The Qatar-Sudan Archaeological Project – Drones and Doors. Dangeil 2017-18

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Recent excavations and conservation initiatives at Dangeil focused on several areas within the sacred enclosure of the late Kushite, 1st century AD Amun temple including the southern half of the temple's monumental pylon entrance, the south-east side of the peristyle hall, and the northern half of the first hall. Work also continued in ancillary Temple LT, situated within the temenos perpendicular to the Amun temple on the south side, and rescue excavations were undertaken in Cemetery FRC located to the north west of the temple site beside the village of el-Fereikha.[1]

Temple LT

Work in tripartite Amun-style Temple LT revealed the western half of the pylon entrance and of the first and second halls, and the central and west sanctuaries (Plate 1). The exterior face of the pylon and foundations were of fired brick while the pylon core and remaining upper walls were of mud brick. Throughout the structure, the entrances were faced with fired bricks at least at the lowest levels, presumably to reinforce and protect areas of higher traffic. AMS dating from the temple places it in the 1st century AD[2] confirming it was contemporary with the standing Amun temple, something already suggested by the uniformity of construction practices, materials, location and associated ceramics. Temple 200 at Naqa is situated in a comparable position and is of analogous architectural style, but unlike LT is constructed of sandstone blocks (Kroeper 2011, figs 2 and 3). Unfortunately, the god or goddess, to whom these temples were dedicated, remains unknown.

Plate 1. Orthophoto of ancillary temple LT, with north east-south west baulk section in situ *(orthophoto: R. Hajduga © Berber-Abidiya Archaeological Project).*

In Egypt, ancillary temples situated within temple enclosures were not infrequently dedicated to the consort and family of the god of the primary temple; however, this might not always be the case in Kush during the late Kushite period. A wide variety of types of ancillary temples have been found arranged in avenues perpendicular to primary Amun temples, as, for example, at the Royal City at Meroe where smaller late temples KC104, KC101, KC100, M282 and M720 flank the processional way leading to the Amun temple. The deities to whom Meroe's ancillary temples were dedicated remain unknown or their identification is speculative. The architectural diversity of the temples' plans, which range from podium-style (KC101) to Amun-style with tripartite sanctuaries (KC100) to double temple-style (KC104) (Shinnie and Anderson 2004, folding pls 4, 9, 13), would seem to indicate a difference in associated ritual practices and in the deities housed within. Jebel Barkal B500 provides another example in its associated temple B560-561. Based upon reliefs discovered within this small structure, B560-561 has been identified as a *mammisi* temple (Kendall 2010a).

[1] Dangeil is situated on the right bank of the Nile, south of the Fifth Nile cataract, approximately 350km north of Khartoum. Fieldwork was conducted from 18th October - 4th December 2017 and from 28th February - 4th April 2018. The mission was co-directed by Julie Anderson (British Museum, UK), Rihab Khidir elRasheed (National Corporation for Antiquities and Museums, Sudan) and Mahmoud Suliman Bashir (National Corporation for Antiquities and Museums, Sudan). The team consisted of Francesca Guiducci (conservator), Roksana Hajduga (archaeologist, artist), Mohamed Saad Abdalab (bioarchaeologist), Mohamed Tohami (drone pilot), Osman elFadl (conservator, builder), Julian Reade (registrar), Katarzyna Solarska (archaeologist), and Tajasir Mohamed (conservator, builder). During the spring season, in addition to Osman elFadl and Tajasir Mohamed, the shelter construction crew was led by elHadi Ali Mirhal and comprised Abduwahab Haj Ahmed, Adam Ahmed, Eisa Abdelfadl, Hani etToum, Mohamed Ali, Mustapha Abdula, Osama Abdelrahman, elNur Abdula, Nuradiam Abdelkarim, Nuradin Mohamed, Safedin Ahmed, Sayed Ahmed Sayed.

[2] Temple LT's AMS calibrated dates were AD 25-86 within 1 sigma and 1 BC-AD 130 within 2 sigma. Dating was conducted in 2017-18 by the 14CHRONO Centre, Queens University, Belfast.

Within the main central sanctuary of Dangeil's Temple LT, a large pit had been dug through the hard-packed mud floor in antiquity and red-brick column drum segments lay scattered on the extant part of the surface. Little else was found in the room (Plate 2).

Plate 2. Sanctuary room, Temple LT (photo: K. Solarska © Berber-Abidiya Archaeological Project).

In the western sanctuary, following the removal of fired-brick column drum quarters and fragments which were distributed across the mud surface particularly in the area of the entrance, the floor was strewn with 24 ceramic, globular miniature offering vessels. These pots were close-mouthed, roughly wheel-made, with flattish bases, and measured approximately 40-50mm in diameter, and 20-30mm high. The vessels' openings provided just enough space for the insertion of a finger. They appear to be cultic equipment and may have contained a cosmetic or unguent perhaps to anoint a cult statue; however, no evidence to support this has yet been identified. No visible residue was present on their interiors and several contained earth fill (Plates 3 and 4).

Similar vessels recently were found at Naqa in Temple 700. The vessels were also empty or contained an earth fill, and were found behind a stepped podium altar within the sanctuary. The remainder of the ceramics found in Temple 700 were the same as those discovered elsewhere at Naqa associated with structures of Amanitore and Natakamani (K. Kroeper, pers. comm.). Temple 700 is a ramped podium temple with a single room sanctuary containing six columns (see further Kroeper 2011, fig. 1). Dangeil LT is an Amun-style temple with tripartite sanctuary. The main difference between the Naqa and Dangeil vessel finds is the structure of the buildings in which they were discovered. This variance in building plan suggests that these temples were dedicated to different deities while the presence of these offering vessels might suggest the performance of similar rituals.

Plate 3. Offering vessels in situ*, west sanctuary, Temple LT (photo: © Berber-Abidiya Archaeological Project).*

Plate 4. Globular offering vessels from Temple LT (photo: K. Solarska © Berber-Abidiya Archaeological Project).

Two small stamped mud stoppers (36/17 and 37/17) were found on the floor in LT's west sanctuary. The ovoid seal impressions on one stopper (37/17) were unclear. The other stopper (36/17) had three complete and two incomplete impressions that appear to show a figure in relief, possibly holding two incense censors, or two knives, or perhaps a lyre (Plate 5). These impressions are very small measuring 14 x 11mm. The image may be of a Bes-type figure as, for example, may be seen dancing on a ring now in the World Museum, Liverpool (56.20.577)[3] or possibly a satyr, as found in a moulded appliqué decorating a sherd from Dangeil (Anderson *et al.* 2015, pl. 17). The stamped figure appears to have a tail that might support these suggestions.

Amun temple, monumental entrance pylon

The semi-circular flagpole niche situated on the west exterior face of the southern pylon, and the temple's paved entrance, were the focus of excavations conducted on the monumental

[3] See further, http://www.liverpoolmuseums.org.uk/wml/collections/antiquities/ancient-egypt/item-295182.aspx [accessed 22nd May 2018].

Plate 5. Ovoid seal impression on mud stopper from Temple LT (photo: © Berber-Abidiya Archaeological Project).

gate (Figure 1). The pylon stands over 4m high and was constructed of fired bricks and reused materials including torus mouldings and fired-brick column drums. Bricks and brick courses within the wall core were irregular and poorly laid (Plates 6 and 7). These flaws were disguised by a thick layer of lime plaster applied to the pylon's exterior. As a consequence, the pylon was subject to structural stress that was evident in several places. On the exterior face of both the north and south pylons, the outer brick courses were poorly bonded to the wall core and in both cases experienced serious slumping as the outer brick courses separated and slid away from those in the interior.

It is clear the Kushites were aware of these structural failings. To cope with a bulging wall face in the entrance, a 900mm wide buttress was inserted into the door niche on both sides, substantially narrowing the entry way from 3.5m to 1.2m, and altering the configuration of the door (Plate 8). Originally, the temple was entered through a double door,

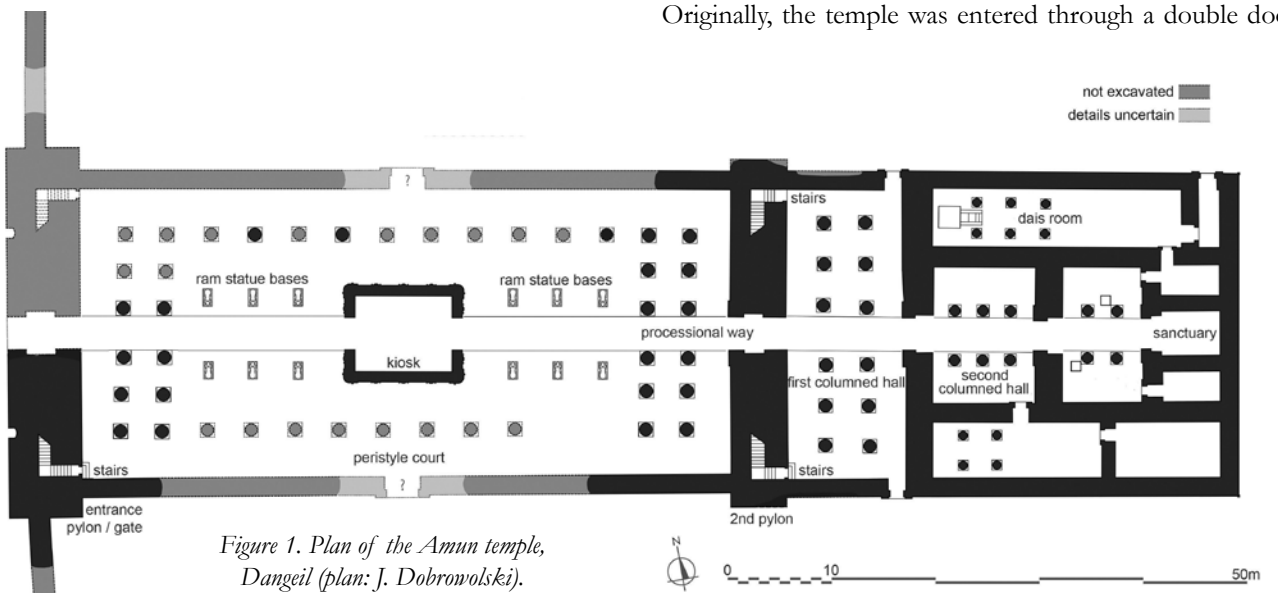

Figure 1. Plan of the Amun temple, Dangeil (plan: J. Dobrowolski).

Plate 6. Amun temple, facing east towards the sanctuary, with the main pylon entrance in the foreground (drone photo: Mohamed Tohami © Berber-Abidiya Archaeological Project).

Plate 7. View from above of the main gate, south pylon (orthophoto: R. Hajduga © Berber-Abidiya Archaeological Project).

Plate 8. View of the temple entrance from above, facing south (photo: © Berber-Abidiya Archaeological Project).

presumably of wood, that swung inward. A semi-circular groove created by the north door remains visible in the pavement. The original door pivots, thus far unexcavated, would have been located beneath these two added buttresses. Three square sockets, that would have secured the doors in position when open or closed, are present in the stone floor surface.

The lowest brick courses in the corners of the entrance were laid with thick layers of lime mortar (10-30mm in thickness) rather than mud mortar as found elsewhere in the pylon. Whether this was done to reinforce the corners and ameliorate the potential problems caused by the use of a miscellany of materials in the pylon core is uncertain; however, the builders surely would have known what materials were to be used in the pylon's construction.

The pylon had a bonded foundation of headers that protruded half a brick length (*c.* 180-200mm) beyond the wall face. On the front west face, the wall was further reinforced with at least six additional courses of fired bricks which abutted the pylon and had been laid on top of the projecting foundation. They were arranged in alternating courses of whole-brick stretchers and half-brick headers.

Situated approximately in the centre of the western face of the pylon is a single, substantially preserved semi-circular flagpole niche (Plates 9 and 10). The depth and width of the niche, and of the carved ferricrete sandstone post-pad set in its base, are 1.1m x 1.02m. The upper surface of the post-pad stands 600mm above the original ground surface. In the past the niche probably housed a substantial wooden pole, flying a banner or standard on top. Like much of the rest of the temple, the niche and stone base had been lime plastered. This may have also had the additional, and perhaps unrecognized, benefit of deterring insect consumption of wooden architectural elements. Based on the imprints and incised lines left on the post-pad, the pole was roughly 800mm in diameter. This is comparable in size to the square post-pads found in the Amun temple at el-Hassa and, notably, this temple also had a single flagpole niche in each pylon (Rondot 2012, 171, fig. 2). It is also similar to the pole diameters suggested for Amun temple B500 at Jebel Barkal. At Barkal circular copper-alloy post footings indicated the poles ranged between 0.9m and 1.2m in diameter. Copper-alloy plaques depicting bound enemy prisoners also had been nailed to the base of the poles. The height of the poles would have been in direct correlation to the height of the associated pylon, and presumably extended higher than it. It has been suggested that the Barkal poles may have stood up to 24m in height and were attached to the pylon via wooden clamps (Kendall 2010b). No evidence for either prisoner plaques or clamps has been discovered thus far at Dangeil. The weak structural nature of Dangeil's pylon and the use of fired brick rather than stone as at Barkal make it unlikely that the Dangeil flagpoles and pylon were nearly as high as those at Barkal, simply because the structure could not have supported them. Other issues to be considered are availability of large pieces of softwood lumber during the late Kushite period and whether the temple at Dangeil would have rated such material.

The stone base was wedged in position with irregular-shaped ferricrete stones which filled gaps between the brickwork of the niche and the base (Plate 10). This construction technique has been observed elsewhere in the temple. For example, ferricrete stones were placed under a sandstone column base in the sanctuary to level it. The purpose of the semi-circular step carved deeply into the front of the stone base is uncertain. It may be symbolic[4] or simply could have

[4] Fragments of statues of the early Kushite rulers Taharqo and Aspelta were found in the destruction debris of the late Kushite temple (Anderson *et al.* 2017; in press; Anderson and Salah 2009; 2010a). Inscrip-

Plate 9. Amun temple, south pylon of main gate with flag niche in the centre of the image (photo: © Berber-Abidiya Archaeological Project).

Plate 10. Detail of the flag pole niche, main pylon, south side (photo: © Berber-Abidiya Archaeological Project).

been functional as its curved slope and depth would expedite the run-off of rainfall (just as ceramic drainpipes did), although this may have been an unintended result.

The paved surface of the processional way running through the gate is a chaotic mixture of materials, shapes and sizes, and includes brick column drum quadrants, sandstone flags, irregular stones of various types, and rectangular fired bricks (Plate 8). Near the temple's second pylon and within the first and second halls and sanctuary, the paving is more consistent and regular, both in materials and shape. Considering the nature of this surface and the composition of the gate, it seems probable that the builders were running out of materials and using 'left-overs'. The distance to which the processional route extends westward beyond the temple is unclear; however, there appears to be a rectangular structure in front of the temple sharing the same axis. This may be another kiosk as found for example, outside the Amun temple at Meroe.

Amun Temple, the peristyle court and first hall

Two regions of the peristyle court were further explored, the first at the west end beside the main pylon, and the second at the opposite end of the court, to the east and south east of the kiosk. In the first area in the south-west corner of the court, the main pylon's foundations and construction layers were uncovered. Alongside the pylon, the foundations of the colonnade were founded on an earlier mud-brick structure that was of similar orientation and had been levelled to its foundation courses. Numerous post-holes cut into this early building, likely to support scaffolding for the construction of the columns and pylon. Fifty post-holes, some substantial in size with diameters of 300mm or more, and depths of between 300-500mm, were identified here. A fired-brick foundation, bonded to the pylon and extending a metre beyond its east face, was cut by many such post-holes. It is possible that this broad foundation was constructed to provide additional support for the structure. Alternatively, the overall size of the pylon may have been reduced from an initial plan, perhaps as the result of a design flaw, a misunderstanding between the architect and builders, or once the amount of available building materials was reconsidered. This is the only area where such an extended foundation has been located thus far.

Further evidence of the temple's decorative programme was also uncovered. A wall painting, discovered but not exposed in previous seasons, was excavated. Situated adjacent to the temple's entrance on the east face of the north pylon, it comprised a portion of the lowest register on the wall (Plate 11). Surmounted by two yellow bands running on either side of a blue band is a repeating frieze of lotus flowers consisting of a fully open blossom, followed by a bud in the process of emerging at a slightly lower level, followed by a partly open flower. Red, yellow and blue pigments were used. The blue seems to be a more fugitive pigment, and was less well preserved when compared to the red and yellow. Lotus flowers of similar style, colours and date have been found on the painted altar in the Amun temple at Naqa (Wildung and Kroeper 2016, 25).

tions on both statues describe the rulers as 'Beloved of Re'-Harakhty who resides in…'. The place name is missing in each case, but likely it was the ancient name of Dangeil. These inscriptions are unlike those on similar statues found at Jebel Barkal and Kerma-Dokki Gel in that the mentioned god differs. These inscriptions describe the kings as 'Beloved of Amun' followed by their respective geographical locations, such as 'Beloved of Amun of Pnubs' (Kerma-Dokki Gel) (Bonnet and Valbelle 2005, 92-93, 116) or 'Beloved of Amun of Napata' (Jebel Barkal) (Dunham 1970, pl. XXX; See further Reisner 1917; 1931). The shape of the front of the post-pad was widely remarked upon by both excavators and visitors to the site, as it may call to mind various hieroglyphic signs (i.e. mountain or horizon Gardiner 1957, 545 (N26, N27)). It may be that its shape was a Kushite meme, perhaps suggesting the presence of Re'-Harakhty, god of the horizons.

Plate 11. Wall painting of lotus flowers in situ *on the east face of the main gate's north pylon (photo: © Berber-Abidiya Archaeological Project).*

Towards the eastern end of the peristyle court work focused upon several pits in the processional way, a ram-statue plinth, foundations for the peristyle court's colonnade, and a sandstone column capital that had fallen from the kiosk. Ram-statue fragments, red bricks and architectural fragments overlay these features (Plate 12).

Plate 12. South-east side of the peristyle court with ram plinth and pitting in the processional way visible (orthophoto: R. Hajduga © Berber-Abidiya Archaeological Project).

Apart from the peristyle court, the first hall with its packed earth surface is one of the few places where it is possible to explore the layers underlying the late Kushite floors. While the gradiometer survey conducted in several paved rooms revealed little evidence of earlier occupation[5] excavation of the first hall's fired-brick column foundations indicated that they had been cut through part of a substantial mud-brick building of similar orientation. Prior to construction of the later temple, this earlier building had been systematically levelled to its foundation courses (Plate 13). These early mud-brick walls were also cut by construction pits and post-holes associated with the later temple, and by pits and ovens from

[5] See further Anderson *et al.* 2014, 73-73.

Plate 13. First hall, north side with fired brick column foundations and the underlying mud structure visible (orthophoto: R. Hajduga © Berber-Abidiya Archaeological Project).

a post-temple occupation phase. In previous seasons several large mud-brick walls belonging to an earlier building were uncovered in the south-east room of the temple beneath the mud-floor surface. These also had been purposefully levelled to their foundation courses. The temple was directly founded on some of these earlier walls, and shared their orientation (Anderson and Salah Mohamed Ahmed 2010b, 96-97).

The remains of the mud-hardened surface, created during the construction of the later temple, overlay the earlier mud-brick structure. Several large post-holes had been cut through this surface. These tended to cluster around columns and along the sides of walls suggesting the use of wooden scaffolding during construction. Part of a builders' construction platform of fired-brick halves was also uncovered. It also had been built over the earlier building. Similar platforms are still used in construction often for mixing materials such as, sand, mortars, and lime. The column foundations subsequently cut through both the platform and mud surface, following which some of the foundations adjacent to the temple's main axis were covered by the sandstone paving of the processional way. While a wall painting was uncovered on the main gate as discussed above, in the construction layers of the first hall, a tool kit for the creation of such paintings was discovered. Finds included raw pigments such as Egyptian blue, lime, red and yellow ochres along with pot sherds reused as applicators.

The most recent occupation in the first hall was found beside the north wall. Parts of four ceramic jars had been set in pits and reused as ovens (Plate 14). The base and rim of each vessel had been removed, leaving a ceramic ring

Plate 14. Detail of post-temple occupation ovens situated beside the north wall of the first hall (photo: R. Hajduga © Berber-Abidiya Archaeological Project).

filled with ash and charcoal. The walls of the hall would have provided shelter from the prevailing winds. The ovens are interesting because, being similar in form to the earlier ovens found behind the temple on Kom K associated with the manufacture of temple offerings (Anderson *et al.* 2014, 70-71; Maillot 2015), they demonstrate continuity of cooking installation type.

Cemetery FRC

Rescue excavations were conducted in cemetery FRC situated north west of the temple complex.[6] The site is threatened by the expansion of a modern cemetery and its low mounds have been treated as a modern source of gravel and building material. To date a total of 83 tombs containing the skeletal remains of 170 individuals have been excavated in the FRC and the adjoining WTC cemeteries. This population includes male and female adult burials but almost all categories of age are represented. This season, 11 graves ranging in date from early Kushite through to the medieval period were excavated (Plate 15). No superstructures are visible on the surface and the cemetery size remains to be determined. This particular area of the cemetery is very complicated with grave shafts cutting through one another (including those of the same period). The graves also do not follow a regular pattern of orientation as found elsewhere at Dangeil.

An intact Post-Meroitic burial (FRC C13, T.36) was excavated. The descendary was oriented east-west with a north-south burial chamber at the western end. The deceased was accompanied by numerous ceramics, including beer jars, amphorae, and black libation vessels. Some of the beer jars had been purposefully coated with mud around the shoulder and at least in one instance this mud had been covered with yellow ochre. Perhaps the mud was functional, possibly keeping the pot contents, which may have been used during the

Plate 15. Cemetery FRC, tomb shafts from above (orthophoto: R. Hajduga © Berber-Abidiya Archaeological Project).

funerary ceremonies, cool, but there also seems to be a ritual aspect to it as suggested by the application of ochre and highly visible fingermarks in the mud.[7] Other grave goods included an archer's loose and arrowheads suggesting the individual may have been an archer or hunter. In any case it was wished that they be associated with archery in the afterlife (Plate 16).

Plate 16. Cemetery FRC, Post-Meroitic tomb (C13, T.36) with mud-coated beer jars and iron arrowheads visible (photo: Mohamed Saad © Berber-Abidiya Archaeological Project).

[6] Unlike at the Amun temple site, no drone pictures were taken of the cemetery due to difficulties caused by the local raptors.

[7] For discussions of Kushite funerary banquets and rituals see Mohamed Faroug Abd el-Rahman 2011, 125-127; Lenoble 1999; Edwards 1996.

Conservation and site management

Extensive conservation work has been undertaken over the last several years with the aim to preserve, conserve and protect Dangeil for the future, and to make it more accessible to visitors. Each season conservation work carried out on the temple fabric in previous seasons is reviewed and evaluated. Some conservation is quite challenging because the temple was constructed of a mixture of materials. For example, fired-brick columns set with mud mortar must be capped against rain to prevent the percolation of water. Within the structure, drainage channels and removable, gravel surfaces continue to be installed where required.[8]

Issues of site management and accessibility are also being addressed. Streetlights were installed around the site with the assistance of the local village council, and a public transit and water stop was built next to the route of the tarmac road, currently under construction. At present, Dangeil receives visitations from local school groups, university students, interested members of the public, both from the village and elsewhere in Sudan, and foreign tourists. With the approval of Dr Abdelrahman Ali Mohamed, Director General of the National Corporation for Antiquities and Museums (NCAM), builders from Dangeil constructed an Information Point for visitors beside the site entrance where information panels will be installed shortly. A gate was also fitted at the site entrance (Plate 17).

Plate 17. Information Point and site gate, facing north-east (photo: © Berber-Abidiya Archaeological Project).

One issue the project has been struggling to address is enabling visitors to view the carved sandstone columns and wall panels in the temple sanctuary, while at the same time keeping these features secure and protected from destructive natural elements and anthropogenic factors. The facings and columns have been conserved and currently are enclosed within temporary sealed protective structures. Ideally the entire temple should be enclosed within a protective shelter; however, at this point that is beyond the resources available. Following consultations and recommendations from conservators, architects and builders, a removable shelter was built over the sanctuary area (18 x 16m) (Plate 18). Construction was undertaken by a professional team of builders from

Plate 18. Protective shelter constructed over the sanctuary, with the first hall in the foreground, facing south-east (photo: © Berber-Abidiya Archaeological Project).

NCAM supported by local builders from Dangeil village. Access into the structure is via a large double steel door that stretches between the north and south walls of the entrance to the sanctuary and offering hall. Within the shelter, the interior is open and contains no modern columns or additions. Lighting is provided via translucent fibreglass panels in the zinc roof which is supported by cantilevered steel beams. These beams are set on buttresses in the modern fired-brick walls (*c.* 1.5m high) which were laid upon the substantially wider, underlying sanctuary walls. Guttering and drainpipes direct rainfall behind the temple into a small *khor*. The temporary protections covering the columns and sanctuary facings will be removed in a forthcoming season.

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[8] See further Anderson *et alii*, 2014.

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