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BANGANARTI AND SELIB: SEASON 2011

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Abstract: The report summarizes work carried out during the 2011 season by the archaeological and restoration mission at Banganarti (Upper and Lower Churches, eastern tower of the fortifications, house SW1 in the southwestern part of the church enclosure) and at two sites in Selib: the church enclosure at Selib 1 and the Meroitic settlement at Selib 2. In the case of the earlier Selib church, inscriptions on the outer wall of the church have confirmed its dedication to St Menas. A baptistery tank associated with the oldest church on site and a lime-plastered rectangular tank approached by a flight of steps were also discovered. A large earthenware polylobed tray was recorded from the fill of the latest trench

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The mission in 2011 worked concurrently on two sites, completing preservation and restoration activities at Banganarti and developing excavation projects at the sites in Selib, as well as finishing some fieldwork at Banganarti. On-site activities at the latter site involved primarily documentation and conservation of murals and inscriptions in the Lower Church at Banganarti, planned transfer of inscribed plaster in the Upper Church (see appendix below) and excavations of the eastern tower as part of continued investigations of the Banganarti

curtain wall, reported separately in this volume (Drzewiecki 2014; for earlier reports, see Drzewiecki 2011; 2013), as well as exploration of House SW1 in the southwestern part of the church enclosure, continued from the previous season (for the results of work in 2010, see Żurawski 2013). Selib also saw a continuation of excavations on the site of the church enclosure, as well as extensive testing at a Meroitic settlement site nearby, codenamed Selib 2 (for earlier excavations, see Żurawski 2011; Żurawski, Stępnik *et alii* 2013).

RESEARCH AND RESTORATION AT BANGANARTI

Essential copying of inscriptions was done by the mission's epigrapher Agata Deptuła once the backfill from unit 18 in the Lower Church, the middle one of the three westernmost units, was cleared away. The plasterwork in this room was successively protected and restored as required. Restoration proceeded also with the transfer of inscribed plaster from a late extension of a divider wall separating

Chapels 1 and 2 of the Upper Church. Once the patches of plaster were moved to a new destination on the rebuilt wall in the western part of the Upper Church, the extension was dismantled, thus returning this section of the church to its original late 11th century shape (see appendix below).

New murals discovered in the wake of various conservation activities were examined from the point of view of

Team

Dates of work: 29 December 2010–3 March 2011

Director: Dr. Bogdan Żurawski (Institute of Mediterranean and Oriental Cultures Polish Academy of Sciences)

NCAM representative: Fathiya Abd er-Rahman

Archaeologists: Aneta Cedro (PhD candidate, Nicolaus Copernicus University, Toruń), Mariusz Drzewiecki (PhD candidate, Institute of Prehistory, Adam Mickiewicz University, Poznań), Aleksandra Głąb (independent), Roksana Hajduga (PhD candidate, Institute of Archaeology and Ethnology, Polish Academy of Sciences), Ewa Skowrońska (independent), Katarzyna Solarz (PhD candidate, Institute of Archaeology, University of Rzeszów)

Restorer: Tadeusz Badowski (freelance)

Archaeologist-restorer: Katarzyna Molga (freelance)

Iconologist, specialist in Christian wall paintings: Dr. Magdalena Łaptaś (Art History Institute, Cardinal Stefan Wyszyński University, Warsaw)

Epigrapher: Agata Deptuła (PhD candidate, Institute of Archaeology, University of Warsaw)

Documentalist: Katarzyna Mich, student of archaeology and theology (Adam Mickiewicz University, Poznań)

Photogrammetrists: Łukasz Banaszek, Adrian Chlebowski (both freelance)

Volunteer: Wojciech Pluta-Plutowski (photographer, restoration assistant)

Acknowledgments

The fieldwork in Banganarti and Selib is sponsored by the Polish Centre of Mediterranean Archaeology, University of Warsaw. The 2011 season was generously supported by Mr. Wojciech Pluta-Plutowski, who also volunteered in the field as restoration assistant and photographer.

The Mission operates in Sudan on the grounds of an agreement between the PCMA and the National Corporation of Antiquities and Museums of the Republic of Sudan. I would like to express my gratitude to the Directors and staff of the NCAM, especially Director General Hassan Hussein Idriss and Head of the Excavation Section Salah Mohammed Ahmed, for their generous help and assistance. I also gratefully acknowledge the unfailing support of PCMA Director Prof. Piotr Bieliński and the PCMA's experienced staff at the Warsaw headquarters. My sincere thanks to Iwona Zych for help in editing the English version of this report.

iconography and iconology by the mission's iconologist Dr. Magdalena Łaptaś. These concern paintings in Chapels II, XIII and XXI. In Chapel II, a composition of the apostles was recorded once a late pillar had been removed. This composition belongs to a scene representing the Nubian ruler under the protection of an archangel and the apostles, and comes from a sequence of scenes belonging to the so-called "royal program", located in the eastern part of the Upper Church. A consideration of painting layer stratigraphy led to the conclusion that the mural dated to the second half

of the 11th century. In Chapel III, a new mural presumably representing SS Cosmas and Damianos was studied and in Chapel XXI, on the south wall, there was a unique Nubian painting, presenting two Nubian rulers, both in horned crowns, under the protection of an archangel.

Excavations in the Eastern Tower reached the foundation foot of the earliest tower at a depth of 4.90 m below the datum point (which is on the upper surface of the stone threshold in the southern entrance to the Upper Church) and revealed a stratigraphic record for this feature. Two general phases of building activity



*Fig. 1. Banganarti on an aerial (kite) photograph taken at the end of the 2011 season
(Photo B. Żurawski)*

could be traced, showing also an intense development of domestic architecture in the area east of the Upper Church in the later phase (for details of this and the earlier season, see Drzewiecki 2014, in this volume).

[BŻ]

HOUSE SW1

A house in the southwestern part of the enclosure continued to be explored (trench supervisors E. Skowrońska, K. Solarśka). It adjoined a street running along the inner face of the defense walls and was thus one of the fronts in this street. A huge arched portal, found blocked with red brick in a later phase of its existence, originally gave access to the suite of rooms from the east and apparently formed a coherent unit constructed at roughly the same time as the house. It started to be excavated already in 2008 (Żurawski 2008: 278–281) [Fig. 2].

Exploration began with the clearing of top walls and was continued within each unit in arbitrary levels 0.50 m thick, stopping either on preserved floor levels or going down to culturally sterile layers wherever the state of preservation of the structure allowed. Walls were built mainly of unfired mud brick (average brick dimensions 32–40 cm/12–20 cm/7–10 cm). Fired bricks were used for the flooring (units 2, 3, 4, 8) and as a reinforcement of wall structure and door jambs, as well as later rebuilding. Each room was vaulted with a dome or barrel vault and plastered inside with mud mortar. The vaults themselves were made of unfired mud brick, separated sequentially with potsherds.

The original structure consisted of three rooms (1, 7, 8) and an entrance from the



Fig. 2. House SW1: plan and top view (Drawing E. Skowrońska, K. Solarśka; aerial kite photo, early February 2011, B. Żurawski)

south [Fig. 2]. Units 2 and 3 were added with an entrance from the north, sheltered additionally with a small brick L-shaped curtain wall, presumably protecting it against northern winds. Subsequently, room 4 (staircase) was added, from which a small yard was accessible through a “western” door. Parallel with the extension of the upper storey, the structure was reinforced with partition walls (thus forming rooms 5 and 6). The ground floor area including all the extensions covered approximately 78 m².

The entrance from the south led successively to units 8 → 7 → 1 or to the upper storey via narrow stairs. Passages between the successive interiors were in the form of plastered arched openings in walls. Room 8 originally consisted of two smaller vaulted interiors. Reused fired brick fragments were revealed at floor level (about 2.40 m below the preserved vault). A cooking pot with its rim even with the brick flooring was found in place underneath the floor in the north corner. A ceramic pipe ran across a section of the south wall (just underneath the vault), most probably for discharging outside water from the upper storey. In a later phase, the southern entrance “to the street” and to room 7 was walled, while room 8 was rebuilt to create one large space.

Room 7 after the extension was a chamber similar to room 8. It was a pass-through space between units 8 and 1. In the central part, a fragment of brick vault was preserved. The flooring was most probably of mud bricks, and was destroyed. During the excavation of the interior, a negligible amount of archaeological material was found, with the exception of the southwestern corner where a small hearth and cooking vessel were recorded in place.

Room 1 was located in the eastern part of the house, perpendicular to two connected rooms. Flooring, recorded 2.60 m below the preserved barrel vault, was made of mud brick laid in an alternating, checker pattern. In the west corner of the room, a square base/foundation structure was found at floor level. It was built of mud bricks and its outer face was lined with fired bricks. Additionally, in the north corner, there was an elongated rectangular platform. It was made of two courses of fired bricks. Six courses of fired bricks were built into the face of the wall between the two base structures, in the face of the wall. Their surface bore traces of vitrification caused by contact with high temperature. Traces of strong sootiness, significantly stronger than in the remaining spaces, were still visible on the plaster that survived in this area of the interior. The structure may constitute vestiges of a furnace (?) or larger hearth (?). There is also a small window (or ventilation?) opening in the wall, which is located just above the brick platform. Cultural accumulation in the room was characterized by high humus content (including fragments of charcoal, chaff), an abundance of ceramics (mainly kitchenware and storage vessels), as well as animal bones [Fig. 3]. A functional interpretation has been proposed for the area pending further research.

Units 2 and 3 were accessible via the northern entrance. They were two separate, small and rectangular rooms, with areas of about 2.50 m² and 4.80 m² respectively. An entrance led from room 2 straight to a slightly larger room 3 [Fig. 4]. The entrance door was arched, the round arch being finished with a semi-circular plaster casing (vertical elements of the jamb were



Fig. 3. House SW1: clockwise from top left, room 5, northeast wall including partition wall; room 4, door jamb on the west side; stairs in room 4; section of the fill in room 1; bricklaying course beneath the vault of room 3 (Photos E. Skowrońska, M. Drzewiecki)

made of fired bricks). After the original use of the room ceased, the doorway was walled up to the arch impost level, thus creating a small window opening of the “eyebrow” type. In the face of the wall, there was also a window measuring approximately 0.20 m by 0.50 m, preserved in its original state [see *Fig. 4*]. The opposite wall of the room represented an analogous situation, i.e., parallel to the front wall and below the vault, there was a rectangular window and an arched doorway, with semicircular arch, leading to room 3. The doorway and window opening were completely bricked up. In both areas remains of brick flooring were found at a level 2.60 m below the preserved top of the barrel vaulting (that is, roughly 152 m above sea level, measured from the datum point set up on the “threshold” of the Upper Church).

The nature of room 3 indicates that it could have been some sort of utility room serving kitchen purposes. The thickness and the nature of the organic layers (chaff, grain) and the remains of furnaces with an abundance of animal bones and pottery sherds constitutes evidence in favor. The openings were walled up. Similarly the space between the contemporary fill surface and the vault of the room was partly bricked up, thus strengthening the load-bearing walls. It was probably the effect of the ground-floor space not being used anymore. The construction of the upper storey caused a relocation to the first floor of domestic life, at least in part. The secondary use of the space could mean a redefinition of its function to serve as a kind of waste dump, as indicated by the abundant kitchen ware and tableware representing styles of heterogeneous chronology (A. Cedro, personal communication).

Rooms 5 and 6 were created by two partition walls, presumably erected to stabilize the upper storey. They appeared in a small passageway leading through a part of a later staircase to the west side exit. A staircase was located inside room 4 [see *Fig. 3*]. The steps and the flooring were made entirely of fired bricks. The staircase was divided by a pillar built of unfired mud bricks covered with plaster and whitewashed. Traces of whitewash were also visible on the walls of a niche located on the west side, below the level of the “landing” on the stairs. Three complete storage vessels and one cooking pot were left in this niche. In the western part of the staircase, remnants of a vault supported on the south and west walls, as well as on a pillar, were uncovered. In the west corner of the southern wall, a small passage had been walled up and a doorway was made in the west wall (similar to the doorways in rooms 2 and 3).

The richest pottery assemblage came from the staircase (room 4). The repertoire of shapes was extensive, the ceramics including both handmade and wheel-thrown pieces, painted, relief-decorated and stamped. Mostly storage ware (huge jars and one amphora) came from rooms 5+6 and 8. A cooking pot and a bowl were found together with domestic waste, animal bones and ashes in room 3. Dating ceramics came from rooms 1 and 2. A fragment of a plate rim inscribed in Greek (Byzantine majuscule) from room 1 could be dated on paleographic grounds to the 8th century or later. Five spheroid bowls of high execution quality from room 2 are datable to the 8th/9th century. Other finds from the same level, representing the original occupation of the ground-floor units of the house,

included a black saucer, probably imported, scratched with a monogram, found together with three loom weights made of unbaked clay; two fragmentarily preserved pilgrim bottles (one with a resinous substance on the inside walls), a sherd with a monogram and two fragments of glasses.

The archaeological evidence indicates that the house was constructed in the 7th/8th century and was in use until the 12th century, when it was abandoned. In the latest phase, only the upper floor was inhabited, the ground floor being used for disposal of domestic waste and debris. No trace of an internal toilet was

found (it may have been located near the southern curtain wall of the enclosure that runs nearby). Abundant use of red brick, lime plaster and stone corroborated initial assumptions concerning its early date. It could also suggest the higher social status of the owner(s). Moreover, it should be emphasized that there is nothing monastic about this house or any other of the neighboring dwellings explored previously by the mission in Baganarti. They are all dwelling houses typical of this kind of architecture investigated in the secular settlements scattered along the Middle Nile.

[ES, KS, BŽ]

EXCAVATIONS IN SELIB 1

Excavation on the site of the church enclosure (trench supervisor and documentalist A. Cedro) concentrated on clearing the area in and around the church uncovered in the previous season (Żurawski 2011; Żurawski *et alii* 2013)¹ and investigating the earliest phases of the complex [Fig. 4]. Altogether 12 trial pits were dug. The walls of the building were tested in extended trenches: 8 (south wall), 6 (north wall), 11 (west wall). The southern entrance to the building was explored in trench 7 and the area just inside the church entrance on the south was excavated in trial pit 12, while the southeastern corner of the main nave (including part of the oldest east wall) was explored in test pit 10. The northeastern section of the church was tested in trench 5, where the baptistery was located. Trench 1 (later joined with test pits 7 and 8) revealed the southern buttress of the latest church and

trial pit 9 was dug to investigate the area around an inverted capital incorporated into the southeaster pier of the latest church after it was decided to remove it from the wall structure. Trial pits 2, 3 and 4 (joined later to 6) were opened outside the east, south and west walls of the church, testing for other architecture outside of the church building. Last but not least, a trench was dug southwest of the church, exploring a thick scattering of lime plaster found on the surface, corresponding to a magnetic anomaly registered during the 2008 survey (see below).

Walls and a pavement of the earliest church (dubbed the 'Old Church') were discovered in a few of the trenches. The walls were of mud brick coated with fine quality lime plaster. The east wall (traced in trial pit 5) was of red brick plastered with fine lime render on the outer face. The pavement, found 1.20 m below the

¹ The disastrous rainfall of August and September 2010 fortunately caused little damage to the preserved plasterwork.

stone pavement of the latest church (in trench 9 and 12), was made of red bricks (36 cm by 18 cm) and square ceramic tiles (36 cm to the side, 7 cm thick). Trial pit 12 also revealed the original red-brick threshold of the southern entrance to the earliest church building. The original eastern jamb of this entrance was recorded in trial pit 7, dug immediately to the south of test pit 12; the western jamb was not found due to the deliberate demolition of this part of the building in antiquity, achieved by undercutting its south wall to make it collapse. A burial was discovered a meter to the south of the entrance (trial pit 7). A male in his forties (?) had been buried with the head protected by two bricks and a huge deposit of charcoal by his feet. The grave was some 0.40 m below the upper level of a mastaba encircling the late church.

A set of Greek graffiti was found scratched on the plastered west wall of the early church, at the lowest possible level (a little less than 0.50 m above the original ground level). Three of them contained a rare epithet ΤΡΙΣΜΑΚΑΡΙΕ, i.e., “thrice blessed.” In one case, it was followed by the name ΜΗΝΑ, confirming the initial supposition that the church was dedicated to St Menas (Deptūla forthcoming). The idea was further corroborated when an ostrakon with the inscription ΑΓΙΕ ΜΗΝΑ was found in the same trial pit (6), near its eastern corner.

In trial pit 11, which tested the west wall of the church, the wall of the earlier complex was revealed along with another wall parallel to it, set symmetrically with regard to the presumed western entrance. The space between both walls was paved with red brick (35 cm by 17 cm) and



*Fig. 4. Aerial (kite) photograph of the Selib 1 site taken in February 2011
(Photo B. Żurawski)*

covered with white lime plaster that still ascended onto the wall in some places. The assembly of objects from this level was dated to the Transitional/Early Christian Period. It included a large deposit of ceramics, glass and ivory objects, all firmly dated to the earliest Christian period on the Middle Nile. A highlight of this collection are thin-walled bowls with painted (figural) and geometric, metoped decoration (almost 14 complete bowls could be reconstructed from the recorded fragments). Noteworthy are also the imported amphorae and large pieces of gypsum (selenite). Unparalleled decoration in the form of a continuous frieze of fantastic creatures was found on a bowl. Other noteworthy finds included

a complete Aladdin lamp with four wick holes, fragments of a glass chalice and some (stamped) jar sealings. Aladdin-type lamps were also found in other contexts related to the Old Church (test pits 5 and 12) [Fig. 5].

Excavations in trial pit 10 in the southeastern corner of the nave of the latest church revealed the baptistery of the Old Church [Fig. 6]. It was found in excellent condition, still covered on the inside with a layer of white lime plaster. The font was approached by a set of steps on the western side. Its depth was 1.10 m, the upper diameter of the font was 0.95 m. The baptistery of the second phase of the church was located in the diakonikon, on top of the demolished southeastern corner of the earlier church.



Fig. 5. Oil lamps found in between the eastern walls of the Old Church and the middle church, beneath the second apse (Photo A. Cedro).



*Fig. 6. Top view of the baptism tank of the Old Church
(Photo A. Cedro)*

The test pits also provided data connected with the second phase of the church: a wall interlaced with the main wall (trial pit 11) and ending in a tentative staircase. Among the finds attributed to the later phase was a fragment of a stone stoup (*aspersorium*), about 0.35 m in diameter (SDA 21/2011), ceramic pipe with scratched representation of a crocodile (W SEL 1/10/2011), and a remarkably well preserved earthenware polylobed paten (S1.117/2011) in four fragments that could be recomposed

[Fig. 7], found 3 m east of the northern entrance to the latest church (in a layer of debris resulting from the destruction of the building). The paten had eight lobes and was 0.80 m in outer diameter. It was handmade of rather soft, porous clay, with a conspicuous carbon streak in the core. All the decoration of the paten, painted and impressed, was executed before the rather poor firing. Its general appearance fits the repertoire of Late/Terminal Christian handmade containers and it can be dated most probably to the 11th/12th



Fig. 7. Earthenware polylobed tray S1.117/2011
(Photo K. Molga)

century. The interior surface of the tray shows traces of intense use; the erosion of the slip is uneven: the inside of the central depression and its upper edge are more abraded than the rest of the interior. There are also irregular patches where the slip has been rubbed off inside the apsidal compartments (the four in which it has been most erased are all on one side of the tray). The vertical sections, both on their interior and exterior faces, are well preserved with only occasional voids. The underside was left unworked. Intense use seen by the paten is probably responsible for the total abrasion of the four vertical elements that once stood at equal intervals around the central depression. The paten could have plausibly been used for communion by intinction.

Trial pits outside the church walls revealed sections of a mud-brick wall to the west and east of the church building. The wall on the eastern side paralleled the church wall; that on the west did not. Both were of mud brick and were faced with red brick on the sides facing away from the church. The wall on the east was 0.70 m thick and turned corners at both ends, suggesting that it was a kind of enclosure wall, such as known, for example, from the early Syrian churches. A broken relief slab with a representation of wings, very finely executed and assigned a Kushite date, added to the evidence for the nearby presence of a Kushite temple (earlier, a Meroitic column drum had been found used in the southeastern corner of the Selib enclosure).

SUBTERRANEAN TANK

Geophysical testing in 2008 had revealed an anomaly indicative of a masonry structure lying directly beneath the sand

in a location 40 m from the southwestern corner of the enclosure wall, southwest of the church. A dense scattering of fragmented lime plaster was observed on the surface and walls of red brick appeared just below the surface. The structure turned out to be a subterranean tank, measuring internally 3 m by 3 m, approached from the west by a flight of eight steps (2.10 m wide) [Fig. 8]. The external dimensions were 4 m by 6 m. The interior was covered with a thick render of lime plaster. A curved wall made of half bricks outside the steps appeared to have sheltered the entrance to the basin from wind and sand. Objects from the fill included three fragments of window grille (W SEL 1/45-47/2011) differing considerably from the grilles found closer to the church. They may have originally belonged to the building that once stood above the basin.

The complex evidently had some function associated with the use of



Fig. 8. Subterranean tank: left, bird's eye view of the steps leading to the basin during exploration (Photo B. Żurawski)

water. It could have served the purpose of ritual bathing by pilgrims coming to the sanctuary. It could have also been an Epiphany tank, for example.

SAQIYAH COMPLEX

The windblown sand fill of the structure was removed down to a depth of 7.00–7.50 m beneath the surviving top of the red-brick facing wall. The sand contained fragments of red brick, broken *qawadis* and some fragments of window grilles of a pattern similar to those found near the church. The internal diameter of the well was 3.50 m. It was built of brick averaging $34 \times 19 \times 8$ cm in size, set in a regular pattern of stretchers and headers. At a depth of 2.70 m the regular brick pattern was interrupted by a roll of stretchers set on edge that was followed, looking down, by a zigzag pattern made of stretchers laid on edge [Fig. 9]. Bordering the zigzag band was another course of stretchers on edge. Accentuating the differentiated brick pattern was brick quality, the bricks used for the decorative zigzag being overfired or even vitrified, therefore having a definitely different coloration and appearance.

The upper parts of the well shaft were reconstructed by a local bricklayer under the supervision of the project director.

This was done partly for the purpose of preservation of a historical monument and partly to keep the sand from blowing in again and to reduce the danger of animals and people falling into the deep hole. The reconstruction was done with the use of local materials (red brick) and mud mortar made of crushed mud brick taken from the debris heaps.



Fig. 9. Interior of the well (*matara*) at Selib with zigzag pattern of bricks in the lower part (Photo A. Cedro)

MEROITIC SETTLEMENT AT SELIB 2

Two rooms were cleared in Building 1 at the site of Selib 2 (trench supervisor R. Hajduga; for previous work, see Żurawski 2013: ***–***) [Fig. 10]. Fieldwork was focused on the central part of the storeroom and the structures in its immediate vicinity, especially a regular complex of two rows of rooms made

entirely of mud brick, found to the east of the storeroom. An extensive collection of storage jars from the fill (e.g., 14 big jars in unit 15) corroborated their character as auxiliary storerooms, further confirmed by jar sealings occurring in quantity. Two vessels found in this context (Units 18 and 22) had an inside “handle”

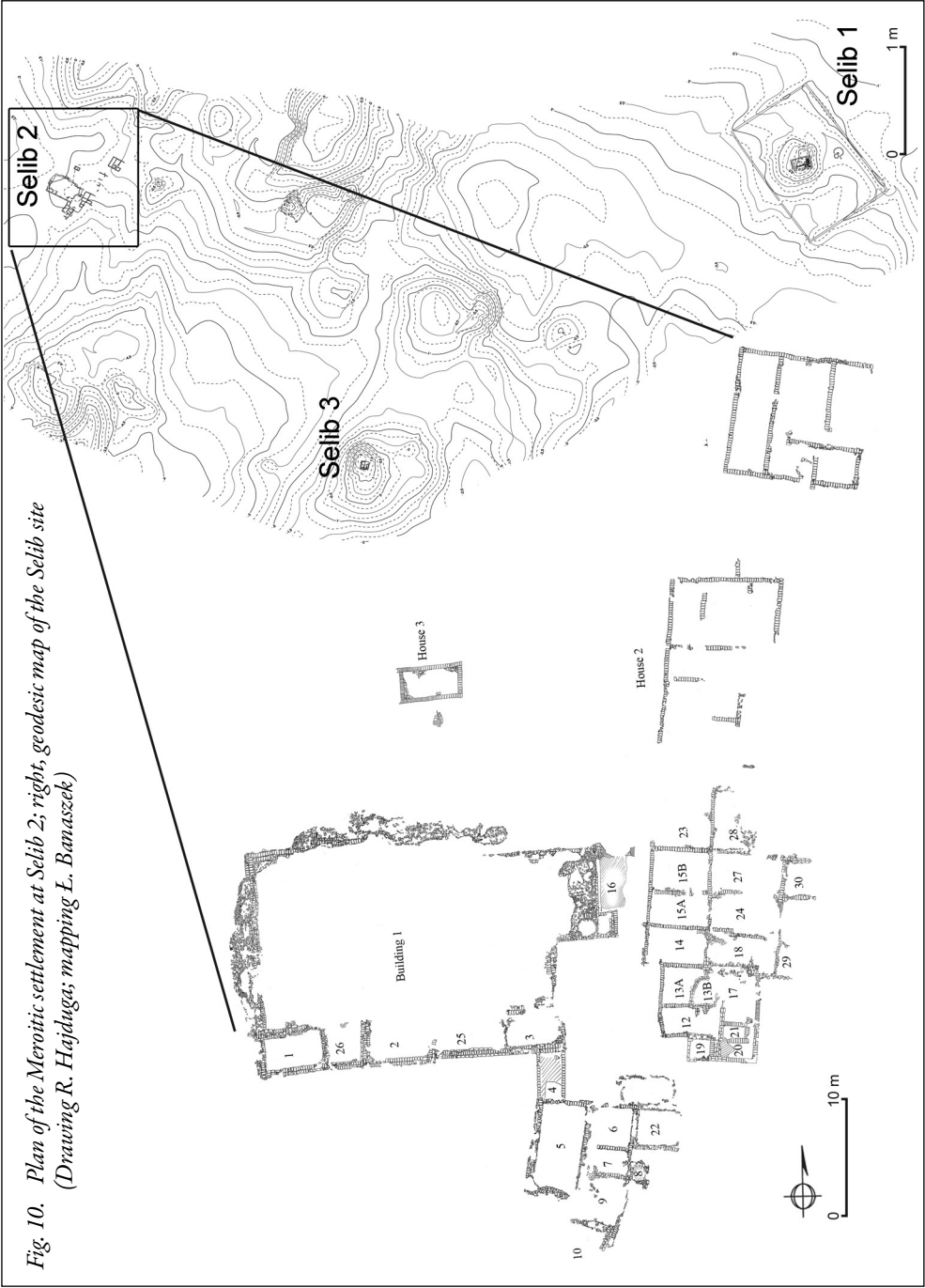


Fig. 10. Plan of the Meroitic settlement at Selib 2; right, geodesic map of the Selib site (Drawing R. Hajduga, mapping L. Banaszek)

[Fig. 11]; these vessels have been interpreted as spinning bowls used for conditioning (dipping and stretching) of thread(?). An iron arrowhead was found in context with one of these spinning vessels. The record included a faience scarab. Archaeological material below the floors of these units suggests at least one earlier phase of occupation preceding the Meroitic structures.

Inside the storeroom excavations uncovered three units along the south wall, bringing to light altogether about 200 decorated jar sealings (for a preservation procedure developed for these artifacts, see appendix below, page 342). Six different iconographic types were distinguished: striding man, pharaoh [Fig. 12], lion and cobra, griffin (?), eagle (?) and crocodile. Most of the sealings were found in the northwestern corner of the storeroom, some were used in the mud mortar in the north wall. This suggests that the storeroom, in its currently surviving form, was rebuilt with the use

of debris salvaged from the site. At the depth of some 40 cm beneath the modern surface, a layer of ashes and burnt earth was found together with charred wood and potsherds.

An open courtyard was uncovered at the core of the storeroom, the fill consisting of blown-in sand with no cultural material. There were no apparent divider walls and the goods appear to have been kept along the outer perimeter walls.

The ceramic assemblage was characterized by a high share of storage vessels, egg-shell wares and jar sealings, not to mention some imports indicative, when considered together, of an affluent local society living of the proceeds from trade, crafts and agriculture.

The religious and probably also administrative centre of the Meroitic settlement at Selib 2, presumably occupying over 50 hectares, should be searched for under the conspicuous kom of Selib 3, where worked blocks have been reported within living memory.



Fig. 11. Spinning bowl (SEL 63/2011)
(Photo K. Molga)



Fig. 12. Jar sealing (W.SEL2. 35/2011) with
impressed image of a striding pharaoh
(Photo B. Żurawski)

APPENDIX

CONSERVATION AND RESTORATION WORK AT BANGANARTI AND SELIB IN 2011

CONSERVATION AT BANGANARTI

The main conservation objectives of the work carried out at the Banganarti churches in 2011 were:

- transfers of inscribed plaster from the eastern part of the Raphaelion II (Upper Church) to a new location in the western part of the church;
- protection and restoration of the painting layer in both Raphaelions;
- exposure of a painting layer covered by later (inscribed) plaster (in the so-called anagyroi vestibule in Unit 12);
- treatment of plasters and painting layers with insecticides;
- consolidation of the painting layer and plaster surface;
- cleaning of inscribed and painted plasters;
- fixing peeling plaster to the background;
- filling voids and cracks with plastic filler made on the base of lime, mud and sand;
- protection (hardening) of impressed mud jar sealings;
- protection of the epigraphic evidence on potsherds.

To transfer the inscribed plaster, fragments already detached from the walls in 2010 and left for fixing in new places were first cleaned with a solution of ethanol in water (in varying proportions from 1:5 to 1:2). Peeled plaster was fixed with a (8%) water dispersion of acrylic resin (PRIMAL E-330) with a 1% addition of VINAVIL. All the transfers in 2011 originated from the upper church. Three patches (measuring 126 x 70 cm, 48 x 97 cm and 21 x 43 cm)

were cut off from the face of a late pier abutment in the southeastern part of the church and four others (measuring 53 x 142 cm, 66 x 137 cm, 19 x 60 cm and 18 x 24 cm respectively) were detached from the late dividing wall located in the same section. Both the pier and the divider were dismantled in the process.

The handling sequence applied was:

- the plaster scheduled for detachment was consolidated (with injections) with a water dispersion of acrylic resin (PRIMAL E-330);
- the precise outline of the fragment to be cut was marked on the plaster surface with a saw or any convenient sharp tool;
- the transfer surface was treated with a 4% solution of PARALOID B-72 in toluene, applied by brush;
- two layers of Japanese tissue were fixed (by means of 7% gluten glue) onto the transfer surface, together with two layers of a nylon textile (larger than the transfer); the margins of this nylon textile were subsequently nailed to a wooden frame that was secured to the roof structure (by means of ropes);
- the wall was carefully dismantled, brick by brick, until the plaster stuck to the nylon textile hung freely on the ropes;
- the reverse of the transfer was thinned (by scraping) to a thickness not exceeding 1.5 cm and smoothed (filling voids and cracks with a paste composed of lime, mud and sand in proportions 1:1:3, adding some gum Arabic and a water dispersion of PRIMAL AC-33;
- an iron mesh was fixed (with gypsum)

- to the smoothed reverse of the transfer;
- sections of wall for attachment of the transfers were soaked with a 4% solution of PARALOID B-82 in ethanol;
- the transfer was glued to the wall by application of the paste mentioned above and pressed against the wall with strained palm ribs and other convenient supports; the wooden frame was removed a day later, together with the nylon textiles and Japanese tissues (using a water solution of ethanol);
- after the iron mesh bordering the plaster fragment was fixed to the wall by means of gypsum putty, the edges were protected with a molded band made of lime, mud and sand.

In the vestibule of the northern staircase of the Raphaelion (where the *anargyroi* Cosmas and Damianos were

painted), the painting hidden beneath the inscribed plaster on the south wall was exposed by removing plaster fragments between the texts [Fig. 13]. In sections where the adhesion of the painting layer to the background was weak, glue injections were applied. Then the whole surface was strengthened with a 3% solution of gum Arabic mixed with Lichenicide. In a similar way other murals (that were attacked by insects) were protected.

In the western part of the Upper Church, weakened plaster was strengthened with injections of 8% water dispersion of acrylic resin PARALOID E-330; the voids and cracks were filled with a paste made of lime, mud and sand.

Conservation was undertaken also of murals and inscriptions in Unit 18 of

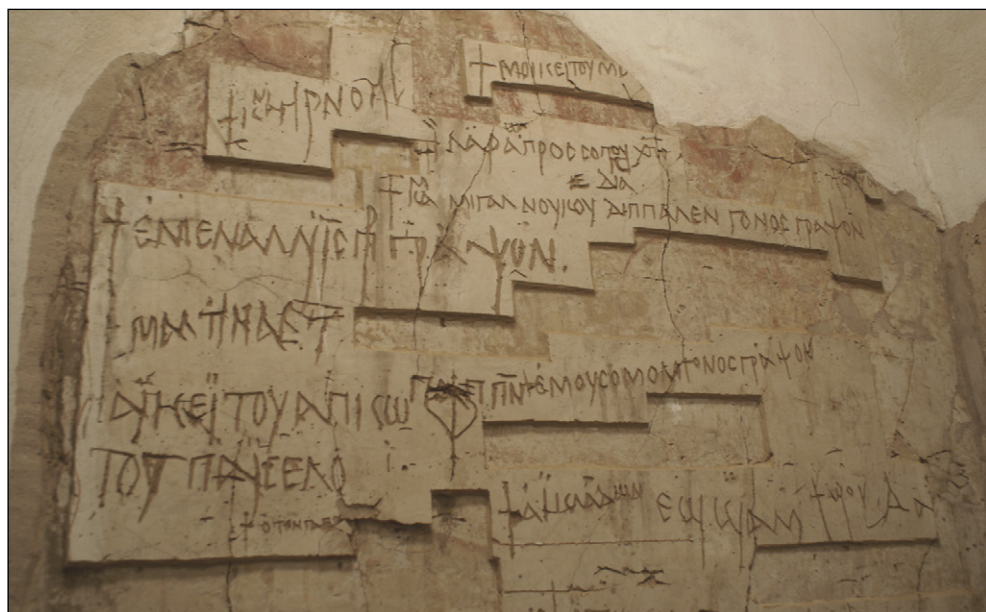


Fig. 13. Mural painted on the first layer of plaster in Banganarti, exposed by removing patches of plaster from the second layer between the inscriptions on the south wall of Room 13
(Photo B. Żurawski)

the Lower Church, which had remained covered with sand backfill for a couple of years. The portrait of St Merkurios killing Julian the Apostate on the north wall was found to be in unsatisfactory condition. There were multiple voids, cracks and a general deficiency of the binder. After initial brushing, the painting surface (together with accompanying inscriptions) was washed with a 5% solution of ethanol in water. Then the paint layer and the plaster beneath the mural was injected with a 10% dilution of PRIMAL E-330 in water. This process was repeated five times. Finally, after the resin had dried, the whole surface of the painting was protected with a 3% solution of acrylic resin (PARALOID B-72) in toluene. On the west wall, the main cause of damage were the termites (*arda*). The mural with a representation of Christ Pantocrator was first brushed of dust and impurities, then cleaned with cotton pads soaked in a 5%–7% dilution of ethanol in water. The process was repeated five times. After the wash had evaporated, the mural was strengthened with injections of a 10 % dilution of PRIMAL E-330 in water. After the painting had dried completely, it was protected with a 4% dilution of acrylic resin (PARALOID B72) in toluene. The north wall was treated in similar manner. Since the huge inscription (Byzantine canon) showed a tendency to peel due to the internal tension between the protected underpaint (on which the inscription was written) and the unprotected plaster, a wet dressing of Japanese tissue soaked in a 1% dilution of methylcellulose was applied to it. Fragments that had started to peel were fixed to the wall with a 10% solution of PRIMAL E-330 (mixed in proportions 1:1 with VINAVIL). Finally,

murals and inscriptions were strengthened with a 10% dilution of PRIMAL E-330 in water and the whole painting layer cleaned with a 5% dilution of ethanol in water, after which it was protected with a 3% solution of acrylic resin (PARALOID B72) in toluene. At the end of the process, the painted surfaces on all three walls of the unit were sprayed with a water dispersion of gum Arabic.

CONSERVATION AT SELIB

The new site of Selib 1 also required attention on the part of the mission's restorers in the 2011 season.

Some 12.80 m of inscribed lime plaster exposed in trial pit 6 (along the north wall of the church) had to be preserved in order to protect the important inscription that had been scratched on it. The plaster was first injected with the 10% water dilution of acrylic resin (MOWILITH). After 24 hours of drying, the edges of the plaster were protected with bands of plaster made of lime and sand (in proportions 1:3) with some (3%) addition of acrylic resin. The plastering from the Old Church (for instance, in trial pit 5) was protected in similar fashion. Injections of a 10% solution of MOWILITH in water were combined with protecting the edges with a composition of lime and sand with some acrylic resin added.

The baptistery tank from the Old Church discovered in trial pit 10 was well preserved, but still demonstrated some voids and cracking of the lime-plastered surface. The following treatment was applied: weakened parts like the cracked and crushed fragments of the upper edge were injected with a 10% solution of acrylic resin (MOWILITH) in water, the

voids and cracks inside the font were filled with a paste composed of lime and sand (1:3) with a 3% addition of acrylic resin. The floor of the baptistery was repaired with a composition of lime mixed with mud and sand (1: 1: 2). The upper tank (belonging to the second-phase church) was treated in similar fashion. Since its exposure to destructive factors had been greater than that of the lower one, its upper part was reconstructed with the use of red brick and lime mortar and covered with three layers of lime render.

A mortar made with rough sand was applied first, covered subsequently with a layer composed of finer-grained sand. Both tanks were backfilled with sand.

Finally, a procedure was tested and subsequently applied to the collection of stamped jar sealings from the storeroom at Selib 2. Fifty of the decorated sealings were washed by submersion (twice) in a water dispersion of PRIMAL E-330, which hardened the surface of the stamps making it resistant to *arda* termites and weathering.

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