortar up to the level of the preserved ancient mud-brick core, then the top of the wall is capped with fired bricks (Plates 27 and 28). The technique of capping

<sup>5</sup> A lengthy discussion of the preservation and restoration of Sudanese monuments and the causes of deterioration and suggested protective measures may be found in Hinkel 1992.



Plate 27. Conservation of red brick wall facing

'has been used successfully by English Heritage on exposed architectural ruins in England and by conservators on archaeological sites in Europe ... An alternative approach of soft capping using earth and shallow-rooted plants was considered, but dismissed because neither the climatic conditions nor the indigenous plants suit this method of protection'

(Sweek, Anderson and Tanimoto, in press).<sup>6</sup>

The capping is constructed with a slight slope so that water drains away from the ancient walls. The lime rendering used to seal the columns is similarly inclined along the edges. Depending upon the final dispensation of the temple roofing proposed below, it may be necessary to consider installing a



Plate 28. Capping the top of a wall with red bricks

<sup>6</sup> A discussion of the various problems and an evaluation of the tentative solutions for dealing with mud-brick architecture and adobe construction were addressed by the Getty Conservation Institute and may be found in Agnew *et al.* 1990, with particular reference to the contributions by Brown *et al.* 1990, 204-207 and Caperton 1990, 209-211.

drainage system within the temple. However, as the various conservation trials dealing with this issue have not yet occurred, it will not be discussed in detail here.<sup>7</sup>

The work thus far has focused essentially on the physical condition of the site including consolidation, repair, and protection, and has considered the future maintenance of the site. However, the degree to which the archaeological structures should be conserved, preserved, restored or reconstructed, and finally presented is still under consideration. Beginning in the 19th century with the conservation and preservation ideas of William Morris and John Ruskin versus the reconstruction practices of Eugène Viollet-le-Duc, the degree and way in which buildings are restored continue to spark heated controversy.<sup>8</sup> Too much reconstruction and recreation and a structure becomes falsified, gaining an imaginary feel. It loses its integrity and ceases to be authentic. But this is a rather Eurocentric approach as various cultures and traditions can interpret and value historical authenticity differently.<sup>9</sup>

To whom is the site being presented, how is it understood and what audiences need to be addressed? Who are the stakeholders? The archaeological site is surrounded by the modern village of Dangeil on three sides. The local rural community takes pride in the site and is highly engaged in the excavations. An increasing number of tourists, both Sudanese and foreigners, are visiting the ruins. There is also a large primary school nearby and students cross the site daily. The site needs to be displayed in an accessible fashion and, as the majority of visitors are not familiar with interpreting maps and illustrations as might be found on information panels, it has been suggested that a measured reconstruction of the walls be undertaken in order that the structure of the temple be more easily understood. For example, the southern half of the gate into the sanctuary area was conserved with a single sacrificial layer of brick above the ancient brick (Plate 29). While the result reflects the preserved state of the ancient wall, it is often confusing for visitors. Many visitors assume it is a staircase rather than the southern half of the doorway. A considered reconstruction of this feature would build all sections up to the highest preserved level of the wall without perhaps being overzealous.

As it is not economically feasible to roof the entire structure at this point in time primarily due to its size (the building alone measures roughly 33.5m by 48.5m), it is proposed that the eastern part of the temple be roofed and sealed with a door to protect the sandstone reliefs carved in the sanctuary on the sandstone columns, facings and altar. This area could

<sup>7</sup> A temporary drainage canal to prevent water pooling in the temple during the rainy season was dug in 2003 and is maintained on a yearly basis. Currently, most excavated rooms are backfilled to a level that enables rainwater to drain out of the temple and temporary drainage pipes have been installed in spaces where this has not been possible.

<sup>8</sup> For a discussion of policies on restoration and reconstructions see English Heritage 2001; 2008a. The appended annexes in English Heritage 2001 cover the various international charters on the subject.

<sup>9</sup> See further the 'Nara Document on Authenticity', Annex 4 in English Heritage 2001 and Avrami *et al.* 2000.



Plate 29. Southern half of the gate into the sanctuary area after initial conservation.

further be repurposed to incorporate a small site museum, thus hopefully ensuring regular maintenance of the structure in future and breathing additional life into the site.<sup>10</sup>

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<sup>10</sup> 'The best way to save a building is to find a new use for it. Even recently restored buildings that are vacant will soon start to degenerate again. An unreasonable inflexible approach will prevent action that could have given a building new life' (English Heritage 2008b, 1).