

# El-Kurru 2015-16: Preliminary Report

## *Introduction*

*Rachael J. Dann and Geoff Emberling*

The current program of fieldwork at and around the Kushite royal cemetery of el-Kurru began in 2013 and has continued to investigate features previously excavated by Reisner and to broaden our knowledge of the cemetery, its local context, and its later history (Emberling and Dann 2013; Emberling *et al.* 2015).

This report contains four sections. First, a study of the geology and hydrology of the local area, both of which have continued to affect archaeological remains and their preservation. Second, a report on continuing excavation along what Reisner called the “city wall” – more accurately called a town wall given its size. Reisner assumed it to be contemporary with the royal pyramids of the 8<sup>th</sup>-7<sup>th</sup> centuries BC, but we have found it in fact to be a fortification of Medieval (Christian) times. Excavation of this area has also recovered settlement and burial remains. Third, a brief report on an archaeobotanical study in the Medieval settlement. Finally, a report on an innovative cross-disciplinary project bringing together archaeologists and artists to consider how their encounters with the sensory world at the site affect and transform the outputs of their work. This is a long-term project that aims to create a new kind of dialogue between two inter-connected disciplines, to create non-traditional outputs from the fieldwork, and to produce understandings of the experience of archaeology in a newly textured form.

## *Geology and Hydrology*

*Carola Stearns*

Geologic exploration at el-Kurru in 2015 focused on geomorphology and hydrology of the site as well as detailed stratigraphic descriptions of the bedrock in the area of the royal cemetery.

El-Kurru is located along the Nile on the southern edge of the Nubian Plateau, a complex regional bedrock uplift with a core of Neoproterozoic crystalline rock overlain by flat-lying sedimentary rocks. At the site, the bedrock is mapped as “fluvial sandstones and siltstones of probable Cretaceous age” (Geologic Research Authority of the Sudan 1988, Geologic Map of the Sudan). The rocks have not been mapped in detail and precise stratigraphic correlations are unknown, so the use of the name Nubian Sandstone or Formation should be avoided.

This section of the Nile is incised in the Neoproterozoic crystalline basement and has limited floodplain development localized along certain stretches of the river. Here the Nile is a youthful stream, following narrow channels that are controlled by faults and shear zones (Thurmond *et al.* 2004). Downstream of Kareima, the observed contrast in bedrock on opposing banks of the river and the very linear channel suggests that the Nile’s course is controlled by a large, unmapped fault. On the north-west (right) bank, eroded sandstones crop out; the south-east (left) bank appears to be lower in elevation and bedrock does not crop out.

### **Geomorphology and Hydrology**

The flood history of the Nile is related to the weather in the more humid climates of the southern headwaters and not to local precipitation events. According to conversations with villagers and our government representatives, in the last century significant Nile floods near el-Kurru occurred in 1946, 1988 and 1994.

El-Kurru is situated between two large, well-developed drainage systems (Plate 1) and is itself drained by a much smaller and less developed drainage system (Figure 1) that is not clear on satellite images. The flooding of the *wadi* draining the site is caused by intense local precipitation events. According to people in the village, in a typical year, channelized flow is strong, happens two to three times, flows for about an hour, does not fill the channels, and is perhaps at best knee deep. However, after the 2013 excavation, the Late Napatan mortuary temple (Ku. 1500; Emberling *et al.* 2015) adjacent to the *wadi* was flooded and approximately 500mm of sediment was deposited. Overland flow from higher areas around the mortuary temple likely contributed to this depositional event. In the royal cemetery, similar overland flow events would have contributed significantly to the filling of both the mortuary temple and the pyramid burial chambers after they had been looted.

The devastating flood that breached the outer wall of the



mortuary temple happened because of its location at a significant bend in the *wadi*.

The mouth of the *wadi*, where it meets the Nile floodplain, is at the edge of the village. As floodwaters flow out of the *wadi* and onto the floodplain, energy dissipates and *wadi* sediments are deposited in a fan-shape. The southern end of the Medieval town wall is more exposed to *wadi* flooding and depositional events than is its northern end (Figure 1).

Groundwater hydrology in arid lands is quite different than that of humid climates. Rivers are often perched above the regional groundwater table and streams can lose water into high porosity bedrock or channel deposits. That the Nile is sourced by precipitation in its distant headwaters, that the local tributaries are dry, and that the modern villages are all located along the banks of the Nile, indicate that the regional water table in this area is probably deep and that the Nile itself is the likely source

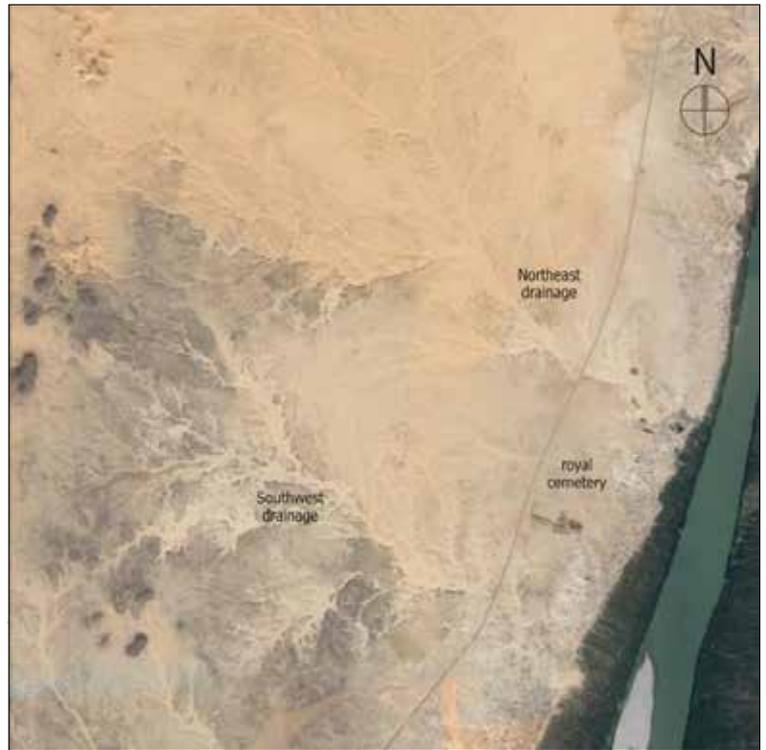


Plate 1. Satellite image showing el-Kurru located between two well-developed wadis.

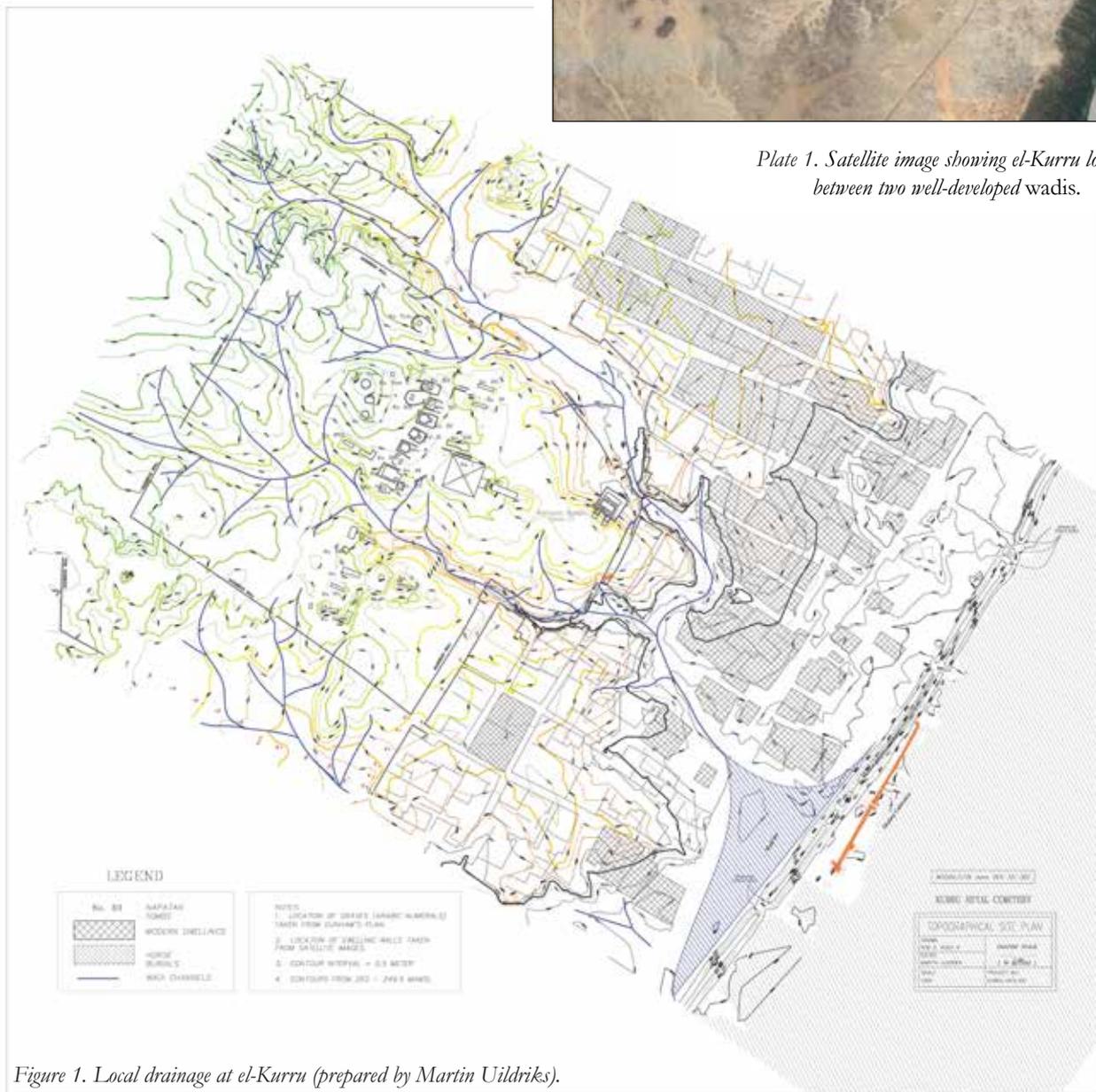


Figure 1. Local drainage at el-Kurru (prepared by Martin Uildriks).

of a shallow, perched aquifer immediately adjacent to the channel. To investigate the groundwater table in the village, I asked about the water levels in the village wells. At houses in the village closer to the Nile, the water level is approximately six “man-height” deep, “man-height” being a local measure of depth, just under 2m. In wells further north west in the village, water levels are deeper, perhaps 10 man-height deep. With at most 8m of elevation change across the village on our site map, it is difficult to say more than it appears that the local water table is flat across the village.

### The Bedrock Stratigraphy of the Royal Cemetery

Exposed in the staircases and chambers across the cemetery is a sequence of Cretaceous sandstones, siltstones and mudstones over 5m thick. Throughout the sequence, but especially well-developed at the top of the lowermost sandstone, are thin layers of hard, iron-cemented, usually fine-grained sediments, which are *paleosols*, or the preserved remains of buried soil horizons, and as such can be referred to as ferricretes (Plate 2). The ferricretes vary in thickness, are in places discontinuous, and are undulating rather than flat-lying. They are important across the site because they are mechanically strong, very resistant to weathering and erosion, can act as a capstone in erosional processes and are relatively impermeable to water. The Cretaceous sediments are unconformably overlain by a thin veneer of sandy Quaternary gravels. The Quaternary surface itself has been significantly disturbed by human activity at the site including original construction and more recent excavations.



Plate 2. Ferricrete layer at the top of the descendancy of pyramid Ku. 1.

The exposed stratigraphic sections are divided into three units: a lowermost tan sandstone more than 2m thick with a prominent ferricrete at the top in all but one of the outcrops; a middle sequence of up to 2.2m of varicolored mudstones and siltstones; and an uppermost gray fine-grained sandstone-siltstone up to 1.5m thick. The sandstones are the channel deposits and the mudstones and siltstones, the floodplain deposits of ancient rivers. In the stairwell to the tomb under pyramid Ku. 6 (in the queens' section of the cemetery) the mudstones are not present and there are no ferricretes.

The lowermost unit (Plate 3) is a tan-colored, medium to coarse grained quartz sandstone that is composed of poorly sorted, subrounded to subangular quartz grains. It is moder-



Plate 3. Lowermost unit of sandstone in the large mortuary temple (Reisner's Ku. 1500).



Plate 4. Vari-colored mudstones in the tomb under pyramid Ku. 4.

ately cemented, friable and weathers on outcrops. The bedding is usually thin and planar with occasional pebbly layers and tabular cross-bedded units. Most of the burial chambers were cut into this unit. This sandstone appears to be quite extensive as it is exposed south of the cemetery in the quarried walls of the mortuary temple as well as in outcrops in the village. It varies locally in color, and significantly in grain size and sorting. Because it is the thickest and most extensive of the sandstones, this unit is clearly the most important source of stone for the construction of the pyramid superstructures.

Above the basal sandstone is a highly weathered sequence of vari-colored mudstones (Plate 4) with occasional siltstones and discontinuous ferricretes. The fine-grained deposits are grey, red-brown, and occasionally cream colored. The variation in color and the blocky, crumbly texture and the ferricretes are all likely related to soil formation in the humid climate of the Cretaceous. The end result is a stone that is highly weathered and mechanically weak. These mudstones are entirely absent from the outcrop at Ku. 6, where instead light grey, fine-grained, moderately well-sorted channel sandstones are exposed.

Overlying the mudstone are light to medium grey quartz silty sandstones and sandy siltstones of varying thicknesses. These stones are poorly sorted and in places well-bedded with tabular cross-bedded units. The sandstones are structurally strong and important at the top of the excavated stairwells for structural integrity and architectural preservation. However, they are not as extensive or thick as the basal sandstone.

In summary, the rocks of the royal cemetery plateau affected both the construction and the preservation of several of the Napatan pyramids, most dramatically in the collapse of the mudstones in a portion of pyramid Ku. 1 during construction and again during excavation (see Emberling *et al.* 2015). The basal sandstones, although friable and only moderately cemented, were strong enough to retain the structural integrity of the underground chambers carved in them. The thicker and more extensive sandstones of the lowermost unit were likely a significant source of local building stone, however, the large variation in grain size and color makes detailed provenance studies difficult.

## Late Napatan rock-cut structure

Sebastian Anstis and Geoff Emberling

As noted in our previous reports, Reisner had identified five elements of settlement around the Kushite royal cemetery. We have previously published preliminary reports on three of these (a large rock-cut well, a large mortuary temple with rock-cut chambers and the town wall discussed further below). We had previously located a fourth structure and excavated it in 2016: a smaller structure with rock-cut chambers. The fifth structure was a section of wall with a corner buttress located in what is now the village; although Reisner said it was close to the smaller rock-cut structure, we have not been able to relocate it by walking survey, magnetometry, or by asking local residents.

The smaller structure excavated in 2016 is located in the heart of the modern village, directly between the royal cemetery and the Nile. Reisner designated this structure Ku. 1100 and considered it a mortuary temple contemporary with the later queen's pyramid at the site (Ku. 2). His notebooks show that he found no datable material in it.

Like the larger mortuary temple, this structure had also been a quarry that was expanded by construction of additional rock-cut chambers. The structure was entered (Figure 2, Plate 5) by a ramp and steps leading down through an arch-shaped doorway into a large outer room (11 x 6m). From that outer room, a doorway cut into the rock led to two small underground rooms in a row, the first (3.5 x 3.5m in size) having a curved ceiling (Plate 6) and the second (3 x



Plate 5. Late Napatan rock-cut structure: entrance and outer room.

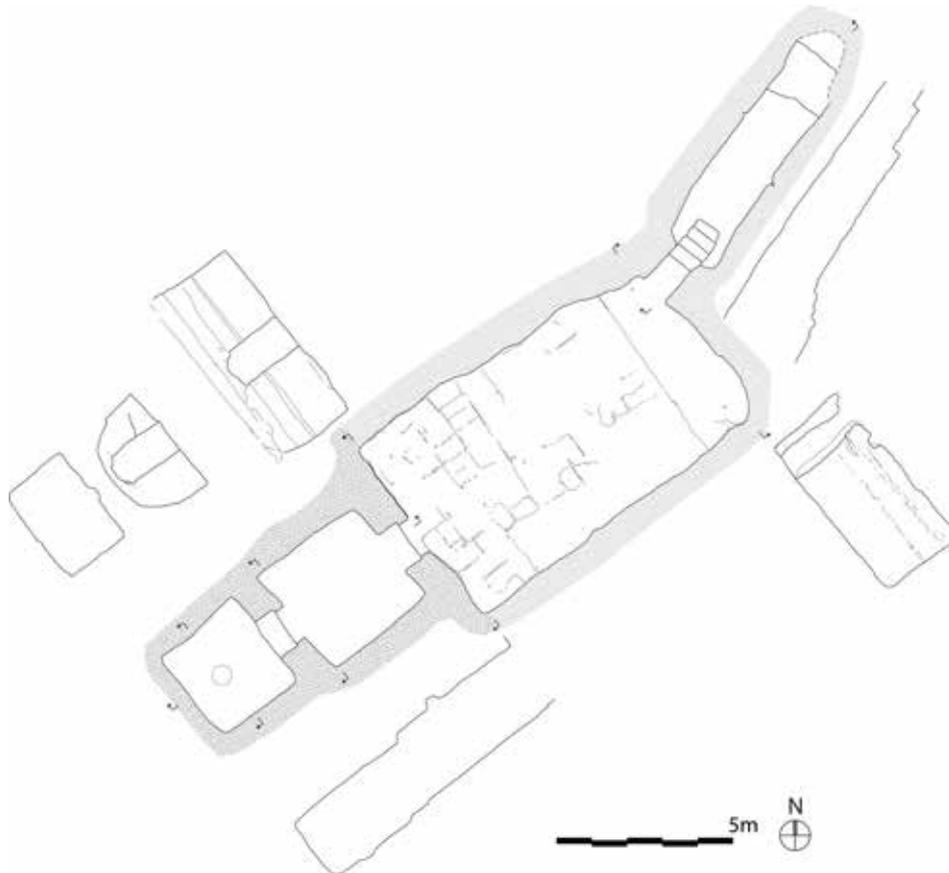


Figure 2. Plan and elevations of a rock-cut Late Napatan structure, possibly a mortuary temple (Reisner's Ku. 1100) at el-Kurru (prepared by Jack Cheng). The outlines on the floor of the largest room are blocks marked for quarrying. Darker shading indicates rooms that are completely underground. (scale 1:150).



Plate 6. Late Napatan rock-cut structure: first underground room with rounded ceiling.



Plate 7. Late Napatan rock-cut structure: partially quarried blocks in the floor of the outer room.

2.5m) having a flat ceiling. The area was clearly a quarry, with partially shaped blocks remaining in the floor of the outer room (Plate 7). The fact that these blocks were not smoothed over, along with numerous other observations, suggest that this structure – like the other mortuary temple and pyramid Ku. 1 itself – was not finished and was never used for its original intended purpose.

It is difficult to say whether Reisner's surmise that this was a mortuary temple for Ku. 2 was correct, but at the current stage of research it remains as likely a guess as any other.



# The Medieval Fortification, Settlement and Cemetery

Tim Skuldbøl, Martin Uildriks, Katherine Rose, Jacke Phillips and Abigail Breidenstein

In his field notebook from the 1919 excavations at el-Kurru, George Reisner described excavating a portion of a fortification wall and gateway, and provided a small sketch (Figure 3). His notes did not clarify the precise location, method of construction, size, or date of the wall and its gateway, except that they were located on the edge of the cultivation and enclosed a rock-cut well that he thought was part of a Napatan palace. Reisner's notes and sketch were highlighted by Kendall (1999, 48-9) in a discussion of a possible Napatan town constructed near the royal cemetery.

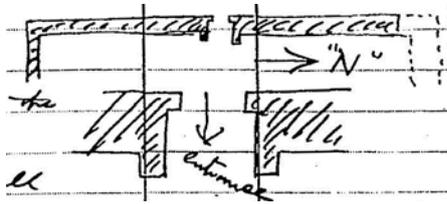


Figure 3. Reisner's sketch of the "city wall" (his Ku. 1300). The plan is possibly ambiguous, but excavation confirms that what could be read as an inner gateway is actually just an expanded version of the gateway itself.

In 2013, through a sounding and coring program, as well as discussions with people living in el-Kurru village, we rediscovered the wall on a strip of land that divides the modern village from the date palm groves along the Nile (see Emberling 2013; Skuldbøl 2013). During the following three seasons (2014-2016) we removed wind-blown and water-laid sediments from over 50 4 x 4m grid squares, uncovering the majority of the wall (Figure 4).

During excavations, we discovered a shallow trench along the wall, likely made by Reisner's workmen tracing the wall's outline in 1919. As we cleaned and continued to document the remains, we learned to our great surprise that the wall and associated layers of occupation are almost entirely Medieval (Christian) in date, with ceramics and AMS dates ranging from about AD 600-1200 (Figure 5).

## The wall, bastions and gateway

The wall runs parallel to the Nile for about 138m and turns west towards the

desert at both ends (Figure 4). The wall had several bastions 5-6m in diameter set at roughly 20m intervals (Plate 8), including what seem to have been corner towers (Plate 9). All were built in similar fashion: the outer stones are roughly-shaped sandstone blocks (largest measuring c. 500 x 300 x 200mm), at least some of which came from the Napatan cemetery (see Skuldbøl 2013, 52); the core of the wall was filled with a mix of stones of varying sizes and shapes, and compact mud packing. The southern corner tower which



Plate 8. A bastion excavated in 2016 along the southern portion of the wall (photo looking north west). Around it were found extensive dark and ashy trash dumps with large numbers of potsherds. Later the collapse of the bastion and wall – red brick, mud brick and stone (now removed around the bastion) fell onto the trash deposits.

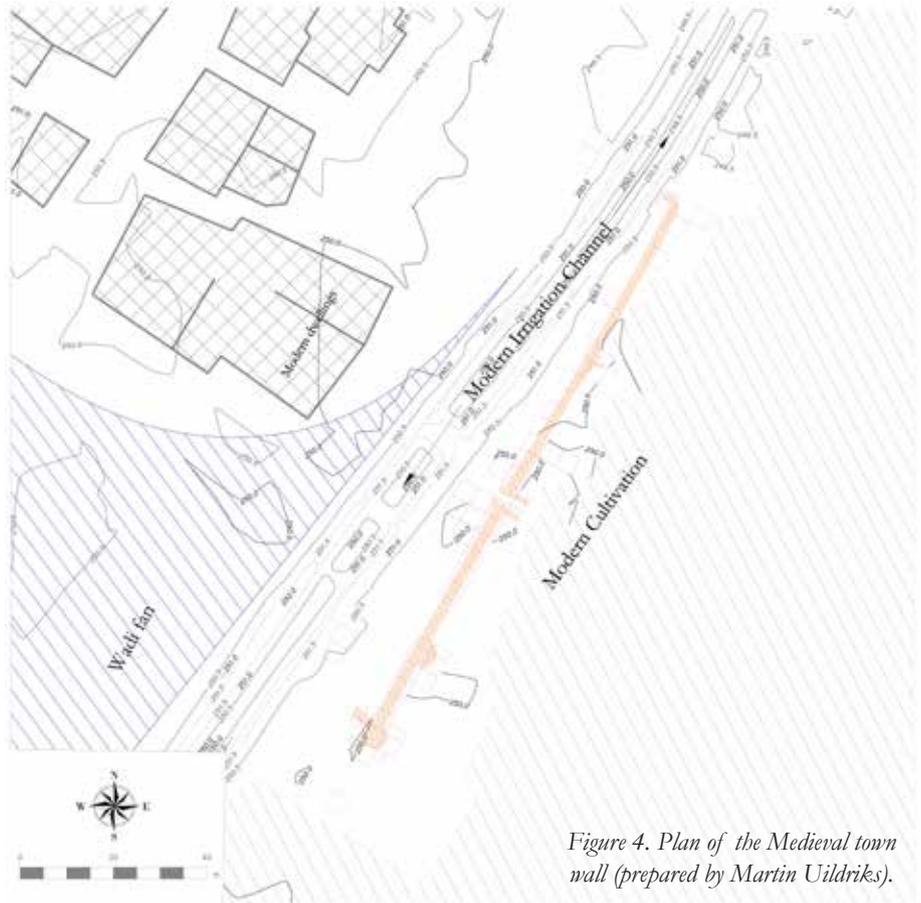


Figure 4. Plan of the Medieval town wall (prepared by Martin Uildriks).

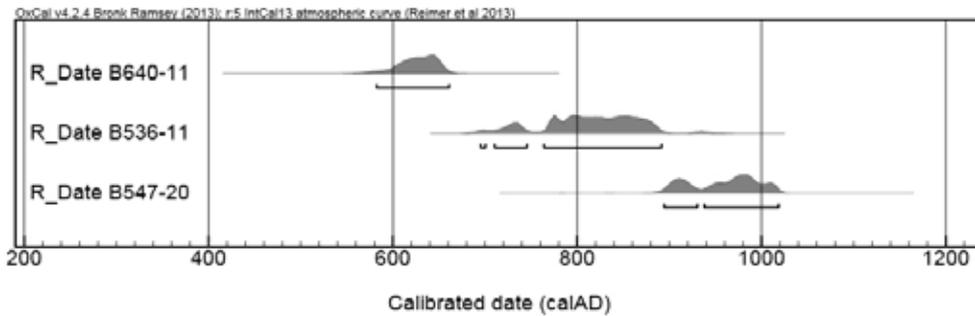


Figure 5. AMS dates from the occupation at the town wall.



Plate 9. The southern corner of the wall with bastion and additional buttress, perhaps to protect against flooding from the adjacent wadi.

likely took the direct impact of water washing down from the desert through the large wadi, was clearly rebuilt at least once (Plate 9). Interestingly, the walls and bastions were not built on a plateau or protected by natural cliffs as other Medieval fortresses in the region in which natural escarpments play an important part of the fortification system (e.g., the fortress at Bakhit – see Żurawski 2013, fig. 4).

In most places, the wall is preserved to a height of about 1m. The upper portion of the wall must have been composite, as significant sections of stone blocks as well as mud and red bricks along the entire wall have collapsed towards the east into the flood plain. In the south, the extent of the collapse suggests that the height of the upper portion of the wall may have been as much as 4-5m. However, the deposit of collapse is also seldom more than half a meter in depth, suggesting that the upper portion of the wall may not have covered the entire width of lower layers; alternatively, some of this upper material may simply have eroded. Extensive garbage dumps, containing ash and large quantities of domestic ceramics, were found below the collapse of the wall's superstructure.

Generally, red bricks in a medieval context have been considered distinctive of churches or monasteries in Nubia. The collapse of the town wall clearly shows that they could be used in other contexts. We did recover a ceramic fragment of a possible window grille, however, which may suggest that a church once stood in the area (Plate 10; see e.g., Jakobielski and Martens-

Czarnecka 2008, 337; Gazda 2008, 354 – with thanks to Bogdan Żurawski for references).

In the middle of the wall is a gateway (Figure 6; Plate 11). Three door sockets suggest the gateway may have had at least three phases of use (Plate 12). The first socket with two square depressions (c. 110 x 120 x 5mm), is set in the lowest course of stones, and clearly was part of the

initial construction. After removing two blocks from the third and fourth courses, a second door socket was inserted into the resulting slot. A third possible door socket is located on the top-row of preserved stones, where a small depression may have held a door pivot.



Plate 10. Ceramic fragment with traces of plaster, possibly from a window grille.



Figure 6. Plan of Medieval wall gateway and later mud-brick domestic architecture adjacent to it (prepared by Martin Uildriks) (scale 1:200).



Plate 11. The gate in the town wall, facing east.



Plate 13. Eroded bedrock in the gate (right) and repairs of the wall (below), facing north east.



Plate 12. The three door sockets in the gate, facing south.



Plate 14. Part of a domestic Christian compound (squares B450 and B550).

A large trunk of petrified wood, originally from the “petrified forest” several kilometers to the north west, was placed as a threshold inside the gateway and in line with the outer stones of the wall. In addition, two perpendicular walls flank the gateway entrance. The threshold and abutting walls rest on the same level of sandstone bedrock, while the inside of the gate shows clear traces of erosion and even attempts at repairing the northern wall face (Plate 13). Based on elevations, the second socket may also be contemporary with the large trunk of petrified wood, and so these additions could all belong to a second phase of use.

### The Christian settlement

Several segments of mud-brick walls were built against the western face of the defensive wall (Plate 14). Finds and installations, including baked brick pavements, benches, parts of a courtyard, cooking pots, storage facilities (bins), jars set in the bedrock, and grinding tools suggest a domestic character (Plates 15-17). Several trenches also produced evidence of later phases of occupation through refurbished walls, blocked doorways, floors, garbage disposal activities, and pottery from a range of Christian periods, suggesting a long occupational history of these domestic quarters (Figure 7; Plate 18).

A portion of a room of a Christian house built abutting



Plate 15. Belt buckle from the Christian quarters (square B450).



Plate 16. Part of a toilet seat from the Christian quarters (square B541).

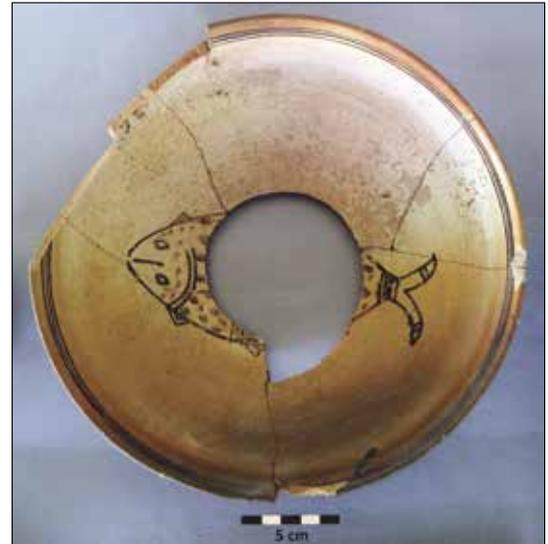


Plate 18. Fineware bowl with painted fish with unusual double eyes from later deposits (Late Christian, c. AD 1200).



Plate 17. Cooking pots from the Christian quarters (squares B350 and B450).



Plate 19. Truncated mud-brick wall and plaster surface of nearly complete Christian house.

the main town wall near the northernmost corner produced the remnants of an interior white plaster floor as well as an almost entirely removed mud-brick wall (Plate 19). The heavily truncated areas indicate the presence of intensive robbing activities in domestic spaces throughout the lifetime of the settlement.

In an outdoor space to the south west, an oval pit (1.5m long) with burned edges contained burned organic material, gray ash, and charcoal (Plate 20). A lower layer in the pit contained six long timbers, nearly completely burned. Between the timbers were 17 fragments of extremely highly burnt angular stones, of varying sizes, with brick melted on top of them. The interpretation

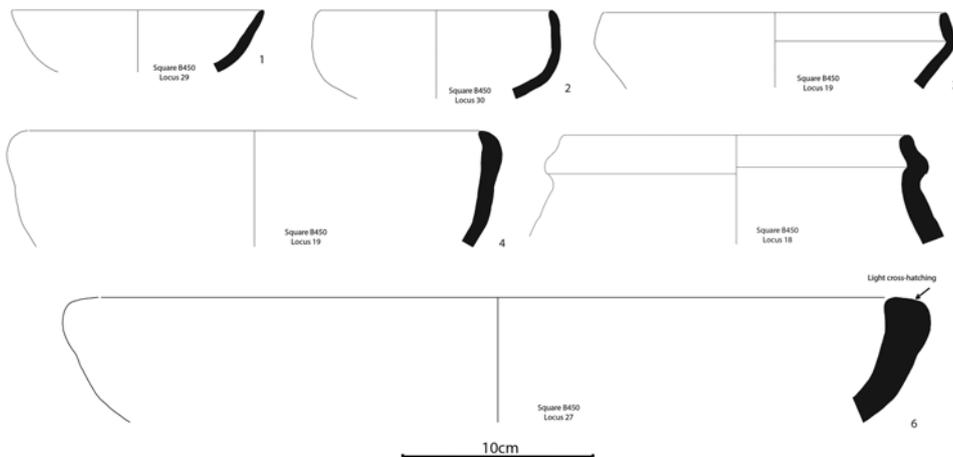


Figure 7. Early-Classic Christian fineware cups (1-3), cooking pot (4), qadus (5) and plate (6) from el-Kurru domestic occupation (scale 1:4).



Plate 20. Pit containing melted bricks and shreds.

of this feature remains uncertain. Clearly there was *in situ* burning of wood at temperatures high enough to melt brick, yet it is much smaller than features normally interpreted as brick kilns.

To the north of the house were two large (2.6 x 1.7m) compacted outdoor mud surfaces, separated by a trench filled with sand and mud (Plate 21). The area also contained patchy remnants of plaster surfaces, post-holes with surviving charcoal from posts, and trampled, laminated clay surfaces indicating repeated movement across the space. A nearly complete transitional Classic/Post-Classic Christian period



Plate 21. Overview of outdoor activity space.



Plate 22. Fineware bowl with painted bird (transitional Classic/Post-Classic Christian, c. AD 1100).



Plate 23. Built circular feature in the town wall.

fineware bowl with a bird motif was also recovered in a small trash pit near the compacted outdoor surfaces (Plate 22).

To the east of this outdoor activity space, a unique feature was built into the town wall. The feature was circular, about 1m in diameter and 750mm deep, and lined with courses of stone and red brick (Plate 23). The coursing continued down the interior walls of the feature to the bottom except on the northern and southern sides where the mud-rubble interior of the wall is visible. Because the mortar used for the lining of the feature differs significantly from the mud packing in the rest of the wall construction, it seems likely that this feature postdates the initial construction of the wall itself. It is possible the feature was a storage pit. It is also similar to the holes in Medieval fortification walls that Żurawski (2013, 130-134) proposed could be emplacements for defensive *manjanīq* (trebuchet).

In 2016, we recovered remains of a Christian mud-brick house, built on top of bedrock below the foundations of a 20<sup>th</sup> century house (belonging to a man named Bakhit) in the southern part of the walled area (Plate 24), supporting the idea that Christian occupation may once have been continuous along the entire length of the wall and in the area of the modern village to the north-west. Unfortunately, it appears that little to no additional Medieval occupation is likely to be



Plate 24. Christian house remains excavated in 2016 in the southern part of the settlement (squares B159-B160).

preserved in the area of the modern village. Water flow in the large *wadi* that drains the pyramid plateau and its sandstone outcrops has certainly eroded some remains, as our excavation of this area showed. Our excavations and closer inspection of the modern village have also shown that bedrock, rising as one moves away from the Nile, is visible or very close to the surface in most of the area, precluding the possibility of preserved archaeological material.

### The Christian cemetery

In higher levels, burials were cut into the settlement remains; 26 were excavated in 2015 and 2016 (Table 1). The burials

Table 1. Sex and age of individuals buried in the Medieval cemetery.

Sex Distribution	Total (N)	
Male (or probable male)	8	
Female (or probable female)	7	
Indeterminate (sub-adults)	8	
Unknown	3	
Age Distribution	Total (N)	Percent
Infant (0-3 years)	3	12%
Juvenile (3-20 years)	5	19%
Young adult (20-35 years)	6	23%
Middle adult (35-50)	2	8%
Old adult (50+)	8	31%
Unknown	2	8%
Total individuals excavated (2015-16)	26	

are simple pit inhumations, laid out in rows (Figure 8), and usually contain one and in some cases two individuals, including adults, juveniles, and children. A Christian date for these graves is suggested by the scarcity of grave goods and the orientation of the body; all individuals have their head in the north west, their feet in the south east, and either their arms or legs crossed (Plate 25).



Plate 25. Orthorectified photo derived from a three-dimensional photorealistic model of burial 206 – a young female whose grave was marked with 50-60 small pebbles apparently placed in the grave as tokens of affection (cf. Cavendish 1966 – pebbles associated with prayers). This individual demonstrated few signs of advanced age and was in relatively good health at the time of death.



Figure 8. Plan of the Medieval cemetery (prepared by Martin Uildriks) (scale 1:200).

During field recovery, all individuals were also preliminarily evaluated for pathology and trauma. Generally, trauma from interpersonal violence is absent in this sample, although fractures most likely occurring in daily life are evident in toes, an arm bone, and one clavicle, and were completely healed. As for pathology, seven individuals show signs of disease not related to age, including periostitis of the long bones, cribra orbitalia in the eye sockets, and/or porotic hyperostosis present in cranial vault bones. Due to the nonspecific nature of these responses, the presence of these bone tissue disturbances are not enough for a differential diagnosis but do warrant further investigation. Other individuals displayed classic signatures of age-related disease. Six adults had positive signs of osteoporosis, osteoarthritis (i.e. degenerative joint disease), and/or ankylosing spondylitis. Dental pathology was generally unremarkable, with no presence of hypoplasias to indicate nutritional stress during growth and older adults showed typical signs of advanced dental wear or missing teeth.

We have not yet been able to demonstrate temporal



relations between this cemetery and the phases of occupation at the wall and in the settlement. However, usage over several generations seems likely: in some locations multiple rows of burials may have been separated by minor paths and some graves were cut into deeper levels, and covered by deposits that were cut into by other burials.

### **The phases of occupation and garbage dumping activities**

The earliest phase of occupation appears beneath the town wall and is represented by a thin ashy deposit with cultural material including Early Christian ceramics found directly on the sandstone bedrock (for phasing see Phillips 2003). In these layers, we found a few Napatan and Meroitic sherds, but these may have been washed down from the royal cemetery higher up or perhaps came from an as yet-undiscovered settlement. In any case, the first phase seems to have left no standing architectural remains, though some features, such as pits cut into the bedrock, could be contemporary. A radiocarbon sample dates this phase to the first half of the 7<sup>th</sup> century AD (Figure 5), but the bulk of the ceramic assemblage from this stratum appears somewhat later, near the end of the Early Christian period (late 8<sup>th</sup>-early 9<sup>th</sup> century).

The wall itself was built later (9<sup>th</sup>-10<sup>th</sup> centuries). Fairly soon after the wall's initial construction, domestic quarters were built up against the interior face of the wall. A second phase of these domestic quarters and continuing use of the wall and gateway possibly date to the 11<sup>th</sup> to 12<sup>th</sup> centuries (Figure 6; see also Skuldbøl 2013, 52-4). During this time, trash dumps were also piled against exterior face of the wall, perhaps dumped over the wall from inside. After the second phase of rebuilding and reuse, the domestic quarters were used for refuse dumping activities during the Post-Classic and Late Christian (12<sup>th</sup> to 14<sup>th</sup> centuries).

Settlement activities dating to the Christian and later periods also extended further out into the flood plains, as suggested by coring and exploratory soundings in 2013 and 2014 (see Skuldbøl 2013). The final traces of Christian occupation are the burials located directly on top of the domestic quarter. They seem to avoid the wall, suggesting that was visible at the time they were dug, however, no radiocarbon samples of the refuse or the cemetery have yet been analyzed.

## *Archaeobotanical and Botanical Activities*

*Naomi F. Miller*

The goal of the archaeobotanical activities during the 2015 field season at el-Kurru was to see if plant remains would be recovered from the deposits and to prepare the ground for future study of these remains. A simple manual flotation system was set up (Miller 2012). Excavators at the town wall took samples from deposits with visible charcoal or from areas with some archaeological remains (e.g., pits, hearths, rooms); 18 samples were taken and floated. In addition, some samples from the 2014 excavation were processed: 18 from pots from tomb area C and three from the town wall area. Three of the tomb samples were not floated because visible charcoal burst upon contact with water in an initial test. A handful of sediment from most flotation samples was reserved for possible phytolith or other analyses. In addition, washes were taken from three pieces of ground stone to see if starch grains might be preserved.

The wall area samples averaged about 4.5 liters of sediment (range: 2 to 10 liters). Recovery was disappointing, with most samples yielding well under 5cc of charred material. The low density may result from poor preservation in these shallow deposits, or simply because there was no *in situ* burning and little secondary deposition of hearth sweepings. Insofar as there were charred remains, visual inspection revealed only wood charcoal from both wall and mortuary temple areas. One modern control sample from near the surface was full of charred date stones and goat dung.

In addition to archaeobotanical work, we have begun to build a comparative collection of seeds (about 20 species) and wood (six types), documented with about 70 herbarium voucher specimens that are now housed at the Academy of Natural Sciences of Drexel University, Philadelphia. Prof. Maha Kordofani received voucher specimens on behalf of the herbaria at the University of Khartoum and the Royal Botanic Gardens, Kew.

## *Art, Archaeology and Sensory Knowledge*

*Rachael J. Dann*

The practice of excavation is often viewed as the fundamental and defining act of the archaeologist: digging is what we do (see Bradley 2003). The hierarchical organization and empiricism involved in traditional archaeological fieldwork have seen explicit critique (for example Faulkner 2000; Gero 1996; Hodder 2003; Lucas 2001; 2004; Shanks and Tilley 1992), and the strategies that have developed to destabilize hierarchical arrangements of archaeological knowledge production involve both reflexivity and multivocality (see for instance Moser *et al.* 2002; Simpson and Williams 2008; Tully 2009; Muraki 2011; Alvarez and Morfini 2012; Nassaney 2012). The methodologies of our research at el-Kurru take up these useful paradigms. However, we make departures from disciplinary norms in terms of who is invited to author the site, the materials that are used to build knowledge, and how the products of knowledge are disseminated.

Archaeological excavation and post-excavation processing are specific forms of work that require a range of training in specialised methodologies, techniques and the use of specialist equipment. Similarly, most modern art production can be defined in terms of practice: it is not solely a finished sculpture that is 'art'; the entire process from conception, through enaction, to display, are creative art practice. As such, both disciplines are engaged in active creation of their products, via particular skill sets. As disciplines, art and archaeology share inter-related approaches and objects of study. Both disciplines are concerned with the transformation of the material world. Artists choose to manipulate or modify materials, landscapes or objects in ways that form a record of their actions, and perhaps of their intentionalities. Archaeologists attempt to reveal the presence and actions of human agents in the past, intentional or otherwise, and to read meaning into their traces. The related approaches and objects of study for the artist and archaeologist, involve intimate apprehension and understanding of the created material world in all its sensual forms.

Despite these similarities in objects of study, modes of practice, and contexts of display the potential for dialogue between art and archaeology remains under-explored (but see contributions in Cochrane and Russell 2014). Recognising other perceptual frameworks in the process of the archaeological dig opens up questions regarding the production of knowledge in exciting new ways. As such, the archaeological site at el-Kurru is the site of a cross-disciplinary experiment between the archaeological team and a series of different artists, the first of whom came to the site in early 2014.

This project initiates a dialogue between archaeologists and artists who, using the archaeological site as a place of encounter, will develop insights into their own disciplinary

practices, produce new understandings of site and practice, and explore modes of dissemination to new publics via non-traditional products. This encounter extends the scope and possibilities of the 'straight' archaeological excavation in order to document and transcribe alternative views and experiences of archaeological processes (excavation, recording, curation, dissemination) which are embedded in the sensory world. It is a radical, experimental approach to conceptualising the past, one that attempts a reformulation of how archaeological sites might be known, experienced and understood both within the Academy, and beyond it.

An artist and archaeologist, each with their own set of skills and particular disciplinary background, are explicitly brought together through a theme, with outputs emanating from a shared encounter at the site of el-Kurru. This embedded relationship allows close scrutiny of the processes of work in and around the site. Living at the site locates the team in the broader contexts of excavation; the landscape, the dig house, the local cultural context of the village, and the wider cultural and political setting of Northern Sudan, and provides the 'data' for thought and production. Several themes relating to embodied experiences at the site are considered: touch, visualisation, movement and performance, presence/absence, and the aural/oral/textual. Together we try to explore 'the brief moments where one could linger in the liminal space of possibility before the processing and categorization of experiences and things' (Russell 2014, 79).

The first artists to visit el-Kurru were Florian Roithmayr ([www.motinternational.com/artists/florian-roithmayr/](http://www.motinternational.com/artists/florian-roithmayr/)) and Melanie Jackson ([melaniejackson.net](http://melaniejackson.net)), and they worked, in particular, with the themes of aurality/orality and haptics (the sense of touch).

Working with this theme, the artist Florian Roithmayr came to el-Kurru in early 2014, and produced an aural sensescape of the broad landscape of the archaeological site at el-Kurru, and of specific moments of archaeological praxis. Roithmayr explored and documented the excavation site and surrounding areas as well as the activities taking place there through sound recordings. The recording device is a vehicle rather than an end in itself: it will be a reason and consequence for encounters, to be present, to observe and be attentive. As such, fleeting experiences of the site (the crunch of sand as we walk to site, the clink of tea glasses, the beeping of the total station, the muffled descent into the tombs) are captured in fragmentary pieces. The process of capturing sounds transforms them into aspects of memory, which can be replayed and discussed, which may index a particular embodied experience located at the site ('that happened in area x, I was sitting in the shade'), or which may mark out an absence of knowledge ('I was there, but I don't remember'). These recordings form one part of the artistic production, similar to taking notes or sketching. Similarly, we can consider how the recordings add to the process of archaeological production by their role in memory but also how, as fragmentary traces, the sound archive becomes another kind of archaeology of el-Kurru.



A further aspect of Florian's production was that of an archaeo-poem, a series of stanzas that play with repetition, alliteration, assonance and word associations (visit <https://internationalelkurruproject.sites.ku.dk>). Confronted by an array of technical terminology which was new to him, and for which he often had no frame of reference, he arranged and re-arranged our vocabularies and our utterances in patterns in which sound, rhythm and cadence become as important as the terminology itself. Indeed, the arrangement of words do not always make sense. Just as in his soundscape, Florian used fragments to capture aspects of life and work at el-Kurru, and to recreate a new whole: a translation, an interpretation of our foreign language. His word and sound associations can be playful, and make gentle fun of our shared understanding of the techniques of our discipline. He holds a cracked mirror up to us, immersed as we were in our verbal discourse.

Subsequent to his residency at el-Kurru, and partly inspired by his fascination in the image of the Opening of the Mouth ceremony in the tomb of Qalhata, Florian designed a live event at Camden Arts Centre in Spring 2016, in connection with his exhibition *'with, and, or, without'*. This performance, called *'breath rider'*, was concerned with themes of breath and gesture, and involved two stone masons. One mason inscribed pieces of stone with text, whilst the other invoked text in the stones (Plates 26 and 27), as the room gradually filled with smoke. Playing with the light and altering visibility are tools to bring orality and aurality into focus, as the sense of seeing becomes gradually inhibited: the sounds of the masons' voice, breath, and the culmination of each gesture which strikes the hard stone. To an extent, such actions recall the process of decoration in the tomb, and aspects of the ritual practice which took place therein, or nearby.

At any archaeological site, embodied selves are located in sensescapes whose elements form the particular context of the excavation, in its broadest sense. Yet knowledge produced via bodily ways of knowing mysteriously disappear from archaeological narratives of fieldwork. One aspect of the investigation focusses on how the haptic sense is used by archaeological professionals in their work. The question of archaeological haptics can be considered from various



Plate 26. Image from Florian Roithmayer's performance piece *Breath Rider*. Stonemason Akira Inman invokes meaning in the stone by breath and speech (Camden Arts Centre, 2016).



Plate 27. Image from Florian Roithmayer's performance piece *Breath Rider*. Stonemason Zoe Barnett carves into the stone (Camden Arts Centre, 2016).

perspectives: the haptic experience of the archaeologist as embodied individual on site (the effects of i.e. heat, light, physical work); archaeological haptics in the archaeological process and their use as a tool for knowledge production (i.e. how sensations such as feel, texture, weight help us to identify objects, contexts, features); and the haptic processes involved in the production of the archaeological record in the past (i.e. the touch based actions and techniques of humans in the past who created the remains - objects, architecture, burials - that we excavate).

Archaeologists traditionally approach ceramics as a type of enduring, stable material which emanates useful messages about its form, function, and the date of its manufacture. Yet this archaeological information is partially foregrounded in tacit apprehensions of material, texture, weight, firing and so on. Artist Melanie Jackson seeks an intimate knowledge of the materialities of the local clays (look, feel, weight, composition, firing qualities), using local minerals in her work. She wanted to challenge the notion that pottery objects are obdurate passive forms that silently communicate information (Plate 28). Jackson worked with the dynamic between the haptic qualities of the clay as raw material for generating potential forms, and the haptic qualities of excavating clay as artefact in the archaeological context. The archaeological/artistic act of working with ceramics involves a double edged revelation from the ground itself - the clay in its 'raw' form, and for the archaeologists in its 'cooked' form. She explores these states of matter as a continuity, or flow, rather than an opposition, and considers the different sensory engagement involved in both stages.

In coming seasons we aim to invite more artists to work with us at site, and we plan that the next theme for consideration is that of presence and absence. Considering the theme of the presence and absence of the archaeologist at site will necessitate an investigation of how the process of locating and dislocating oneself from site occurs; the process of immersing oneself within a team, a culture, a country. Embodied selves are located in sensescapes whose elements form the particular context of the excavation, in its broadest sense.



Plate 28. Production still image from the animated *Deeper in the Pyramid* by Melanie Jackson (2016). Using the methods of the artist and the archaeologist, *Deeper in the Pyramid* is an animated meditation on bodies, milk, prescient geometries and furious abstractions. The pyramid motif traverses ancient Kush to Tetra Pak's contemporary model for economic growth, an extraction of capital from populations situated deeper towards the base of the economic pyramid.

This immersive sense of presence locates one in a specific kind of archaeology, and as an individual archaeologist. This embedding is temporary and limited, but it is often recurrent and it is always immersive. This emplacement, the 'sensual interrelationship of body-mind-environment' (Howes 2005, 7) is central to what makes an excavation experience, and it can be contrasted with sensory experience when one is absent from site. From an archaeological perspective, information is collated from the team (such as emails, diary entries and photographs from the site, excursions, stays in Khartoum, journeys to and from site), to assemble how sensory modes of appreciating one's location and one's engagement, can become peculiar pleasures of the field. It is also a consideration of the interplay between the senses and memory when one is absent from site. As such we attempt to identify the specific sensory experiences (or moments) of work in Sudan which endure for the archaeologists.

For the artist considering presence/absence, the archaeological site is an immersive environment into and through which feeling sensing bodies move(d) in the past, present and future. Drawing upon the geography, history and cultural context of the location of the site, and the acts that have taken place there, a narrative may be developed that forces the viewer to encounter empty, abandoned and previously lived in spaces. In asking the question 'how can what is absent be made present?' one of the essential conceptual challenges that faces the archaeologists at el-Kurru (and every other archaeological site), becomes a central concern. An artist's response(s) to this question may challenge the archaeologists to consider both what is fact and what is fiction in their production of knowledge.

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