Temples and Town of Elephantine

Final Report on the 52nd Season 2023/2024

by the German Archaeological Institute Cairo

in Cooperation with the

Swiss Institute for Architectural and Archaeological Research in Cairo

Report on the Excavations at Elephantine

by the German Archaeological Institute and the Swiss Institute Cairo

52nd Season 2023/2024*

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Abstract

The 52nd season October 2023 till April 2024 of the German-Swiss research project in Elephantine included new excavations in the Eastern Town, the continuation heritage conservation and site management measures. The reconstruction of the Roman Osiris-Nesmeti temple could be finalised. Study of objects focused on finds from Middle Kingdom Houses in the North-West Town and from the New Kingdom House H55, as well as finds from excavations in the wider late Khnum Temple area. Archaeobotanical studies focused on soil samples from previous excavations and mud-brick analyses.

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Contents

1. Introduction

The work at the archaeological site of Elephantine (fig. 1) carried out by the German Archaeological Institute Cairo (DAI) in cooperation with the Swiss Institute for Architectural and Archaeological Research on Ancient Egypt in Cairo (SIK) was continued with the 52nd season from 4th of October until 4th of April 2024.[2]

Fig. 1: Plan of the archaeological site of Elephantine (P. Kopp, O. Kassab, and M. Sählhof, © DAI)

On site excavations in the Eastern Town of Elephantine started within the Early Dynastic fortification (see section 2.1). The interior of this structure area has not yet been archaeologically investigated on a large scale due to the use of the area as a garden by the

[2] Reports from previous seasons are available open access in the download section of the official Elephantine project homepage: https://www.dainst.org/projekt/-/project-display/25953 (last accessed 12/12/2024).

Aswan Museum Elephantine. Planned construction work by the Ministry of Antiquities and Tourism has now made rescue excavations necessary.

Heritage Conservation and site-management measures were continued with the maintenance and consolidation of the reconstructed Sanctuary of Heqaib (see section 2.3.1) and conservation of the 18th dynasty Satet Temple reconstruction (see section 2.3.2) to repair damages to both of these buildings caused by the heavy rainfall in November 2021. Consolidation of mud-brick buildings were continued in the Western Town (see section 2.3.3), the Khnum Temple area and House 55 (see section 2.3.4). The reconstruction of the Roman Temple of Osiris-Nesmeti on the southern tip of the island could be completed by the SIK. The visitor's infrastructure and circulations were improved, and the development of new information panels continued (see section 2.3).

Study of objects focused on finds from pervious excavations, namely Nubian pottery, small finds and lithics from House 55 (see sections 3.2, 3.3 and 3.4), wooden objects from the workshop H210 (see section 3.5), and Late Period sealings from excavations south of the Khnum Temple (see section 3.6).

Reinder Neef's archaeobotanical studies were continued by Ferran Antolin and Jessica Izak from the DAI Natural Science Unit, Berlin (see sections 3.7 and 3.8).

The Realities of Life Project continued the study of objects from excavations in the North-Western Town with an emphasis on stone tools (see section 3.9.2), cordage, matting, and basketry (see section 3.9.3), textiles (see section 3.9.4), and animal remains (see section 3.9.5). In addition to on-site pXRF metallurgical analyses, copper and bronze samples could be examined with scanning electron microscopy (SEM) and energy dispersive spectroscopy (EDS) in the laboratories of the IFAO and the Egyptian Desert Research Centre with the permit of the Ministry of Antiquities and Tourism (see section 3.9.1).

(M. Sähl hof)

Organisation of Store Rooms and Recording of Finds

The reorganisation of excavation store rooms at Elephantine and inventarisation of finds was continued during the 52nd season. Following the work program of the previous years, the main focus was directed to the reduction of space used by pottery sherds in the store room below the reconstruction of the 18th Dynasty Temple of Satet (referred as Satet-Magazine hereafter) through systematic repacking into large bags for long-term storing. More than 100 large bags were repacked and inventoried during the period of reporting. Additionally, a total number of 120 large bags were relocated to storage spaces inside the southern town wall reconstruction to make space for finds from the new excavations in the Eastern Town. Finally, the inventory and short description of approximately 3000 stone objects (mainly tools) from previous excavations stored in the Satet-Magazine was completed.

From the ongoing excavations in the Eastern Town (see section 2.1), finds were inventoried and are temporarily stored in find magazines of the site museum (referred as Annex-Magazines hereafter) as follows: in Annex-Magazine no. 1 soil samples, jar stoppers, animal bones; in Annex-Magazine no. 3 seal impressions, stone tools, relief fragments, jewellery, reused pottery, copper. These finds remain there for upcoming detailed studying, while

pottery is stored in wooden boxes in Satet-Magazine. Additionally, ca. 200 stone objects (relief fragments, temple decorations, stone tools and architectural elements, figs. 2 and 3) from the same excavation area have been recorded and organised in the lapidaries for further studies.

Fig. 2: Decorated part of capital in form of a lotus flower (photo: M.-K. Schröder, © DAI)

Fig. 3: Relief fragment with hieroglyphic inscription (photo: M.-K. Schröder, © DAI)

Transport of samples for studies in laboratories in Cairo took place in spring 2024. Samples included are plaster and stucco, textiles, as well as insects and soil samples. The transport was jointly organized by Dr Dalia Meligy and Dr Ashraf Nageh from the Center for Research and Conservation at the MoTA and the Elephantine mission. The samples were transported from Elephantine to Cairo by Dr Khaled Omar Abdelnabi Mohamed, to whom we would like to express our gratitude.

(M.-K. Schröder)

2. Fieldwork

2.1 Excavations in the Eastern Town

As part of a rescue excavation, investigations were resumed in the eastern part of the ancient town of Elephantine in October 2023 (fig. 4). This area is of particular interest because the oldest known settlement remains were found not far from here, in the area in front of the temple of the local deity Satet. The area under investigation was probably part of the settlement core from which the Early Dynastic Period and Old Kingdom settlements developed. The current work will contribute to a better understanding of the early urban development of the settlement of Elephantine during the formation of the state in Late Prehistory (late 4th millennium BC) and its further genesis up to the early Old Kingdom (c. 2300 BC). New insights are also expected into the fortifications of the city on the border with Nubia and the relationship between the Egyptian and Nubian populations.

Fig. 4: Excavation area in the former museum's garden with localisation of trenches 1-4 (plan: P. Kopp, © DAI)

Another important aspect of the excavations in the former garden of the Aswan Museum Elephantine are the later cult installations between the temple of Satet and the associated Middle Kingdom nilometer on the east bank of the island. In the Greco-Roman period, a large cult terrace was built here along an axis between the temple in the west and the nilometer in the east. The excavations will therefore also provide new insights into the cult topography in the context of the provincial temple of the goddess Satet.

The adjacent areas to the south and west had already been investigated by M. Ziermann between 1984 and 1998.[3] The stratigraphy was preserved up to a height of five metres and covered a period from the 1st Dynasty to the late 4th/early 5th Dynasty. The older, underlying layers were not part of the investigation. The stratigraphy of the eastern town was divided by M. Ziermann into ten building layers and labelled with Roman numerals (tab. 1, building layers I-X). The building layers were dated by the seals and pottery found in them.

M. Ziermann concentrated his work on the fortifications of the town. In addition to several phases of the town wall, he studied the south-eastern flank of the oldest fortified complex of the Early Dynastic Period. This was an area of about 50 x 50 metres, surrounded by strong walls, which extended to the north-west as far as the Old Kingdom temple of the deity Satet. M. Ziermann assumes an orthogonal structure with semi-circular towers on its outer sides. On

[3] M. Ziermann, 'Nordost-, Ost- und Südoststadt: Stadtentwicklung in der Frühzeit und im Alten Reich', in: Kaiser, *et al*., *MDAIK* 44 (1988), 144-152; Ziermann, *Elephantine* XVI, *AV* 87 (Mainz, 1993); M. Ziermann, 'Untersuchungen im Bereich der Südflanke der frühdynastischen Festung', in: Kaiser, *et al*., *MDAIK* 53 (1997), 127-138; M. Ziermann, 'Städtische Bebauung des frühen Alten Reiches in der Oststadt', in: Kaiser, *et al*., *MDAIK* 55 (1999), 71-81.

the south side there was a gate house whose possible counterpart on the north side could not be proved, since the area is inaccessible due to the presence of the Island Museum.

Period Ziermann 2003	Phase of the fortification Ziermann 2003	Building layer Eastern Town Ziermann 2003	Local stratum of the excavation Kopp 2023/24	Dating of the pottery (Elephantine pottery stage) Kopp 2023/24	Historical dating Raue 2020
A	I.1.1	I			
	I.1.2.-I.2.				
	II	II			
B	III	III(1,2)			
	IV	IV(1,2)			
C (1)	V	IV(3)	H		
C (2)	VI				
		V	G1-2	B7	later 2nd Dynasty
		VI (1)	F1	B7	
D (1)		VI(2)	F2	B7	
		VII(1,2)	E1	B8	late 2nd (to early
D (2)		VIII(1.1)	E2	C1	1st half of 3rd
		VIII(1.2)			
		VIII(2)			
		IX			

Table 1: Chronology of the Eastern town after M. Ziermann, *Elephantine* XXVIII: *Die Baustrukturen der älteren Stadt (Frühzeit und Altes Reich). Grabungen in der Nordoststadt (11.-16. Kampagne) 1982-1986, AV* 108 (Mainz, 2003), 14, tab. 1). For the definition of the Elephantine pottery stages and their dating see D. Raue, *Zu den Keramikfunden der frühdynastischen Zeit und des Alten Reichs*, in: P. Kopp, *Elephantine* XXIV: *Funde und Befunde aus der Umgebung des Satettempels. Grabungen von 2006-2009, AV* 104 (Wiesbaden, 2018), 186-198); D. Raue, *Keramik der 1.-6. Dynastie auf Elephantine*, *MAPDAIK* 1 (Kairo, 2020), 4-12.

The area within the fortified enclosure was also not subjected to excavation in the south, as it lay below the museum garden and therefore not accessible at that time. However, G. Dreyer and M. Ziermann had previously uncovered a section in the north-west of the complex in front of the temple of Satet.[4] As a result of the new excavations conducted since this campaign, it is now possible to make up for this and thus also include the interior of this complex on the opposite side in the investigations. During the excavations from October 2023 to March 2024, four building layers were uncovered, the lowest of which was located in the fortified enclosure (local stratum G).

From the centre of the complex, winding corridors lead to the enclosure wall (fig. 5). On either side are houses with small rooms and courtyards (houses 185 and 186). The walls are approximately parallel to the enclosure wall. Fireplaces and rectangular, small brick-framed storage devices have been found here. The houses extend right up to the enclosure wall, leaving no room for a passageway inside this wall. The buildings here do not differ from those

[4] M. Ziermann, 'Siedlungsstrukturen innerhalb der frühzeitlichen Festung', in: Kaiser, *et al*., *MDAIK* 49 (1993), 136-141; M. Ziermann, 'Älteste Baustrukturen im Inneren der frühzeitlichen Festung (STO)', in: W. Kaiser, *et al*., *MDAIK* 51 (1995), 103-109.

in the north-west corner of the fortress. It is a small-scale urban development, as can also be found outside the complex.

Fig. 5: Eastern flank of the fortified complex to the right, with inner buildings H185 and H186, trench 1, local stratum G1 (photo: P. Kopp, © DAI)

In the late 2nd Dynasty, the fortified complex was abandoned and subsequently built over. On the eastern side, the town wall was extended from south to north and thus the area incorporated into the settlement. Behind the wall, large courtyards were built, similar to those in the area to the south, between the partly still protruding ruins of the fortress.[5]

At the end of the 2nd Dynasty/beginning of the 3rd Dynasty the area was once again rebuilt (house 183, figs. 6 and 8).[6] In contrast to the often-non-parallel walls in the underlying building layers, the walls are now laid out orthogonally and have pilasters at the doorways. Additional pilasters can divide larger rooms into different zones.

In four rooms (fig. 8, R01-R02 and R05-R06), a colour scheme was identified on the walls (fig. 7).[7] The colour was applied to the regular clay plaster in several zones. This consisted of a grey base zone of 32-34 cm[8] above which the walls were whitewashed with a lime slurry.[9] The grey

[5] Contemporary to Ziermann's building layer VI. Ziermann, *Elephantine* XVI, 122-124 and fig. 53.

[6] Contemporary to Ziermann's building layer VII. Ziermann, *MDAIK* 55 (1999), 74-77.

[7] In trench 1, the walls were preserved to a lesser height, which made it difficult to discern a painting. This is particularly the case given that the wall surfaces are normally heavily worn in the lower centimetres.

[8] Above the actual floor in spring 2024.

[9] Tested with HCl.

base did not contain any pigments but was made of a fine clay slurry. Because this didn't contain any yellowish sand, its colour is less brownish than the colour of the regular plaster. A horizontal red band of approximately 4 cm was applied at a height of approximately 15 cm above the grey base. The pigment used in this instance was red ochre, a material that was available in the vicinity of Elephantine and that has been is regularly found in the excavations.[10]

Fig. 6: Official building of the late 2nd/early 3rd Dynasty H183 in trench 4, local stratum E1 (photo: P. Kopp, © DAI)

In the building excavated by Ziermann in Area A to the south-west, this painting scheme was also found in Room III (fig. 8). [11] This type of painting was also found in Buto. In a 1st Dynasty building interpreted as a palace, a yellowish plaster with a red stripe was observed above a dark base zone.[12] In Giza, horizontal bands of black, white and red colour were observed on the walls of the south-eastern building of the pyramid city of Khentkaus.[13] In Dahshur, a colour scheme in three different colours was also found. In the Old Kingdom settlement north of the valley temple of the Bent Pyramid, a house dating to the early 4th Dynasty had white-painted walls.[14] Its base zone was painted black. A red stripe was not observed above it, but fragments of plaster indicate that here the ceiling was painted red.

[10] Kopp, *Elephantine* XXIV, 75; Degryse, *et al.*, *Quarry scapes*, WP4, No. 5 (2007), 143-145.

[11] Ziermann, *MDAIK* 55 (1999), 76.

[12] von der Way, *Buto* I, 148-149.

[13] Hassan, *Excavations at Giza* IV, 41.

[14] Rosenow, *eDAI-F* 2019-2, 29 and fig. 2.

Fig. 7: Colour scheme on the southeastern wall of R02 in house 183 (photo: P. Kopp, © DAI)

The aforementioned buildings in Buto, Dahshur and Giza also exhibit a comparable structural configuration, comprising narrow, straight corridors that open up to larger rooms, which may be divided by pilasters.[15] An area separated by pilasters is evident, for example, in the south of Room 05. Such an area can also be identified in the building in Area A (fig. 8). M. Ziermann interprets it as a seating niche for representative purposes.[16]

House 183 and the building to the south in Area A differ significantly in their representative design from the contemporaneous residential and farm buildings on Elephantine.[17] On the other hand, there are parallels in the architecture and decoration with buildings in the vicinity of the residence and in Buto, where it is a palace of the Early Dynastic Period.[18] No further indications of the type of utilisation for house 183 could be gained from the finds. In addition to an ovoid ceramic vessel set into the floor in a corner of a wall, no other finds were discovered *in situ*. As with the examples of other sites previously mentioned, there are few distinct traces of use or installations compared to simpler residential and farm buildings.[19] It can therefore be assumed that house 183 was a kind of official building with representative rooms in its western part. The entrance to the building was probably to the north. The excavated group of rooms could then have been accessed via corridor R01, which led

[15] The similarity in the ground plan can be observed in Buto particularly in sections E1-2 and E5-6.

[16] Ziermann, *Elephantine* XXVIII, 90 and fig. 34.

[17] E.g. Ziermann, *Elephantine* XXVIII, 80-112.

[18] U. Hartung, 'Frühdynastische Bebauung nördlich von Sechmawy (Grabungsflächen E0-E17) ', in: Hartung, *et al*., *MDAIK* 68 (2012), 94.

[19] Ziermann, *Elephantine* XXVIII, 90.

westwards to the representative area around room R02, which may also have contained living rooms, and eastwards to a more economically used area around courtyard R08.

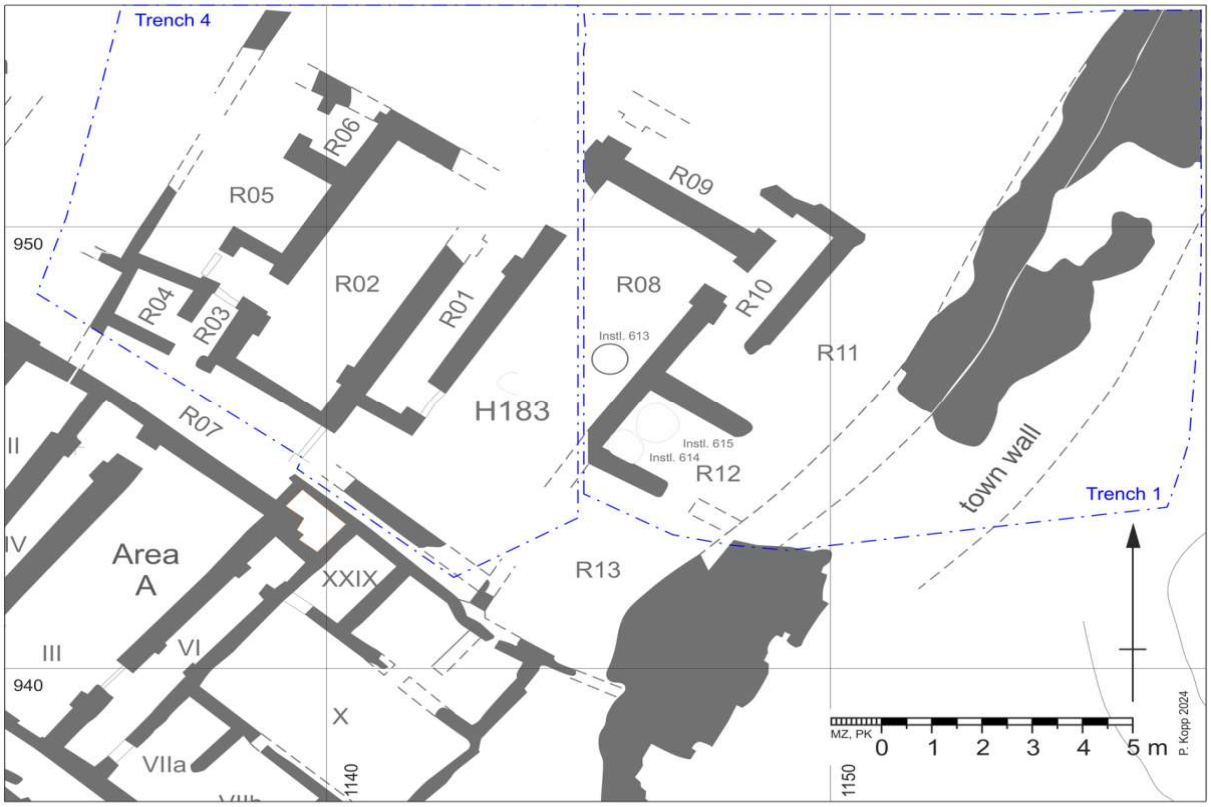

Fig. 8: Official building in the early 3rd Dynasty (H183 in trenches 1 and 4, local stratum E2; plan: P. Kopp, © DAI)

In the early 3rd Dynasty a workshop for stone vessels was established here and in the adjacent buildings to the south (fig. 8).[20] In addition to several stone vessel drills, a pit with emery in a floor of room 08 is evidence of this. A large vat set in the ground and several larger pits lined with clay also date from this period, which now certainly indicate that the eastern rooms were used for economic purposes (instl. 613-615).

All the building layers excavated so far in the area of the eastern town have been disturbed by deep pits. These pits, up to three metres deep, were created by the activities of the Sebbakhin, who dug these settlement layers to extract fertiliser. These pits were filled with material with a high ceramic content. This pottery dates almost exclusively from the Roman period to late antique period, but also contained a small proportion of sherds from the 2nd to 5th dynasties and a few glazed sherds of the Islamic period. A number of relief fragments and other building components from temples of the New Kingdom to the Greco-Roman period were also found here like a block with a cartouche of Thutmosis III from a pillar of the temple of Satet (fig. 9) and another one with a cartouche of Nectanebo II (fig. 10).

[20] Ziermann's building layer VIII. Ziermann, *MDAIK* 55, 71-81.

Fig. 9: Fragment with the cartouche of Thutmosis III, find no. 52300-9 (photo: P. Kopp, © DAI)

Fig. 10: Block with inscription of Nectanebo II, find no. 52302A_d_1 (photo: P. Kopp, © DAI)

Other finds associated with the temples are the base of a granodiorite naos[21] and a model hedgehog boat made of faience. Boat models with a hedgehog's head as a stem have been found in Egypt almost exclusively in the Old Kingdom temple of Satet at Elephantine, where they were used as votive offerings.[22] The small finds included also a few glass fragments, fragments of terracotta figurines of horses and women, and stone tools. Some of these stone tools can be attributed to the stone vessel workshop that was located in this area in the 3rd/4th dynasties.

(P. Kopp)

2.2. Finds from the Eastern Town

2.2.1 The Base of a Naos with a Demotic Graffito

The incomplete granodiorite rectangular piece (find no. 52302A/d-2, fig. 11) with a preserved maximum height of 16.8 cm and a maximum length of 72.2 cm, but a full width of 69 cm is undoubtedly a part of a naos. Its base measures 14.3 cm in height. Nothing has survived from the upper part to determine its type on the basis of the decoration and architectural features, including the roof. The walls were once completely hacked out, probably for reuse. However, the negative of the walls has preserved the thickness of the wall (5.3-6 cm) and a projection

[21] Find no. 52302A-d-2.

[22] Find no. 52301A-b-2. Dreyer, *Elephantine* VIII, 76-79; Kopp, *Elephantine* IX, 99-100.

of unclear character, only attested on the rear wall, where the wall is preserved in two places higher than on the side walls. The walls of the base were probably straight.

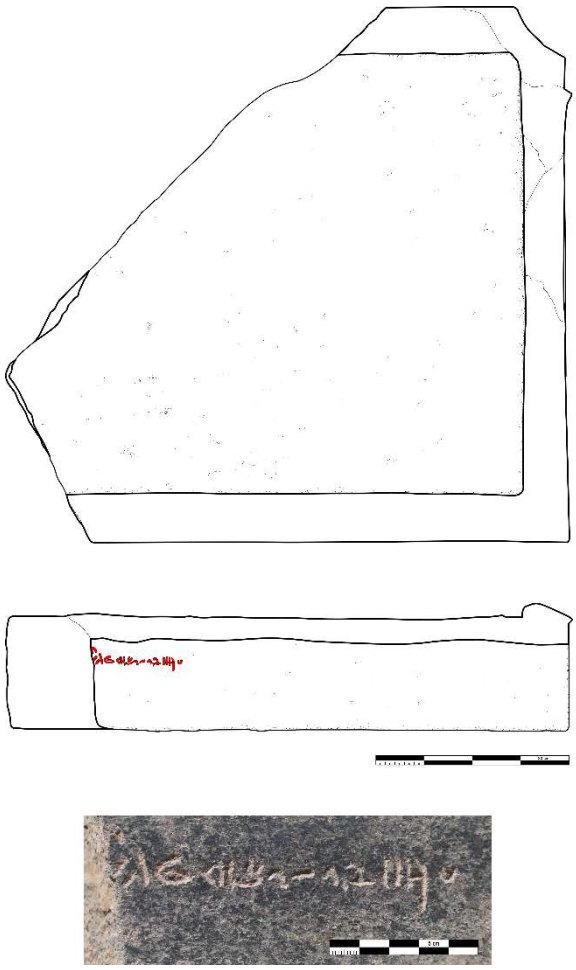

Fig. 11: Fragment of the granodiorite naos find no. 52302A/d-2 (drawings and photo: P. Kopp, © DAI)

The preserved base of the naos bears the short demotic graffito on its left side, possibly continued in the lost part of the stone: *p3 syḥ t3 wsḫ(.t)* […] "the chapel of the hall […]". The writing of the articles,[23] and the spelling of the words could point to the early to late Ptolemaic periods.[24] The short Demotic text of the discussed piece places the chapel (*syḥ*) as part of a hall (*wsḫ(.t)*). Both terms are well known in the temple context and provide information about the object and its location. The word *syḥ* (<*sḥ*), especially *sḥ-nṯr* is usually understood as a room - chapel or shrine,[25] but here it designates the naos instead of the usual words *k3r* or *g3yt*.[26] Such an interpretation is also suggested by the second word *wsḫ(.t)* "the hall", since such a room is architecturally treated as an open courtyard or covered vestibule, which can be present several times in the given temple and its different functions are explained by the additional designation,[27] which is lost here. Therefore, the short graffito informs that the naos does not come from the main sanctuary but from the other place, a hall. In the Ptolemaic temples the Enneads had their own hall.[28] But above all, the Book of the Temple, the instructions for the ideal temple, testifies that the main sanctuary was accompanied by secondary chapels for different gods.[29] These chapels are called *syḥ-nṯr* (e.g. P. Wien D. 3169, col x+III, x+β, l. 25, 32; x+γ, l. 23),[30] or

[23] El-Aguizy, *MIFAO* 113, 404-407.

[24] For *syḥ* see *DPDP* (http://129.206.5.162/beta/palaeography/palaeography.html?q=tla:d5048, accessed 11/10/2024), for *wsḫ.t* see *DPDP(* http://129.206.5.162/beta/palaeography/palaeography.html?q=tla:d1516, accessed 11/10/2024).

[25] Spencer, *The Egyptian Temple*, 114-119, 133-134; Konrad, *Architektur und Theologie*, 27-28.

[26] For the names used for naos and the synonymous use of *k3r* and *sḥ,* see Hohneck, *Naoi Königliche Steindenkmäler in den Tempeln Ägyptens*, 25-30, 42.

[27] Spencer, *The Egyptian Temple*, 71-80; Konrad, *Architektur und Theologie*, 77-84.

[28] Gaber, *JNES* 74 (2015), 91-113.

[29] Quack, *ARG* 2 (2000), 4-5; Quack, *EAO* 29 (2003), 13-14.

[30] Reymond, *From the Contents of the Libraries of the Suchos Temples in the Fayum 2*, 52-55.

syḥ (e.g. P. Wien D. 3169, col. x+IV, x+δ, l. 34).[31] The latter is also used in a sentence assigned to the left side of the hall: *n3 syḥw nty ḥr i3bty n t3 wsḫ.t* „the cult-rooms that are on the left-hand side of the broad hall" (P. Wien D. 3169, col. x+V, x+α, l. 14).[32]

In Ancient Egyptian the terms could be used metonymically.[33] Thus, the word *syḥ* denotes the architectural space, i.e. "shrine", but also its equipment, i.e. "naos". This association, encouraged by the presence of the god, is visually noted in both written and pictorial representations. The word *sḥ-nṯr* may be written by the sign  (JSesh O175A) or (JSesh O175B)[34], eventually (JSesh O175)[35] representing the pitched-roofed stand with the sign *nṯr* inside. In fact, in the private inscriptions the *sḥ*-sign (Gardiner O22) is written by means of the pointed version of the booth since the Middle Kingdom and on the royal monuments especially in the post-Amarna period when combined with the sign of the alabaster basin (Gardiner W3) into the composite form (Gardiner W4).[36] The composite form is represented in the temple scenes as the shrine with the king on the alabaster basin sign.

The dating of the naos is ambiguous as the criteria are inconclusive. The Late Period is suggested by the material used; the granodiorite seems to be typical for naoi of the 30th Dynasty.[37] However, the granodiorite may be referred to in publications as black or grey granite and it is possible that some stone designations in general need to be verified. For example, the naos of Nectanebo II from Bubastis is such a case; the material is identified as basalt, granodiorite or black granite.[38] Therefore, the material used cannot be the only criterion for dating.

The royal building activities for the local temples of Khnum and Satet in the Late and Ptolemaic Periods provide the historical context for the object under discussion. During the 26th Dynasty the royal presence on the island is reflected by the royal and private inscriptions.[39] In particular, the reliefs of Psametik II testify to his cultic and building activities on the behalf of

[31] Reymond, *From the Contents of the Libraries of the Suchos Temples in the Fayum 2*, 56-57.

[32] Reymond, *From the Contents of the Libraries of the Suchos Temples in the Fayum 2*, 58-59.

[33] For example, in the Book of the Temple the word "gods" should be read as "(statues of) gods", Quack, *ARG* 2 (2000), 4 footnote 10.

[34] *Wb*. III, 465, 1-13.

[35] see Spencer, *The Egyptian Temple*, 114 and note 160.

[36] On the relationship between the signs Gardiner O22 and W3 see Fischer, *Egyptian Studies* 3. *Varia Nova*, 208-209.

[37] Hohneck, *Naoi. Königliche Steindenkmäler in den Tempeln Ägyptens*, 80 and the list of naoi by Spencer, *The Egyptian Temple*, 64.

[38] Hohneck, *Naoi. Königliche Steindenkmäler in den Tempeln Ägyptens*, 481 and note 1700 (naos no. 116).

[39] A hieroglyphic graffito at the entrance to the temple of Satet dates from the 25th year of the reign of Psametik I, see K. Jansen-Winkeln, *Inschriften der Spätzeit Teil* IV.1, 360-361 (379). The text of the early Demotic contract starts with the 5th year of Psametik II, see Jansen-Winkeln, *Inschriften der Spätzeit* IV.1, 344 (119); ERC-Project ELEPHANTINE (https://elephantine.smb.museum/objects/object.php?o=100423, accessed 11/10/2024), and a Demotic note is palaeographically dated to the 6th year of Psametik II, Jansen-Winkeln, *Inschriften der Spätzeit* IV.1, 344 (120). For the reign of Apries two private statues name the Elephantine gods, Jansen-Winkeln, *Inschriften der Spätzeit* IV.1, 408-410 (147-148).

Khnum,[40] including fragments of a gate possibly of his temple.[41] The columns dated to the reign of Amasis attest to the addition of a colonnade or kiosk to the New Kingdom temple of Satet.[42] The blocks reused in the Ptolemaic foundations of the vestibule of the temple of Satet were originally the gate of Amasis in the same temple.[43] The monuments of Amasis refer to Khnum but also to Satet, Anuket, Hathor, Mikt and gods in general. During the 29th Dynasty Hakoris built a gate for the temple of Khnum.[44] The last building phase of the temple of Khnum as an extension of the New Kingdom temple was the addition of a gate with the renovation inscription of Nectanebo I.[45] Nectanebo II (or less likely an earlier ruler of the 30th Dynasty) began to rebuild the temple of Khnum but left it unfinished.[46] The two naoi of Nectanebo II were also left unfinished and the third, fragmentarily preserved, was left undecorated.[47] The temple of Satet was rebuilt anew by Ptolemy VI,[48] who also carried out the pronaos of the temple of Khnum.[49] Work on both temples was continued by Ptolemy VIII.[50]

On the basis of the preserved features it could be proposed that the naos was originally no higher than 2 m with the straight walls and possibly with a pitched or pyramidal roof. It was dedicated probably by a Late Period or Ptolemaic Period ruler. For Nectanebo II point: his building activity, the kind of stone used, the plan of the new temple built for Khnum similar to the Ptolemaic ones;[51] the latter agrees with the location of the chapels of the gods as described in the Book of the Temple. Despite the incomplete state of preservation and the unclear architectural feature the monolithic naos could represent for example a shrine of similar type to the naos of Nectanebo II from Tuna el-Gebel (CGC 70014; pitched roof, straight walls).[52] However, it should be noted that the Late Period attests to the greatest number of naos of different types.[53]

(E. Kopp)

[40] Jansen-Winkeln, *Inschriften der Spätzeit* IV.1, 317-318.

[41] W. Kaiser, 'Bautätigkeit der Spätzeit an den Tempeln des Neuen Reiches', in: Kaiser *et.al.*, *MDAIK* 53 (1997), 174 footnote 227.

[42] Junge, *Elephantine* XI, 67-68, pl. 40a-b (6.4); Jansen-Winkeln, *Inschriften der Spätzeit* IV.1, 448-449 (95); for the realtion of the columns and the New Kingdom temple of Satet see Kaiser, *MDAIK* 53 (1997), 173, 176-177.

[43] Kaiser, *MDAIK* 53 (1997), 174-177.

[44] Jansen-Winkeln, *Inschriften der Spätzeit Teil* V.1, 146-147 (40).

[45] Kaiser, *MDAIK* 53 (1997), 174; Jansen-Winkeln, *Inschriften der Spätzeit* V.1, 272-274 (90).

[46] Kaiser, *MDAIK* 53 (1997), 174; Niederberger, *Elephantine* XX, 13-15.

[47] Niederberger, *Elephantine* XX, 86-91, figs. 51-55, pls. 32-33.

[48] Jaritz, *et al.*, *Elephantine* XXXVI.

[49] Arnold, *Temples of the last pharaohs*, 322.

[50] Arnold, *Temples of the last pharaohs*, 322.

[51] Niederberger, *Elephantine* XX, pl. 40.

[52] Hohneck, *Naoi. Königliche Steindenkmäler in den Tempeln Ägyptens*, 519-521 (No. 313).

[53] Hohneck, *Naoi. Königliche Steindenkmäler in den Tempeln Ägyptens*, 133-134; 226-228.

2.2.2 Fragment of a Greek inscription

Found autumn 2023 in the Eastern Town, trench 1, refill of a sebbakhin pit (find no.: 52301A/b-29). Fragment of a sandstone slab with dimensions: h. 25 cm, w. 26 cm, th. 5.9 cm. The left edge of the slab with the left margin of the text has been preserved (fig. 12). On the right side, the surface of the slab rises slightly upwards, perhaps because there was some figural (?) representation in bas-relief here. It can be assumed that this representation was placed centrally and the inscription framed it on the right and left sides. If these assumptions are correct, we would have preserved approximately one third of the width of the slab and approximately half of the width of the inscription. The inscription covers the entire preserved surface of the slab. Delicate vertical line marking the left margin of the inscription and horizontal guidelines between lines of the text are visible. The inscription was carelessly executed. The script is slightly inclined at places. Letters are of irregular height and shapes. *Epsilon* both square and lunar, *sigma* and *omega* of 'classical' form, *omicron* both small and placed at the top of the script line and big, occupying the entire height of the script line, right hasta of *nu* shorter than the left one, *pi* with both vertical hastae of the same height.

Fig. 12: Sandstone slab fragment 52301A/b-29 (photo: P. Kopp, © DAI)

[. . .]. .α. . . .[.]. .[- - -]
ἐνλόγιμον ἱερῶι̣ [- - -]
ε̣ἰ̣ς̣ τ̣ὰ ἱερὰ καὶ πρ̣ο̣[- - -]
4 π̣οιού̣μενος *vacat* [- - - ὕ]-
δ̣ατα κατὰ τὴν χο̣.[- - - ε]-
δ̣ωκεν̣ ὥστε τὰ πάν[τα - - -]
βασίλισσα Ἀρσινόη . .τ[- - -]
8 οἱ θεοὶ τιμηνγισ. . .εα[- - -]
ιει ἑαυτὸν γενέσθαι ἀν[- - -]
.ρονον {α̣ι̣} *vacat* ἀγαθῇ̣ τ[ύχῃ - - - θε]-
οῖς Φιλοπά̣τ̣ορσι καὶ τοῖς .[- - -]
12 . . . .ας κληθήσεται .[- - - - - βασι]-
λ̣ί̣σσης Ἀρσινόης τῆς [- - -]
. .υ. Ποντικ̣ὸν καὶ .[- - -]
συντελεῖσ̣θ̣αι αὐτὸν̣ [- - -]
. .[- - - - - - - - - - - - - - -]

2. ἐλλόγιμον

[-]
highly reputable for/to the temple (?) [- - -]
for/to the temples (?) and [- - -]
4 who is making for himself [- - -]
waters through the [- - -]
he gave so that everything [- - -]
Queen Arsionoe [- - -]
8 the gods [- - -]
[- - -] he himself became [- - -]
[- - -]. To the good fortune [- - -]
to Gods Philopatores and [- - -]
12 [- - -] he/she will be called [- - -]
of Queen Arsinoe [- - -]
[- - -] Pontic [- - -]
[- - -] he accomplishes [- - -]
16 [-]

2. The reading ἱερῷ̣ ῥ̣[- - -] is possible as well.
5. One is tempted to read κατὰ τὴν χόῤ̣[αν - - -], ‘throughout the land’, however, this reading has disadvantage of producing a scribal mistake (χόραν instead of χώραν).
6. δ̣ωκεν̣ is obviously the ending of the third person singular of either aorist or perfect active of the verb δίδωμι, ‘to give’, or a compound thereof.
8. It is not clear to me how the sequence of letters following οἱ θεοὶ should be read. ηνγισ may be a form of aorist of the verb ἐγγίζω, ‘bring near, approach’, recorded phonetically instead of ἠγγισ (compare ἐνλόγιμον for ἐλλόγιμον in l. 2). I do not know how to interpret τιμ in this context.

10. Perhaps χρόνον. The following αι is probably an abortive attempt to write the word ἀγαθῇ, later put much to the right, after a large free space.

13–14. Perhaps [- - - βασι]|λ̣ε̣ὺς.

14. It is unknown whether Ποντικός is a personal name or a pseudo-ethnic referring to a person or a thing originating from the Black Sea area, but it is probably the second possibility that is true. No man with the name Ποντικός is attested in Egypt in the second half of the third century BC, and the name is generally late, with attestations coming mostly from the Roman Imperial period. On the other hand, the pseudo-ethnic Ποντικός, 'Pontic', is attested in some third century BC papyri (*P. Cair. Zen.* I 59012; 59013; *P. Cair. Zen.* IV 59702; *P. Petrie* III 142) with reference to a sort of nuts.

15. The translation 'he accomplishes' has been suggested only *exempli gratia*, considering that συντελέω has a variety of meanings depending on the context.

The mention of Gods Philopatores in lines 10–11 allows dating the inscription to the reign of Ptolemy IV and his queen Arsinoe III. The exact range dates are: autumn 220 BC (marriage of Ptolemy with his sister Arsinoe and their apotheosis as Gods Philopatores)[54] and spring/summer 204 BC (the death of Ptolemy IV).[55] Perhaps the lower date should be moved back to the autumn of 210 BC, that is, the birth of Ptolemy V, the future Epiphanes, the only child of Ptolemy IV and Arsinoe III, and his association to the throne shortly thereafter, since the inscription does not seem to mention Ptolemy V as co-ruler.[56] The poor state of preservation of the inscription does not allow us to take a firm stance on this matter. The mention of Gods Philopatores further allows identify queen Arsinoe mentioned in lines 7 and 12–13 as Arsinoe III.

The fragmentary state of preservation of the inscription makes it difficult to determine its nature. We are certainly dealing here with a text with a complex structure, as evidenced by the formula ἀγαθῇ τ[ύχῃ in line 10, most probably introducing the content of some legal act. Since this hypothetical legal act mentioned at the very beginning Gods Philopatores, it was probably issued by them. The text preceding ἀγαθῇ τ[ύχῃ would contain a description of the circumstances of issuing the legal act and provide its justification. It is impossible to say what this legal act could have concerned. Interestingly, both the text of the legal act and the description of the circumstances of its issuance mentioned Queen Arsinoe, which may suggest

[54] Here I follow Lanciers, *AFP* 34 (1988), 27-32. Previous research on the subject believed that the marriage of Ptolemy IV and Arsinoe III took place only in the late autumn of 217 BC, after the Battle of Raphia. The apotheosis of Ptolemy IV and Arsinoe III did not mean the automatic inclusion of Gods Philopatores in the Alexandrian dynastic cult. This fact seems to have occurred only in 216/5 BC.

[55] The circumstances and the date of the death of Ptolemy IV are unclear. The latest document dated after him comes from 22 July 204; see Casanova, *Aegyptus* 68 (1988), 13-18. At the time this document was drafted, Ptolemy IV may have been dead for a long time, because according to Justin (30, 2, 6) his death was concealed. He probably passed away as a result of injuries suffered in the fire of the royal palace in spring or early summer 204 (or perhaps even earlier). The earliest document dated after Ptolemy V Epiphanes (*UPZ* I 112) comes from 8 September 204. Generally, on the chronology of the death of Philopator and the ascension of Epiphanes, see Samuel, *MBPF* 43, 108-114.

[56] According to the demotic version of the Rosetta stone (*Urk*. II 194, 1) Ptolemy V was borne on the last day of the fourth month of Shemu = 30 Mesore = 9 October 210 BC. He is first mentioned as coregent (as 'Ptolemy the son') in P. dem. BM 10829 dated to 5 February 209 BC. For the question of the beginning of the coregency of Ptolemy V, see Huß, *Ägypten in hellenistischer Zeit,* 450 no. 53.

that the act was somehow connected with her. It should be observed, however, that the lack of mention of King Ptolemy may only be a consequence of the poor state of preservation of the inscription.

(A. Łajtar)

2.3 Heritage Conservation and Site Management

The measures initiated during the 49th season in spring 2020 to implement a new site management for the archaeological site of Elephantine were continued in the 52nd season with special funding by the German Foreign Office.[57] The newly developed concept is based on the work of Werner Kaiser, who until 1998 had realised the accessibility of the site and the presentation of the archaeological research to the wider public.[58] Central aspects of Kaiser's work included the reconstruction of the Temples of Satet in different building phases dating from the 6th Dynasty up to the 18th Dynasty.[59] In addition, mud-brick buildings within the settlement mound and stone elements from residential and further cult buildings were presented in in an open-air museum which was created within the archaeological site. The development of visitor paths along selected points of particular interest was accompanied by a printed bilingual guidebook in Arabic and English versions.[60]

During the 52nd season, the focus of the work was on implementing measures, which served to protect and preserve the archaeological and architectural heritage as well as to present and impart knowledge to the general public. One of the focal points continued to be the maintenance of the site and heritage conservation measures to consolidate damages caused by the heavy rainfall in November 2021.[61] In this context, heavily rain-damaged plaster surfaces on the reconstructed sanctuary of Heqaib were repaired by the lead of Omar Kassab and the plasterer Mohamed Sabr Mahrous (fig. 13).

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[57] For measures from previous seasons see M. Sählhof and O. Kassab, 'Heritage Conservation and Site Management', in: Sählhof, *et al.*, *Report on the 51st Season*, 7-9; M. Sählhof and O. Kassab, 'Heritage Conservation and Site Management', in: Sählhof, *et al.*, *Report on the 50th Season*, 12-19; ; M. Sählhof, 'Site Management Concept', in: Sählhof, *et al.*, *Report on the 49th Season*, 9-11.

[58] W. Kaiser, 'Teilöffnung des Platzes für den allgemeinen Besucherverkehr', in: Kaiser, *et al.*, *MDAIK* 55 (1999), 68-70.

[59] W. Meyer, 'Satettempel: Wiedererrichtung des Heiligtums der 18. Dynastie', in: Kaiser, *et al.*, *MDAIK* 36 (1980), 250-254; W. Kaiser, 'Die Entwicklung des Satettempels in der 11. Dynastie', in: Kaiser, *et al.*, *MDAIK* 49 (1993), 145-152; W. Kaiser, 'Zur Rekonstruktion des Satettempels der 12. Dynastie', in: Kaiser, *et al.*, *MDAIK* 44 (1988), 152-157; W. Kaiser, 'Restaurierung und Wiederaufbau: 2. Satettempel Sesostris I.', in: Kaiser, *et al.*, *MDAIK* 46 (1990), 248; W. Kaiser, 'Restaurierung, Wiederaufbau und weitere Maßnahmen', in: Kaiser, *et al.*, *MDAIK* 55 (1999) 67-68; Kaiser, *Elephantine, the Ancient Town*, 48-51.

[60] Kaiser, *Elephantine, the Ancient Town*. A digital open access of the English version is available on the Elephantine project homepage of the DAI:

(https://projectdb.dainst.org/fileadmin/Media/Projekte/2852/Sonstiges/Elephantine%20F%C3%BChrungsheft_English, last accessed 12/12/2024)

[61] M. Sählhof and O. Kassab, 'Heritage Conservation and Site Management', in: Sählhof, *et al.*, *Report on the 50th Season*, 12-14.

Fig. 13: Sanctuary of Heqaib, looking North with the new staircase bridging between the open-air museum and the Old Kingdom street level (photo: M. Sählhof, © DAI)

Conservation measures on the reconstruction of the 18th Dynasty Temple of the Statet included a thorough cleaning of all surfaces that have been affected by stains caused by the rain. Original components with polychrome painting were consolidated by Erico Peintner and Franzika Kleinschmidt with the support of the conservators Mohamed Abdel Daim Mohamed, Mohamed Saadallah Hassan Ghali and Ahmed Mohamed Al-Sagir Ahmed from the restoration department of the Aswan Inspectorate. Further consolidation and maintenance measures concerned mud-brick buildings of the Western Town in the central area of the settlement mound (see fig. 1), which date from the New Kingdom to the Late Period. Under the guidance of Achim Krekeler who excavated these buildings,[62] mud-brick walls were supplemented, repaired and provided with new copings as protection layers against erosion caused by rain and wind. The addition of missing parts of walls also served to improve the readability of individual building units and their presentation to visitors to the site. Similar measures were also carried out on the New Kingdom House 55 south of the Heqaib sanctuary.

Visitor's infrastructure and Circulation

To improve visitor's infrastructure and circulation, a new fencing system was installed to define areas accessible to the public and at the same time to protect vulnerable heritage structures (fig. 14). The new fencing system contains of steel posts with a diameter of 15 mm and an over-ground height of 110 cm, a welded-on steel hemisphere at the top end and metal eyelets at the sides for attaching a steel cable of 6mm thickness. The colour scheme was tested

[62] Krekeler, *Elephantine* XXI.

with prototypes for its compatibility with the heritage on side. In a first phase 120 steel posts, connected with a steel cable of a total length of 600 m were installed in consultation with representatives of the local inspectorate and after approval of the prototypes by Dr. Bassem Ibrahim, Director of the Facilities Management Department in Archaeological Sites and Museums at the Ministry of Tourism and Antiquities. The new fencing replaces the over 30-year-old existing system and integrates better into the archaeological site due to colour and design.

Fig. 14: New fencing (right) compared to the old fencing (left) (photo: M. Sählhof, © DAI)

A further measure to improve the visitor circulation was the construction of a staircase as a new entrance to the settlement mound by Michael Tschofen (fig. 13). The connection takes up the historical north-south street of the ancient town, which can be traced being in use from the late Old Kingdom to Late Antiquity. The staircase intersects the formerly strong dividing line between the retaining wall of the landfill in the upper area of the open-air museum with temple reconstructions and the historic street level below. Its alignment is orientated to the street direction and thus creates a clear visual guide for visitors through the site. The height difference of 2.70 m also gives visitors the physical experience of leaving the open-air museum by moving down towards the historically grown part of the ancient town.

Signage

For the interpretation of archaeological and architectural features, Kaiser's points of interest along the visitor paths, the development of information panels was continued by Valentin Boyer and Omar Kassab. The panels should provide latest research-based knowledge directly

on site and in the context of each feature.[63] They contain didactic explanatory texts in Arabic and English, enriched with ground plans, reconstruction drawings and further illustrations (fig. 15). A timeline localises the features visually and intuitively within their historical context.

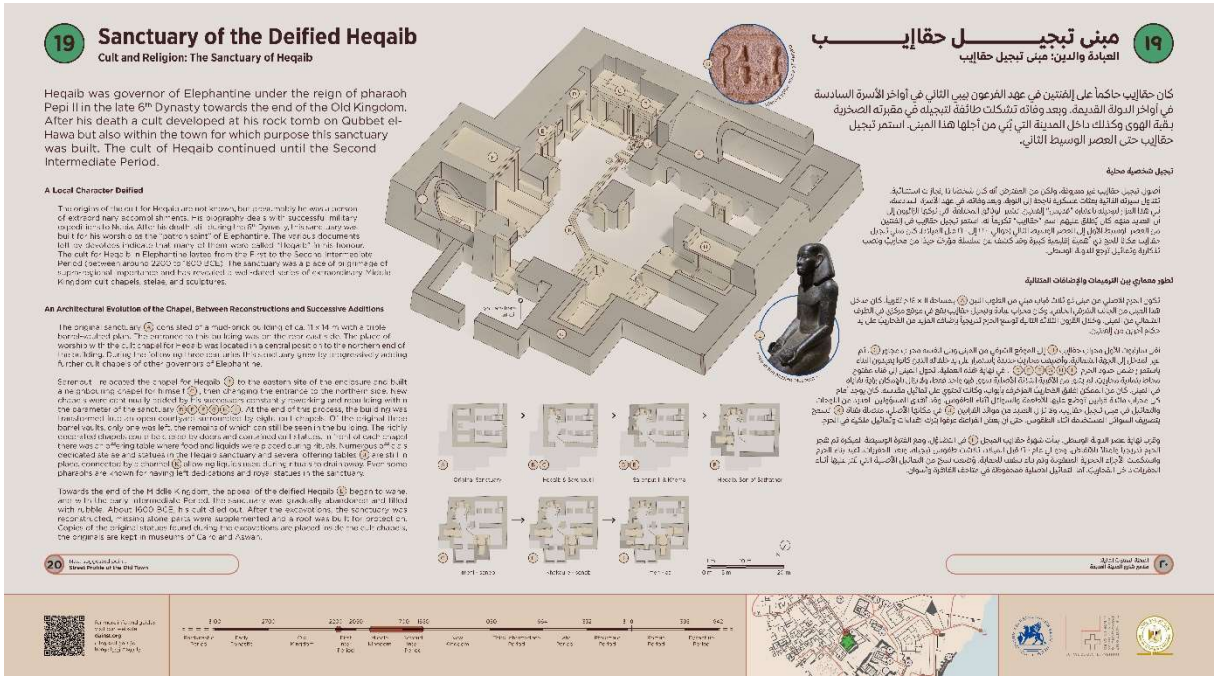

Fig. 15: Information panel for the Sanctuary of Heqaib (O. Kassab, V. Boyer and M. Sähl hof, © DAI)

Each point of interest is presented with an individual information panel with an inclined surface,[64] providing additional and updated information to Kaiser's guidebook. For example, the feature panel for the Sanctuary of Heqaib (fig. 15) discusses the cultural and religious aspects of the cult activities during the First Intermediate Period and the Middle Kingdom. The complex architectural evolution of the building is visualised with step to step ground plans which can be related to an axonometric drawing on the panel and at the same time towards the building itself.[65] Additional illustrations recontextualise objects found during the excavations, which are now kept in museum collections.

A colour-coded numbering system creates an interlinked connection among the feature panels and provides visitors with a suggested next feature panel. The installation of the panels on site is planned for autumn 2025.

(M. Sähl hof)

[63] M. Sähl hof and O. Kassab, 'Presentation and Information', in: Sähl hof, *et al.*, *Report on the 50th Season*, 17-19.

[64] Sähl hof, *et al.*, *Report on the 50th Season*, fig. 20.

[65] G. Heany,'The Architectural History of Heqaib's Sanctuary', in: Habachi, *Elephantine* IV, 140-157; von Pilgrim 1996: 115-129. For the physical reconstruction of the Heqaib Sanctuary on site, see A. Krekeler, 'Hekaib-Komplex', in: Kaiser, *et al.*, *MDAIK* 46 (1990), 244-248.

2.3.1 Heritage Conservation of the Heqaib-Sanctuary

The Sanctuary of Heqaib was physically reconstructed 1986-1987 on the original site by Achim Krekeler.[66] Based on the architectural research by Gerhard Haeny.[67] the reconstruction was intended to restore the sanctuary to its last construction phase of the 13th dynasty (see fig. 15). For this purpose, existing mud-brick walls were supplemented with the same material and then covered with a mud-plaster up to 3 cm thick. The chapels within the sanctuary were reconstructed using their original and decorated sandstone parts, in some cases also incorporating artificial stone which was left undecorated. In order to protect the interior of the reconstruction from erosion and high temperature differences by direct sun impact on the sandstone, a protective shelter was erected over the northern part of the building.

Nevertheless, the reconstructed building was also damaged during the heavy rainfall in 2021, especially those parts not covered by the protective shelter on the exterior façades and the southern part of the interior space. The damage was mainly caused by water erosion, as had already been observed in other mud-brick buildings:[68] The rain water collected on tops of walls, from where it flowed down the vertical surfaces, eroding plaster and masonry in its path (fig. 16). Surfaces exposed to driving rain from the southeast direction were eroded throughout their entire surface.

Fig. 16: Sanctuary of Heqaib, exterior after rainfall on 13/11/2021 (photo: M. Sählhof, © DAI)

[66] Krekeler, in: Kaiser, *et al.*, *MDAIK* 46 (1990), 244-248.

[67] Heany, in: Habachi, *Elephantine* IV, 140-157.

[68] Sählhof and Kassab, in: Sählhof, *et al.*, *Report on the 50th Season*, 12.

Due to the extent of the damage, all plaster was removed from the reconstruction, both from the exterior and interior wall surfaces. In a second step, the heavy eroded uppermost brick-course of the outer walls was completely removed. A replacement was done with mud-bricks in the size of 24x12x6cm with an outwards inclination of about 8 degrees to prevent rainwater from running onto the inner surfaces of the sanctuary (fig. 17). Additionally, damaged brickwork of the reconstruction was supplemented with new bricks of the same size. After completion on the brickwork, a new layer of mud plaster applied in two steps: firstly, a thin layer applied with a trowel followed by secondly a layer applied by splashing and smoothing with a sponge.

Fig. 17: Sanctuary of Heqaib, consolidation of the exterior mud-brick walls (photo: B. Ezzat, © DAI).

Fig. 18: Sanctuary of Heqaib, exterior looking south after conservation (photo: M. Sählhof, © DAI)

To create a uniform colour on the surfaces, the new plaster was finally coated with a fine mud slurry, which gives the building a greyish render and making it clearly recognizable as a reconstruction in the historical surroundings (fig. 18). Compared to the existing material, supplemented bricks and plaster were created by changing the ratio of aggregates (sand, dung and chopped straw) for improved durability and resilience towards erosion and humidity. The surrounding ground to the sanctuary has been leveled to direct and collect rainwater away from the sanctuary and the neighboring built-structures.

Fig. 19: Sanctuary of Heqaib, interior after conservation (photo: M. Sählhof, © DAI)

The sandstone parts of the chapels were not affected by the rain, but some of them showed superficial stains from mud runners. These surfaces were cleaned manually with distilled water and a soft sponge (fig. 19).

(O. Kassab and M. Sählhof)

2.3.2 Conservation of the 18th Dynasty Temple of Satet

Condition of the Temple

Due to the heavy rainfall in 2021, areas of the original stone surfaces of the Satet Temple were covered with a clay slurry that had deposited on the decorated stone surfaces of the temple. The clay slurry runners on the walls were caused by dust and sediments that had accumulated over the years on the upper stone surfaces (Hight-Angel.Shot). The rainfall bound the dust deposits into thick mud, which was deposited on the walls as mud runners due to the heavy rainfall (figs. 20 and 21). These sludge runners partially cover the decorated surfaces of the

stone blocks. The plastering of the open areas also has mud runners in some areas. This soiling on the walls is not only visually disturbing, but also alkaline-corrosive. The alkaline effect of this mud is particularly noticeable in the open areas. If the muds are removed from these plastered surfaces, the stains are still clearly visible. This is because the plaster on these surfaces is heavily yellowed by the alkaline deposits. These discolourations in the plaster are irreversible.

Another type of damage caused by the rain can be seen on the polychrome stone surfaces. The absorption of moisture in the stone structure activated the salts in the stone and these salts were released when the moisture was released again. Thus, the absorption of moisture in the stone structure activated the salts in the stone and when the moisture was released again, these salts were transported to the surface. As a result, salt efflorescence was deposited on the surface of the stone in some areas (figs. 20 and 22). These salt efflorescences partially combined with the sediment deposits on the stone surfaces and formed a calcite layer. This process is not yet complete on some stone blocks, so that areas of the stone block are still undergoing a transformation process before the salts become visible on the surface. These stone blocks are mainly located in the lower area, where residual moisture is still present.

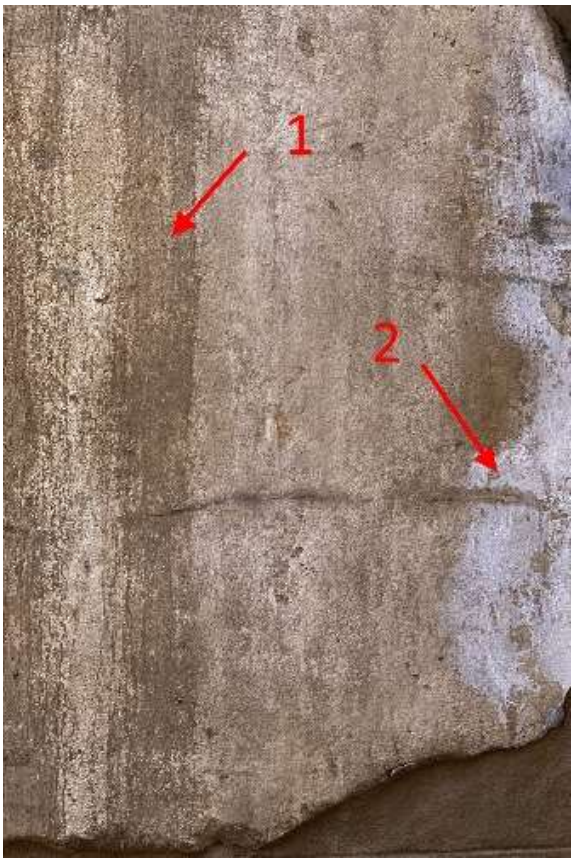

Fig. 20: Arrow 1: Dirt sludge runner. Arrow 2: Salt efflorescence (photo: E. Peintner, © DAI)

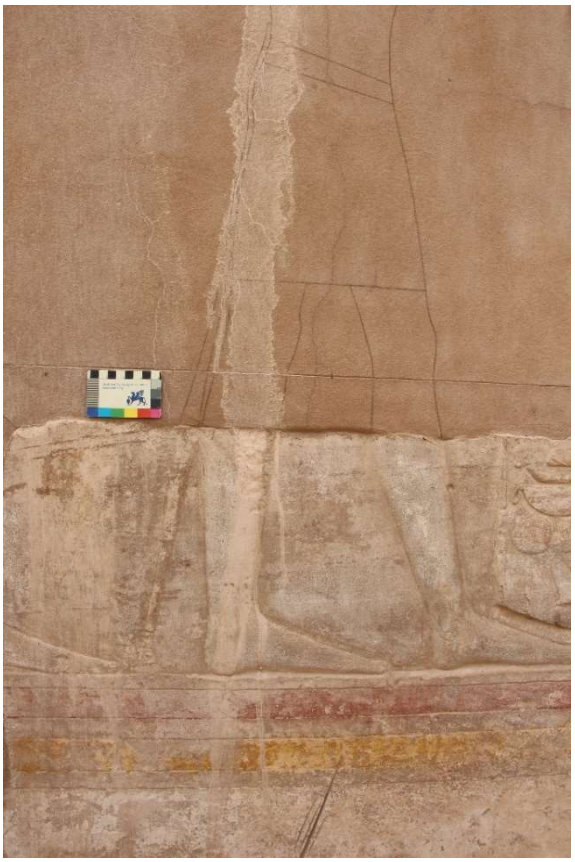

Fig. 21: Dirt slurry runners over the plastered open areas and the original stone blocks (photo: E. Peintner, © DAI)

Bat and bird droppings (fig. 23) have caused surface soiling in some areas of the temple. As the droppings are very acidic, they mainly cause damage to the polychromy.

Areas of the polychromy inside and outside the temple were also damaged by the rain. However, most of the damage to the polychromy had other causes. Extreme temperature fluctuations sometimes caused tension in the multi-layered polychromy, causing layers of colour to detach from the substrate and the layer underneath. As a result, parts of the colour layers were no longer connected to the substrate and fell off.

Fig. 22: Salt efflorescence (photo: E. Peintner, © DAI)

Fig. 23: Bird droppings on decorated surfaces (photo: E. Peintner, © DAI)

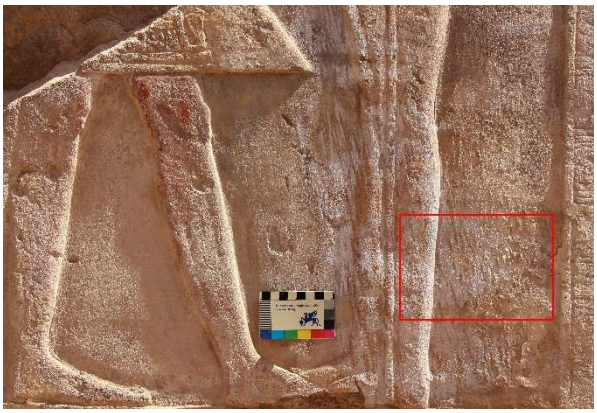

Fig. 24: Damage to the paint layers (photo: E. Peintner, © DAI)

Fig. 25: Vulnerable areas of the paint layer (photo: E. Peintner, © DAI)

This type of damage is particularly evident on the exterior of the temple, where there are several layers of polychromy. The multi-layered white paintings and parts of the polychromy are particularly affected here. In these areas, there are numerous loosened paint layers and vulnerable areas of paint that are at risk of flaking (figs. 24 and 25). This damage can also be found in the interior areas, especially in the first two rooms.
As hardly any conservation measures have been carried out on the temple in recent years, particularly on the polychromy and its surfaces, this damage has been allowed to develop unchecked.

Applied measures

The original stone surfaces were first photographed in their previous condition (fig. 26). The primary measure on the temple was to protect the endangered areas of the original surfaces. The paint layer was protected using Klucel E and methyl cellulose derivatives. Klucel hydroxypropyl cellulose is a non-ionic cellulose ether with a versatile combination of properties.

Fig. 26: Condition before cleaning
(photo: E. Peintner, © DAI)

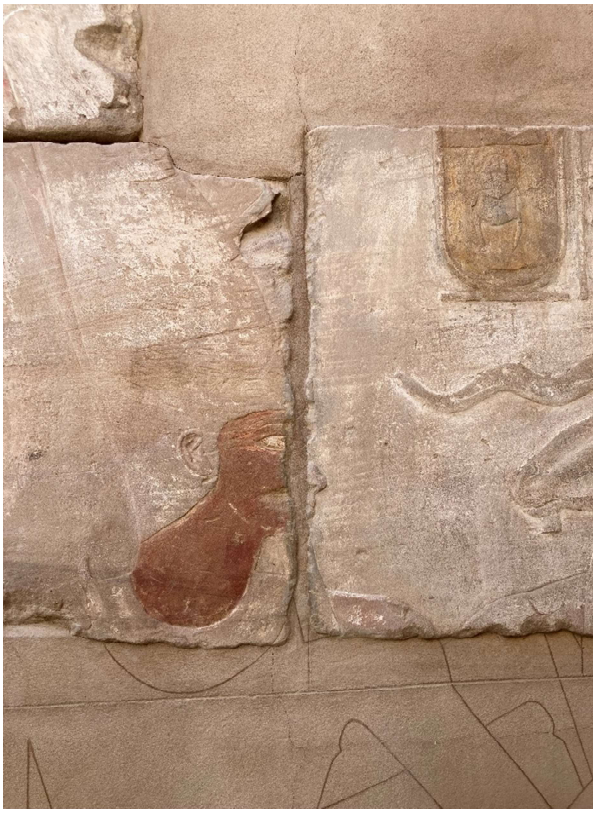

Fig. 27: Condition after cleaning
(photo: E. Peintner, © DAI)

The standard grades have slightly different properties to the F Pharm grades. In particular, the F Pharm grades are somewhat purer. Klucele combines good solubility in water and polar organic solvents, thermoplasticity and interfacial activity with the thickening and stabilising properties of other water-soluble cellulose polymers. In some areas, this securing measure had to be repeated in order to achieve sufficient securing of the paint layer. The surface was

then dusted with a soft brush (make-up brush). As far as possible, secondary sediment deposits were removed with an Akapad sponge. Encrusted soiling and partial salt efflorescence were removed with a polyurethane sponge or cotton buds moistened with ethyl alcohol and distilled water (fig. 27).

Conservation maintenance

All these conservation measures cannot protect the temple in the long term. This makes regular maintenance of the temple all the more important. Appropriate measures should be carried out at intervals of 2-3 years and could be completed in one day if carried out regularly. The costs involved are many times lower, as preventive treatment can be carried out in a shorter time than a conservation measure that only takes a few years.

Regular maintenance is therefore of fundamental importance for stable preservation in the future, as targeted measures can be taken immediately in the event of visible changes or damage to prevent further destruction. Maintenance should include a brief report with a description of the damage and the general condition of the temple. Photographic documentation with detailed images of the endangered and already secured parts of the temple should also be documented.

2.3.3 Consolidation of mud-brick buildings in the Western Town

In the Western Town, the central area of the settlement mount, consolidation of mud-brick walls, levelling and backfill of inner parts of buildings and excavation trenches was continued (fig. 28). Damaged walls were repaired in small sections and endangered wall structures were reinforced and protected. The newly installed mud bricks serve as structural reinforcement and as new protective coping layer for protection against erosion from wind and rain water. Deep structural damages and gaps were reconstructed up to a maximum of the highest preserved layer of bricks. Walls in different states of preservation were stepped down, building phases were differentiated by varying reconstruction heights. Damaged wall copings and supplementations from previous consolidation measures have been repaired by replacing single bricks or entire courses of brickwork.

As for the consolidation of the Sanctuary of Heqaib (see above, section 2.3.1), the new bricks for consolidation were produced by changing the ratio of aggregates (sand, dung and chopped straw) for improved durability and resilience towards erosion and humidity. A self-explanatory differentiation between historic features and interpretation was further emphasised by the use of inlaid bands of pottery sherds (fig. 29). After the bricklaying was completed, inner rooms were filled with rubble as a protection layer of archaeological features. Consolidations, supplementations, and repairs of walls were mapped according to their building level (figs. 30-32 and tab. 2).

Fig. 28: Working area in the Western Town area, looking northwest (photo: O. Kassab, © DAI)

Building level	Building no.	Consolidation Measures applied
6b	House BA	Repair of copings from previous measures and reinforcement of walls 400, 403 and 406c
	House BC	Repair of copings from previous measures and reinforcement of wall 156; partial reinforcement of wall 432; partial reconstruction of wall 501
	Sanctuary Y	Repair of copings from previous measures of walls 323 and 339; reconstruction of the altar with new sandstone slabs[6]
5	House AA	Repair of copings from previous measures and reinforcement of walls 129, 194. 290, 387 and 396
	House AB	Repair of copings from previous measures and reinforcement of walls 129, 194. 290, 387 and 396
	House AC	Repair of copings from previous measures, partial reinforcement of walls 283 and 257b
	House AD	Repair of copings from previous measures and reinforcement of wall 260b
	Building T	Reinforcement of wall 130
4a	House P	Repair of copings from previous measures and reinforcement of walls 57, 98 and 161; repairs of brickwork and underpinning of wall 155
	House Q	Reinforcement of walls 185 and 199
3	House E	Partial reinforcement of wall 191
	House R	Reinforcements and repairs of wall 199
	Courtyard Z	Reinforcement of wall 356 and restoration of the oven installations in Z_1

Table 2: Compilation of consolidation measures of mud-brick wall by building level, house and wall numbers

Fig. 29: Reinforcing structurally damaged walls by underpinning (photo: O. Kassab, © DAI)

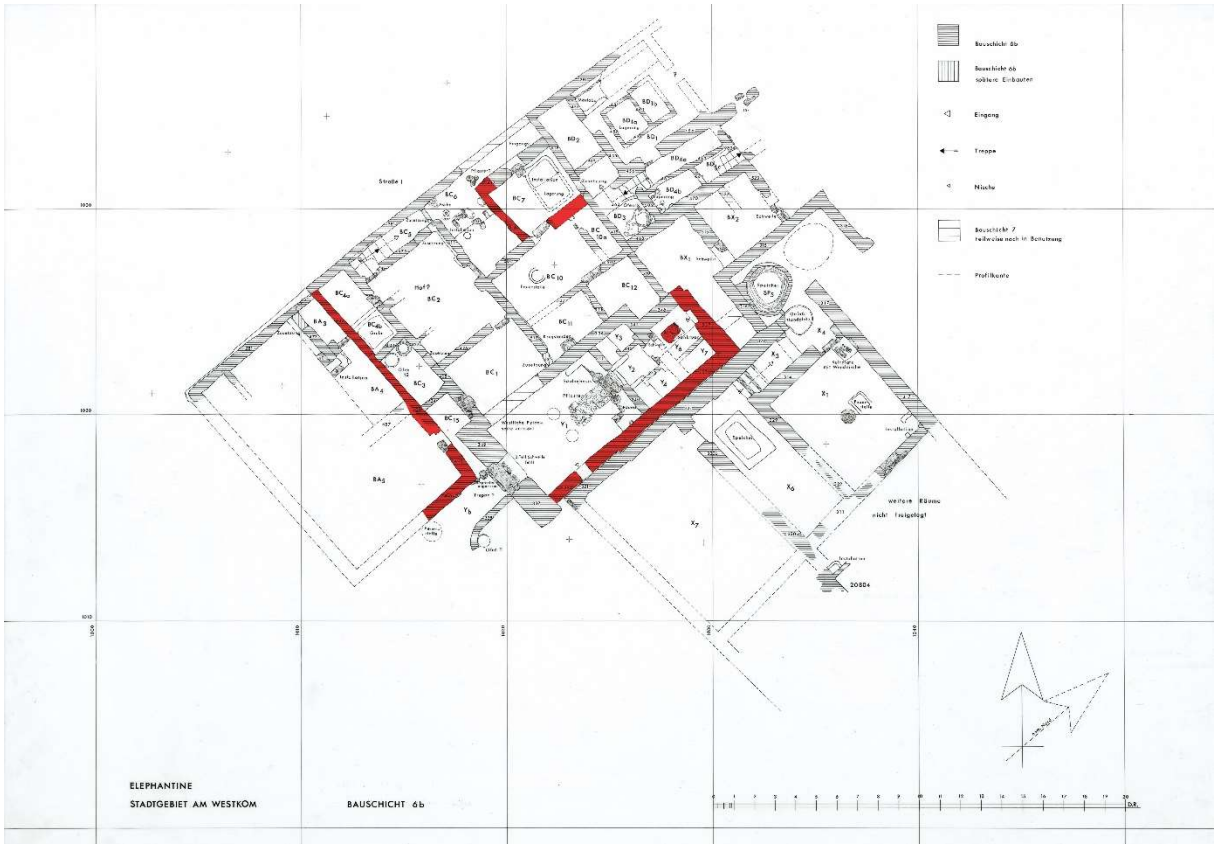

Fig. 30: Western Town, consolidated mud-brick walls (red) in level 6 b (plan: A. Krekeler © DAI)

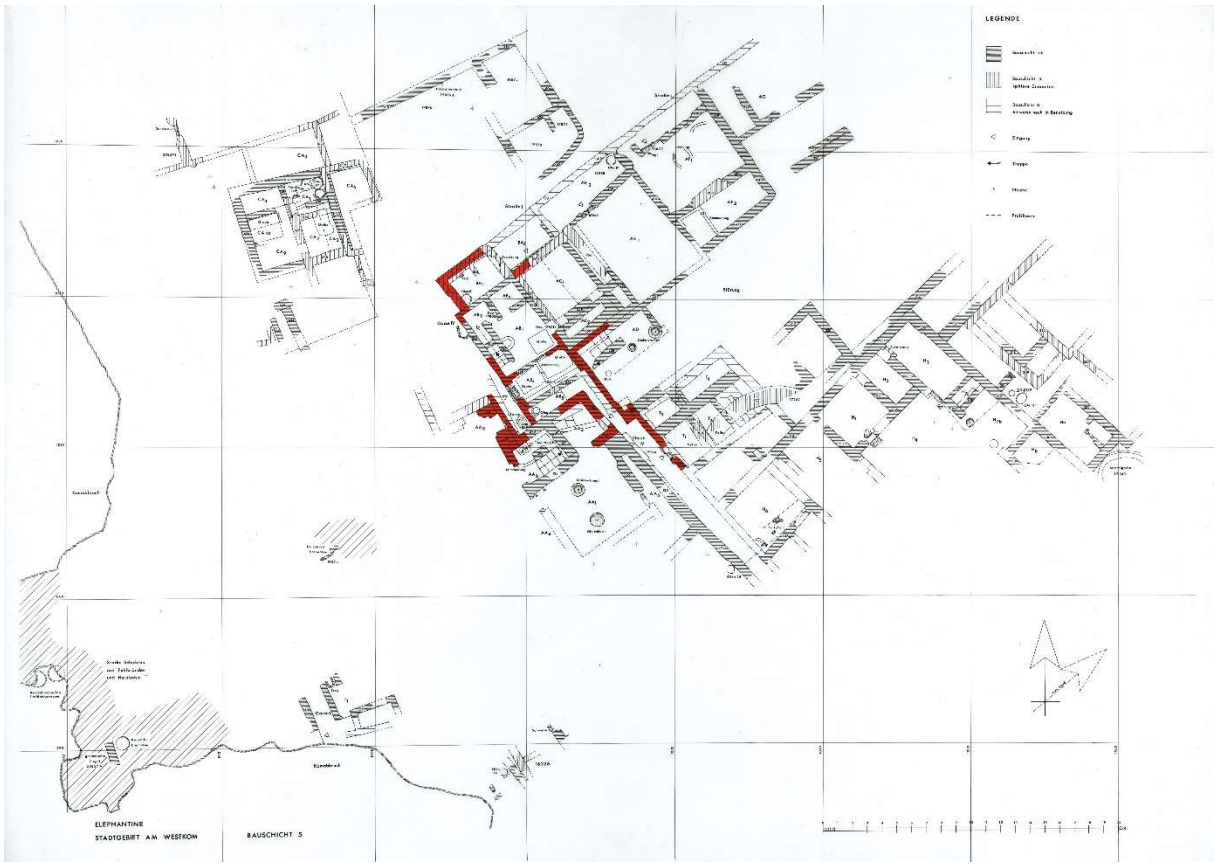

Fig. 31: Western Town, consolidated mud-brick walls (red) in level 5 (plan: A. Krekeler © DAI)

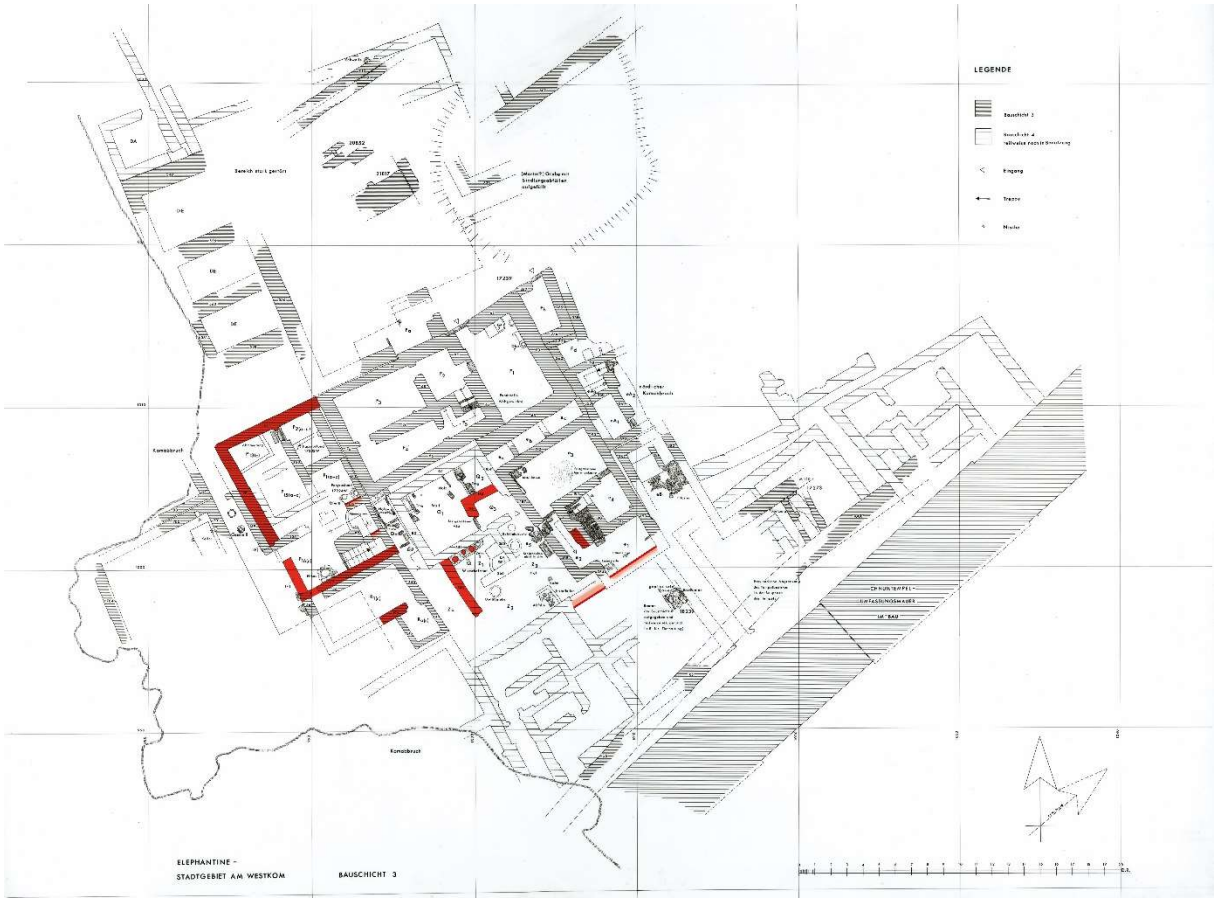

Fig. 32: Western Town, consolidated mud-brick walls (red) in levels 4 and 3 (plan: A. Krekeler © DAI)

Fig. 33: Working area (building levels 5b and 6) after consolidation of mud-brick walls, with Sanctuary Y (right) (photo: B. Ezzat © DAI)

Through appropriate additions based on archaeological studies,[69] supplementations of walls serve also to recreate architectural contexts of single building units, intended to give visitors an improved presentation and insights into different building phases and house layouts from the viewing platform (fig. 33). In some cases, consolidation was also realised on interior installations. In sanctuary Y (level 6b, see fig. 30), the altar was reconstructed based on the archeological findings.[70] The already during the excavation of sanctuary Y removed stelae, now on display in the site museum, were replaced by new sandstone slabs of the same dimensions. The altar plate preserved on site could thus be reassembled.

(A. Krekeler, O. Kassab and M. Sählhof)

2.3.4 Khnum Temple area and House 55

In the kom area to the south of the Khnum Temple (Area XXVI), the backfilling of Building 205 of the early Late Period with the debris from the previous excavation in the same area was started. Firstly, the central courtyard area of the building was backfilled to enable the completion of the documentation in the upper part of the section at the southern edge of the excavation area.

On the north side of the Khnum Temple, the back filling of the upper area (XXIX) to the east of House 55 was completed and the consolidation of House 55 was started.

[69] Krekeler, *Elephantine* XXI.

[70] Krekeler, *Elephantine* XXI, 67; A. Krekeler, 'Heiligtum Y', in: Kaiser, *et al.*, *MDAIK* 46 (1990), 211.

Fig. 34: Bricking up House 132, view from the west (photo: C. von Pilgrim, © SIK)

Fig.35: Bricking up House 132. The higher Area XXIX and the back wall of House 132 on the left margin, House 55 on the right (photo: C. von Pilgrim, © SIK)

Consolidation of the copings with new mud bricks seems necessary for several reasons. On the one hand, after the outer walls have been bricked up, the gap between these and the layers behind them can be filled in, thus protecting the layer profiles from further erosion. On the other hand, the closing of gaps in the walls and the laying of two new layers of bricks on top of the ancient walls will prevent further erosion of the brick walls (fig. 34). Additionally, the ground plan of the latest building phase of the house will become clearer to visitors. As two rooms at the rear of the house had been incorporated into a house (H132) built on a much higher level to the east in the latest building phase (cf. section 3.3 below, fig.49: rooms L and M), the fabric of this part of the town with terraced houses will become more clearly visible (fig. 34). The eastern back wall of H132 was rebuilt in the area of the trench that connects the deeper area of House 55 in the west with the higher Area XXIX in the east. The wall now serves as a retaining wall so that the backfilling of the upper area to the east (Area XXIX) could be completed (fig. 35).

(C. von Pilgrim)

2.3.5 Reconstruction of the Nesmeti Temple outside the ancient town

The Temple of Osiris Nesmeti is the last cult building erected in Elephantine in Roman times. It originally stood in a cult area on the northern edge of the city, which was accessible from the Nile via a monumental ceremonial staircase. According to the cartouches visible in the temple, the decoration of the temple began under Emperor Nero in the middle of the 1st century AD and was later continued under the Emperors Vespasian, Titus, Domitian and Trajan.[71] After the end of the cult, the temple was dismantled in the middle of the 6th century AD and the blocks were reused in a riverside terrace directly south of the staircase. In 2000, they were rediscovered there and recovered from the wall during a comprehensive investigation of the area.[72] Although only part of the temple was decorated, Ch. Ubertini was able to accomplish a virtual reconstruction of the building in a careful study.[73] Even though only around a quarter of all the blocks of the temple have been preserved, a physical reconstruction of the temple seemed to be the most suitable way of not only sustainably protecting the existing blocks, but also presenting them to visitors in an understandable way. For as the temple decoration was never completed, the many undecorated blocks also reveal a wealth of details of ancient building techniques.

Unfortunately, the original plan to rebuild the temple on the site where it was discovered and to integrate the area into the fenced-in antiquities area could not be realised, which regrettably poses a serious threat to the existence of the monumental Roman staircase today next to the modern villages. Finally, in 2011, in consultation with the then Director General of the Inspectorate of Antiquities Aswan, Dr Mohamed el-Bialy, preference was given to a reconstruction on the shore strip south of the ancient town (fig. 36), especially as two other

[71] E. Laskowska-Kusztal, 'Osiris-Nesmeti – Child from Elephantine', in: Dreyer, *et al.*, *MDAIK* 61 (2005), 75-82.

[72] S. Schönenberger, 'Untersuchungen im Südosten der Monumentaltreppe', in: Dreyer, *et al.*, *MDAIK* 58 (2002), 200-210.

[73] Ch. Ubertini, 'Restitution Architecturale du "Temple Y"', in: Dreyer, *et al.*, *MDAIK* 61 (2005), 64-75.

buildings from Nubia had already been erected there years ago. The reconstruction of the temple began in the same year. Since 2017, the technical management and conservation measures have been in the hands of Achim Krekeler.

Fig. 36: View of the Nesmeti Temple south of the walled town area (photo: C. von Pilgrim, © SIK)

Fig. 37: View on the Temple of Nesmeti from west (photo: C. von Pilgrim, © SIK)

Fig. 38: Front side of the temple (photo: C. von Pilgrim, © SIK)

Fig. 39: View inside the temple (photo: C. von Pilgrim, © SIK)

Fig. 40: View from inside the temple to the south (photo: C. von Pilgrim, © SIK)

This season, the reconstruction of the Nesmeti Temple came to an end with a concluding work assignment.[74] The final levelling plastering of the brickwork that replaces missing blocks of the original building was completed. The joint pattern was then indicated by incised lines (fig. 39). The former torus and cornice were only accentuated in the plaster on the screen walls of the pronaos to emphasise the lower height of the screen walls.

As no original floor slabs of the temple have survived, work had already begun during the last campaign to lay a new floor covering, which has now also been completed in the innermost room. In close consultation with the inspector accompanying the project, it had been decided to lay a floor of stone slabs, following the example of the restoration of the floor in the Isis Temple in Aswan, which had been successfully carried out by the Inspectorate of Antiquities Aswan in 2020. Accordingly, as in the Isis Temple, roughly dressed stones that had been recovered during the excavation of the temple were reused. To obtain an even surface of the floor, the upper side of the slabs was reworked (fig. 40).

Only a few blocks of the original entrance threshold and the external staircase leading to it have survived. After their reinstallation, the missing parts of the staircase were replaced with new sandstone slabs laid on a foundation of sand-lime bricks (figs. 37-38).

Fig. 41: Reassembled capital with name of Emperor Titus on abacus (photo: C. von Pilgrim, © SIK)

Unfortunately, the lavishly designed capitals of the two columns in the front of the pronaos were smashed when the temple was demolished in late Roman times. One of the two capitals

[74] A. Krekeler, 'Reconstruction of the temple of Osiris Nesmeti', in: Sählhof, *et al.*, *Report on 50th Season*, 72-74; A. Krekeler and C. von Pilgrim, 'Reconstruction of the Temple of Osiris Nesmeti', in: Sählhof, *et al.*, *Report on the 51st Season*, 59-60.

was partly reassembled years ago so that it gives an impression of its original design.[75] For structural reasons, but also to make it better visible to visitors together with the abacus lying on it, which is inscribed with the name of Emperor Titus, it was placed on a pedestal in front of the south-east corner of the temple (fig. 41).

After finishing the work on the temple, the landscaping of the outside area began. A layer of debris was deposited and levelled in the area around the temple to raise the ground level to the height of the temple's stylobate. This will now allow to display further large-format, undecorated parts of the temple, which could not be safely positioned in the temple, in an arranged block storage area on the west side of the temple in the next season. These mainly include several large fragments of the ceiling beams, a fragment of the lintel from the main entrance and fragments of the inner thresholds, but also undecorated wall blocks whose position could not be precisely determined. This not only brings together all the remaining elements of the temple in one place, but also provides visitors with further information about the architecture of the temple.

(C. von Pilgrim)

3. Study of Objects

3.1 Study of objects from completed excavations in the wider Khnum Temple area and the Town Wall

B. Bader continued the documentation of the pottery and small finds from the excavations (41st and 42nd Season) at the north-eastern section of the town wall of the Middle Kingdom (Area XXXVI)[76], M. Lehmann worked on various groups of small finds from House 55 (s.b.).

S. Buławka recorded the lithics from House 55, which were found in the house during the first years of the excavations. These are in total 84 pieces/collections from the excavation years 1989 to 2003 (18th Season - 32nd Season), which are now in the SCA's storeroom in Aswan. With this, the documentation of the lithics from House 55 is now completed (s.b.).[77]

The documentation of the pottery from the early 26th Dynasty (layer 4D and layer 5) in the area south of the Khnum temple (Area XXVI) was continued by D. Aston.[78] In addition, he recorded an assemblage of reworked sherds from the same pottery collections which might have been used as gaming pieces.

G. Eschenbrenner Diemer continued the investigation of the wood splinters from workshop H210 in Area XXIX (s.b.). Together with diorite splinters, they dominate the rich deposits that

[75] C. von Pilgrim, 'Restoration work on the temple of Osiris Nesmeti and other conservation work', in: Seidlmayer, *et al.*, *Report on the 45th Season*, 38-40.

[76] C. von Pilgrim, 'Town wall of the Middle Kingdom and Second Intermediate Period', in: Arnold, *et al.*, *Report on the 42nd Season*, 8-10; B. Bader, 'Work on the small finds and pottery from the excavations at the town wall in Area BXXXVI', in: Sählhof, *et al.*, *Report on the 49th Season*, 64-67.

[77] S. Buławka, 'The Lithic Assemblage from H55', in: Sählhof, *et al.*, *Report on the 50th Season*, 39-43.

[78] D. Aston, '26th Dynasty Pottery', in: Sählhof, *et al.*, *Report on the 51st Season*, 43-48.

have successively accumulated in the preserved southern part of the building. The direct proximity to the simultaneous construction site of the Khnum temple under Nectanebo II and the direct access to the transport route linking the construction site with the northern harbour led to the early assumption that objects were produced here that were needed on the construction site. However, it is difficult to determine the kind of objects, as only the working waste remains. Judging by the shape of the splinters, they were probably objects that were shaped with a gouge. Apart from sledges and mallets, dovetail cramps, of which large quantities were needed during the construction of the temple, are particularly conceivable. Several cramps were found during earlier excavations in the demolition rubble as well as in the masonry in situ. They were included in the current investigation in order to compare the types of wood used.

(C. von Pilgrim)

3.2 Nubian pottery from House 55 – an update

The study of the pottery from House 55 continued during the 2024 season.[79] The focus was on Nubian vessels and so-called hybrid vessels (labelled by Dietrich Raue as Medja-pots, imitating Pan-Grave style incised decoration on Egyptian style wheel-made globular bowls).[80] These vessels combine a Nubian surface treatment with the Egyptian production technique and use Egyptian Nile clay. The shapes are partly very similar to Pan-Grave style cooking pots and globular bowls, partly closer to Egyptian shapes like the 17th Dynasty cooking pots.[81]

Nubian pottery is very common in House 55 with 17.3% of the diagnostic pieces in the database (423 pieces of a total of 2451) and an average of 4.8% of the entire ceramic material (more than 5.500 individual Nubian sherds were counted).[82] Together with 67 hybrid vessels, the Nubian vessels account to 20% of the diagnostic ceramics processed in detail from House 55. In the following, an update regarding the Nubian vessels is presented.

Corpus of vessels

Within House 55, the large spectrum of both types and wares of Nubian pottery is remarkable: not only cooking pots are attested as hand-made and basketry-impressed Nubian wares, but also various open forms, storage vessels and fine wares.[83] The most common vessels are

[79] For a preliminary assessment of pottery from House 55 see J. Budka, 'Pots & people: ceramics from Sai Island and Elephantine', in: Budka and Auenmüller (eds.), *From microcosm to macrocosm*, 147-170.

[80] D. Raue, 'Nubian pottery on Elephantine Island in the New Kingdom', in: Spencer, *et al.*, *Nubia in the New Kingdom*, 525-533; see also de Souza, *JAEI* 27 (2020), 1-23.

[81] Cf. A. Seiler, 'Zur Formentwicklung der Keramik der Zweiten Zwischenzeit und der frühen 18. Dynastie', in: Kaiser, *et al*., *MDAIK* 55 (1999), 204-224.

[82] This amount is significantly higher than in other contexts on Elephantine during the Second Intermediate Period and early New Kingdom which is estimated by Raue, *Elephantine und Nubien*, 226 as not more than 1%.

[83] For a similar situation in other contexts on Elephantine, see Raue, *Elephantine und Nubien*, passim.

globular bowls, most likely used as cooking pots (51% of the vessels, fig. 42), very often with incised decoration and of Pan-Grave style (fig. 43).[84]

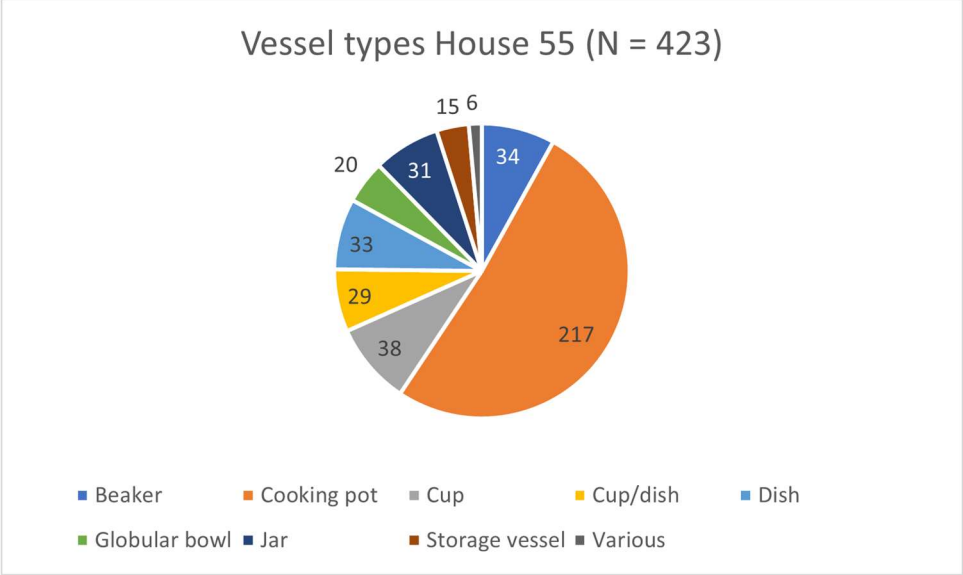

Fig. 42: Quantities of Nubian vessel types from House 55 (chart: J. Budka, © SIK)

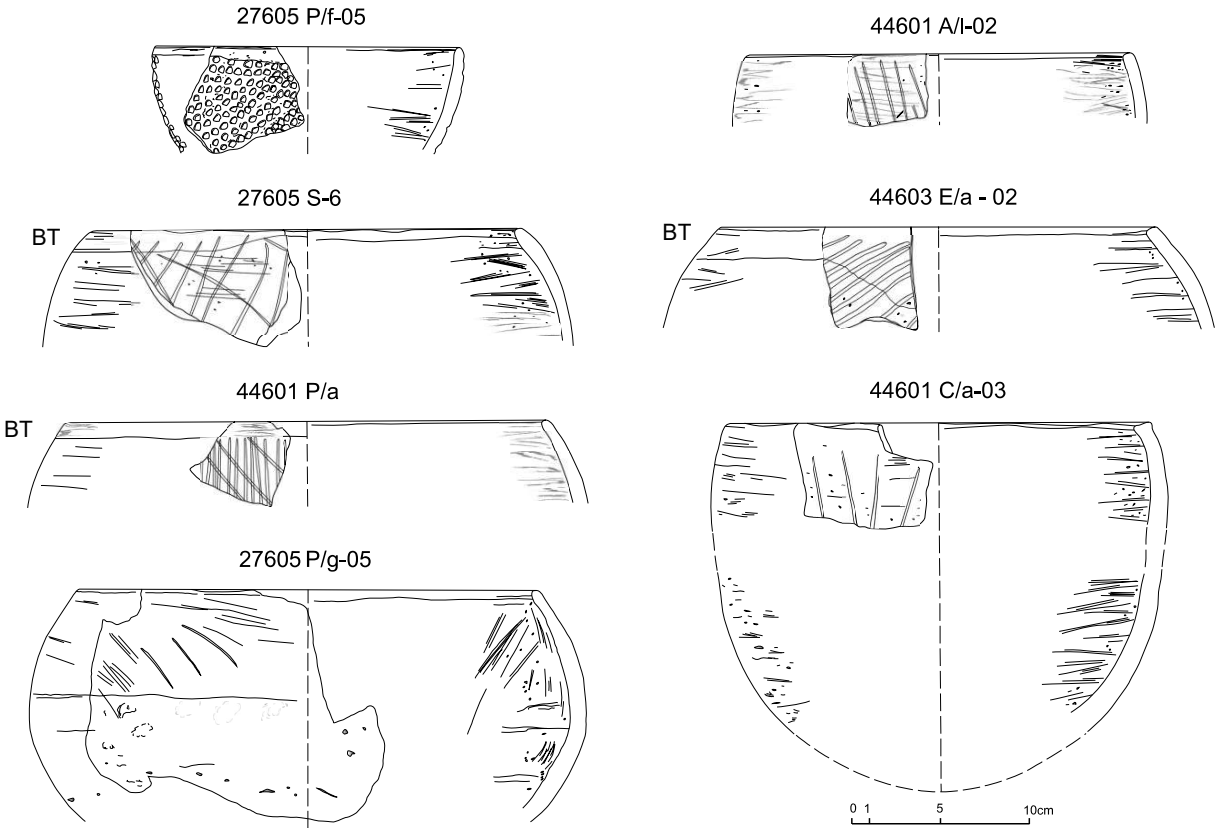

Fig. 43: Typical shapes of Nubian vessels from House 55 (drawings: J. Budka. © SIK)

[84] Cf. Raue, *Elephantine und Nubien*, figs. 101-106, 113-129, 142-157.

A minority of the cooking vessels (as well as open forms) shows basketry impression similar to pieces from Sai and Sesebi in Upper Nubia.[85] Small cups, beakers and bowls, mostly of black-topped style, are also present as are small amounts of storage vessels and jars. Altogether, this assemblage clearly reflects the domestic character of House 55 and the corresponding function of the entire ceramic inventory of which the Nubian pottery must be regarded as an integral part.

Wares, provenience and production

The majority of the Nubian vessels from House 55 are produced in Nile silts which were recorded as Nubian Fabrics 1-3;[86] only one example (Exc.-No. 44603Q/b-01) attests to a desert clay,[87] three more sherds are of unclear fabrics. The most common Nubian fabric in House 55 is the medium-fine clay Nubian Fabric 2 (fine-medium and medium wares dung and/or chopped straw tempered) (fig. 44).

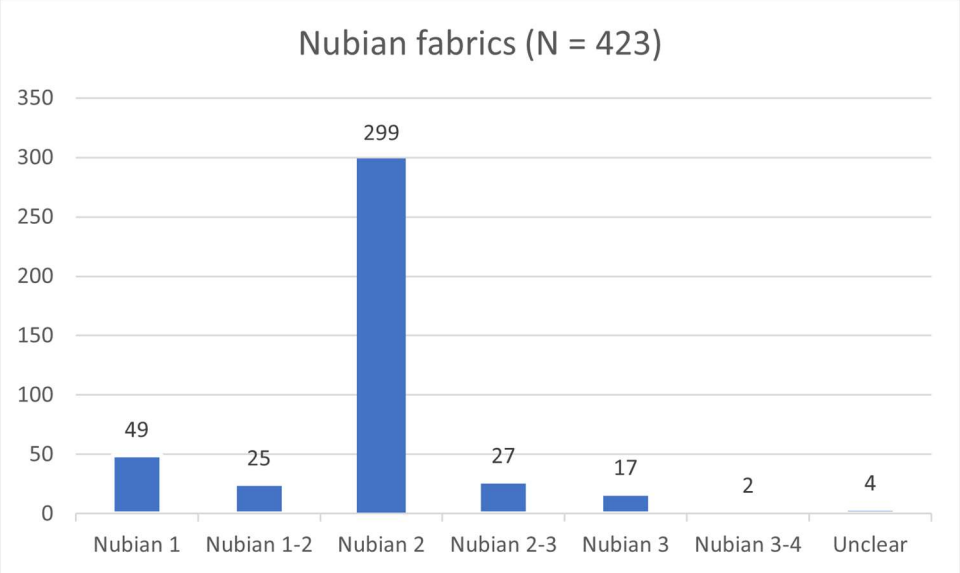

Fig. 44: Distribution of Nubian wares from House 55 according to fabrics (chart: J. Budka, © SIK)

Only a very limited number of sherds belong to the coarse Fabric 3, while some fine Fabric 1 sherds are present. Most of the sherds belonging to Nubian Fabric 2 are incised wares (single incised lines, criss-cross, herringbone or incised panels) related to the Pan-Grave tradition.[88] They are burnished or smoothed on the inner surface and often uncoated on the exterior surface (eventually burnished or smoothed only on the rim). These wares often showed blackened internal and external surfaces, indicating they were used as cooking pots. Fabric 2

[85] P. Rose, 'Early 18th Dynasty Nubian pottery from the site of Sesebi, Sudan', in: Forstner-Müller and Rose (eds.), *Nubian pottery*, 13-29; see also Budka, in: Budka and Auenmüller (eds.), *From microcosm to macrocosm*, figs. 1 and 9. Cf. also Raue, *Elephantine und Nubien*, fig. 164.

[86] These observations on the fabrics and wares are based on a report of Giulia D'Ercole of a study season at Elephantine in 2015 (ERC AcrossBorders project, LMU Munich).

[87] For the use of desert clays for Nubian wares see most recently Brand and Liszka, *SudNub* 27 (2023), 24-47.

[88] See de Souza, *New horizons*. See also Raue, *Elephantine und Nubien*, figs. 143-157.

consists also of black-topped wares with or without a red-coated slip on the external surface. The black-topping can be present only inside the sett-off of the rim or can also be irregular, going below the set-off rim which is probably of chronological relevance.[89] The general presence of both irregular and defined black-tops of Pan-Grave wares at Elephantine has not yet been noticed in previous publications[90] and stresses the importance of the still largely unpublished material from House 55.

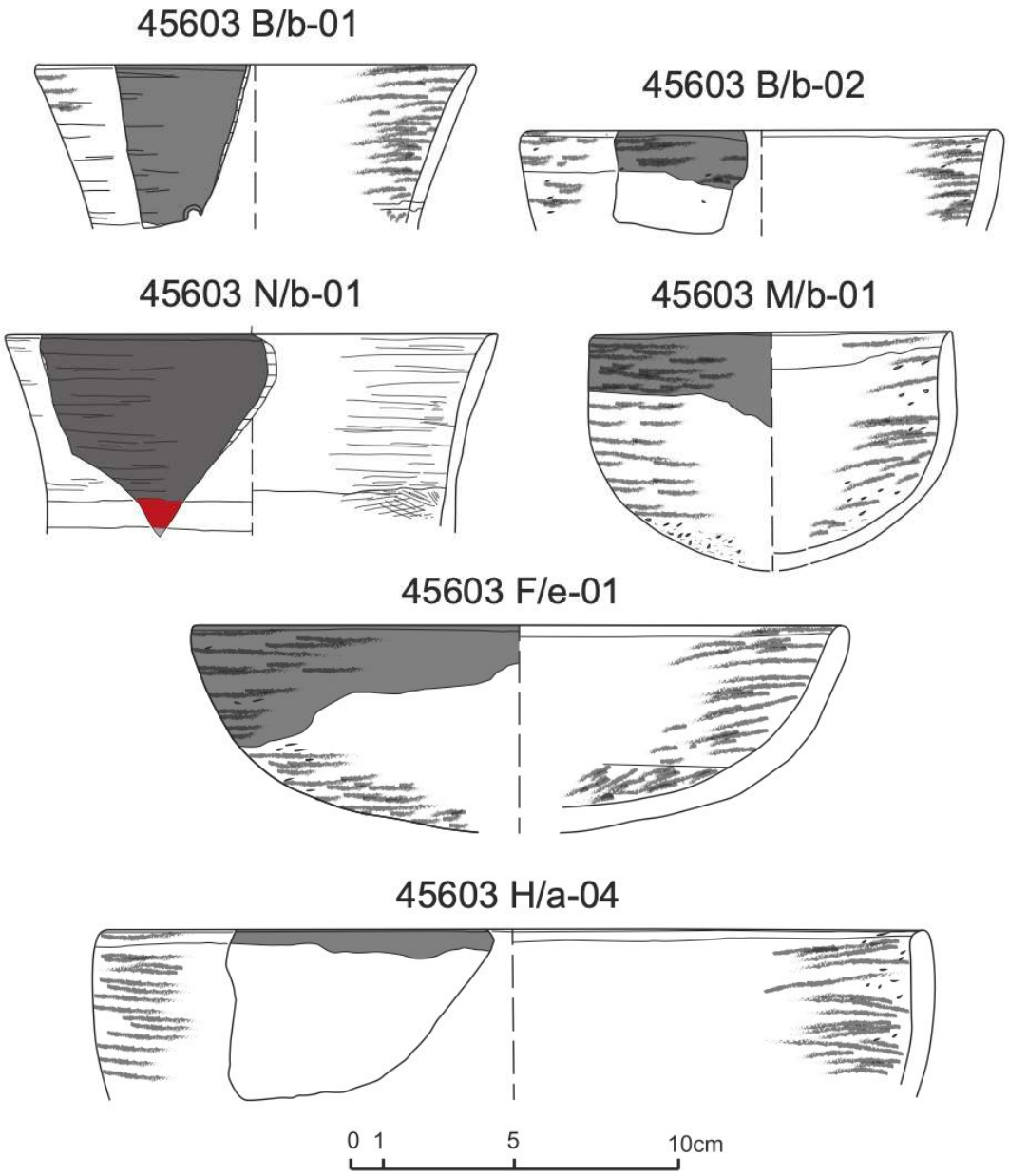

Fig. 45: Examples of black topped wares from House 55; Classic Kerma and Pan-Grave style (drawings: J. Budka, © SIK)

[89] As suggested by M. C. Gatto, C. Gallorini and S. Roma, 'Pan-grave pottery from Nag el-Qarmila and Sheikh Mohamed cemeteries in Gharb Aswan', in Forstner-Müller and Rose (eds.), *Nubian pottery*, 94. See also Raue, *Elephantine und Nubien*, 235.

[90] See de Souza, *New horizons*, fig. 90 for a distribution map of the defined (and applied) black-tops on which Elephantine is missing as a find spot.

Nubian Fabric 1 (fine wares dung tempered) on Elephantine refers mostly to black-topped wares on red coated exterior surfaces, burnished or well smoothed on the interior. One exceptional piece from House 55 is Exc.-No. 45602G/b-09 which represents the shoulder fragment of a fancy vessel of finest quality – probably with a spout typical for Classic Kerma and clearly an import from Nubia.[91]

Black-topped wares from House 55 range from very fine to coarse wares, include incised wares, polished wares, coarse wares, and wares with basketry impressions. Within the drinking vessels (beakers and cups) and dishes, it is remarkable that Classic Kerma beakers are present (including tulip beakers with silver bands), but most of these black-topped vessels belong to the Pan-Grave horizon (fig. 45).[92]

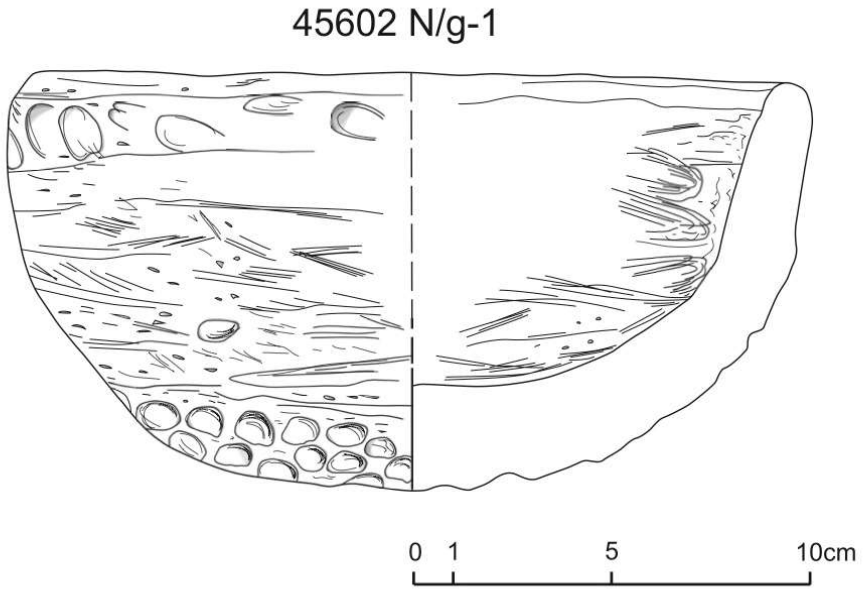

Fig. 46: Locally produced Nubian style vessel Exc.-No. 45602 N/g-1 from House 55 (drawing: J. Budka, © SIK)

Of particular interest is the complete vessel found *in situ*, Exc.-No. 45602 N/g-1 (fig. 46) which can be classified as *ad-hoc*-Nubian vessel, attesting to the local production of Nubian handmade vessels on Elephantine during the late Second Intermediate Period/early 18th Dynasty. Other sherds from House 55 like Exc.-No. 27605X7a-01 and Exc.-No. 45603H/d-01 are also very simple bowls in coarse ware of seemingly a local pottery production in Nubian style. These vessels are very low fired, presumably in a simple "household" fireplace rather than a pottery workshop supplying a larger community.

[91] For this type of vessel see Gratien, *Les cultures Kerma*, fig. 7e (Kerma), fig. 14 (Sai) and fig. 27 (Aniba).

[92] Cf. de Souza, *New horizons*, figs. 31-32.

Cultural implications and outlook

Altogether, most of the Nubian vessels from House 55 are associated with the Pan-Grave horizon while Classic Kerma forms are present as well as local variants. Based on this substantial corpus from one context, Elephantine is one of the main findspots of Pan-Grave associated wares in Egyptian settlement contexts, including a large set of different black-topped fine wares, complementing the pottery corpus attested from cemeteries.[93]

The First Cataract region is well-known as a border region with complex interactions of various communities of different lifestyles[94] and the cohabitation of Egyptians and Nubians can be traced at Elephantine through millennia.[95] Rather than drawing artificial borders between Egyptians, Nubians, and their respective lifestyles, the aim should be to reconstruct social, economic and cultural identities and corresponding practices at the local level.[96] A contextualised study of the pottery from House 55 holds much potential in this respect.

Although recent studies have stressed the need for regional perspectives in Egyptian and Nubian archaeology, including the analysis of ceramics, it is also essential to investigate local patterns within a larger context. Here, House 55 and the mixed occurrence of Kerma style, Pan-Grave style and locally produced vessels including hybrid vessels is on one hand very characteristic for the First Cataract and Elephantine,[97] but on the other hand comparable to the combined occurrence of Kerma and Pan-Grave style material culture in tomb contexts in Nubia.[98] This seems to attest to the diversity of lifestyles within individual communities – nomadic groups did not remain nomadic forever, but could also become partially sedentary and there were a number of different forms of agropastoralism and other subsistence strategies in the Nile Valley and beyond.[99] Furthermore, for reconstructing the lived experiences reflected in archaeological contexts, aspects of interconnectivity, of seasonality and the combination and dynamics of various lifestyles need to be considered.[100]

(J. Budka)

[93] For other findings in Egyptian settlements like Edfu and Abydos see de Souza, *New horizons*, 9.

[94] Cf. Gatto, *Origini* 36 (2014), 93-123.

[95] Raue, *Elephantine und Nubien*, passim. Note also the find of an authentication sealing naming the ruler of Kush in a cartouche at Elephantine, suggesting an influence of the kingdom of Kerma on the island, see C. von Pilgrim, 'An authentication sealing of the "Ruler of Kush" from Elephantine', in: Jiménez-Serrano and von Pilgrim (eds.), *From the Delta to the Cataract*, 218-226.

[96] Budka, *AcrossBorders* I.

[97] See Raue, *Elephantine und Nubien*, 253-262.

[98] Cf. Raue, *Elephantine und Nubien*, 254 and new evidence from cemetery GiE 003 in Ginis, J. Budka, 'Introduction. Regionality of resource management in Bronze Age Sudan: an overview and case studies', in: Budka and Lemos (eds.), *Landscape and resource management in Bronze Age Nubia*, 22-24, as well as El-Widay I at the Forth Cataract, see Emberling and Williams, *GAMAR* 7 (2010), 27, 29 and 33; Walsh, *JANEH* 9 (2) (2022), 195-220.

[99] Cf. Gatto, *JAEI* 6 (1) (2014), 11-28. See also Raue, *Elephantine und Nubien*, 262.

[100] Cf. the concept of archaeology of interaction, adapted for Nubia by C. Näser, 'Nomads at the Nile: towards an archaeology of interaction', in Barnard and Duistermaat (eds.), *The history of the peoples of the Eastern Desert*, 80-89.

3.3 Small finds from House 55

The small finds study of House 55 (late SIP/early 18th Dynasty) was continued this spring season. The work started with the wooden objects found within House 55. The wooden objects only take up about 2% of the total find material and include firewood and charcoal. In addition, about 80 objects remained, of which 68 could be identified (fig. 47).

This includes beams, most likely parts of the collapsed roof, and several posts. Parts more likely related to the actual workshop activity are planks and dowels as well as parts of boxes and furniture legs probably from beds and stools.

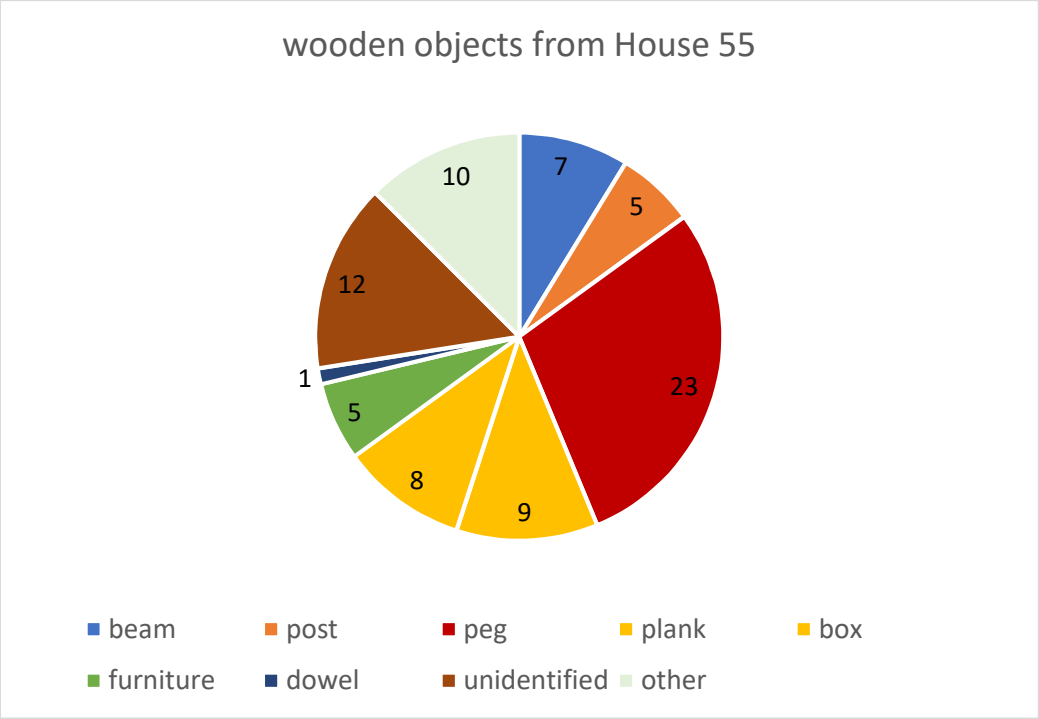

Fig. 47: Wooden objects by type (chart: M. Lehmann, © SIK)

As several parts of objects such as boxes and furniture were found but without other joining parts of these objects, they could be either unfinished and were left within the production process going on in the workshop. Another option would be the storage of older wooden parts in the house for later reusage of their material, this is especially the case for those objects found in storage areas.

In addition, 23 small wooden pegs remained from the excavation, many more were found *in situ* in room C but did not survive removal from the ground. Many of these pegs are varying in diameter between 1-3 cm and were used intensely within this workshop room to peg other objects to the ground. As many of them are relatively small, they might have been used as green wood.

The study of net sinkers made of reused ceramic sherds was also continued this season. A total of 100 objects belong to this category. Slightly more than half were made of the harder marl clay while the rest were made of Nile clay. These objects were attached to one end of fishing nets, opposite of net swimmers, bringing the net into a vertical position in the water.

The sherds were recut into roughly rectangular shapes with the lateral sides scraped down into flat or slightly convex shapes. They often show indentations where the string attached them to the net (fig. 48).

The weight range of the net sinkers can be allocated from the 31 examples that are completely preserved and show a range between 21.6-107.1 g, with the majority weighing between 40-50 g.

Comparing the distribution within the building, 23 net sinkers are from the later filling layers of the house after its abandonment, the remaining 77 spread quite evenly over all rooms of the house with at least 2 examples in every room. However, there is a clear focus in room B and C and a still somewhat higher amount in the neighbouring rooms A and D (fig. 49). Therefore, the net sinkers were mostly used/handled/produced(?) in room B and C, while some might have been stored in the other rooms.

Fig. 48: Net sinker 45601U/a-4 (photo: M. Lehmann, © SIK)

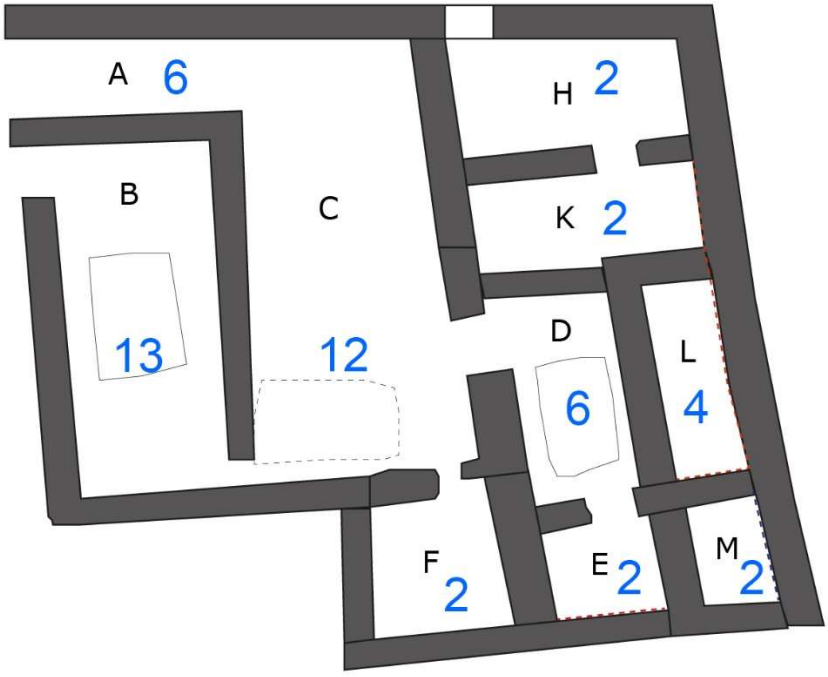

Fig. 49: Distribution of ceramic Net sinkers by rooms (drawing: M. Lehmann, © SIK)

If the building phases are taken into consideration, a slight shift appears. In the older phase d more objects were found in room C and B, and in phase c an even spread over rooms A-C can be seen. In later phase b more objects were found in room D.

The remaining part of the season was used to finish the study of the stone objects and to continue the drawing of objects for the publication.

(M. Lehmann)

3.4 House 55: The lithic assemblage from earlier seasons

During a short stay in spring 2024, the lithic artefacts from House 55, which already had been found in the 18th to 32nd season, were recorded. [101] H55 is a residential house and workshop functioning during the late 17th Dynasty to early 18th Dynasty. It is located in Area VIII, to the south of the Heqaib Sanctuary. The house comprises five different building phases (a-e). [102]

A total of 185 lithic artefacts from H55, weighing a total of 2.33 kg, were examined. All were described, measured, and photographed and a selection was drawn. The material analysed was consistent with that from excavation seasons 44 to 47.

Most of the lithic artefacts were made of chert (184). Only 1 tool was made from another not yet identified raw material. Distinctions within the flint artefacts were based on microscopic analysis undertaken for artefacts from another area of Elephantine Island in previous years[103]. The largest group (126 specimens) consists of beige, greyish, and brown cherts with a smooth, weathered 1-3 mm cortex (if exists on the surface), mottled structure, lightly banded or with small inclusions, matt and non-transparent. Few were similar but contained crystal inclusions. Only five pieces were made of pinkish-beige chert with similar characteristics. Up to 17 artefacts were burnt to such an extent that identification of the chert raw material group was not possible.

Table 3 gives an overview of the 185 lithic artefacts studied this season. The table is organised according to building phases and rooms within House 55. The lithics are divided into four major categories: cores, debitage, tools, and natural nodules/fragments of nodules. There are several types of debitage elements, including flakes, blades, technical flakes/blades - crested flakes, chips (flakes less than 15mm), bladelets (blades less than 15mm), and waste pieces. Tools include sickle blades, scrapers, sidescrapers, notched flakes, denticulated tools, burins, pounders, bifacial tools, bifacial knives, and combined tools (which combine several tool

[101] For the material from seasons 44 to 47 see: S. Buławka, 'The lithic assemblage from House 55. Preliminary results', in: Sählhof, *et al.*, *Report on the 49th Season*, 57-63; S. Buławka, 'The lithic assemblage from House 55', in: Sählhof, *et al.*, *Report on the 50th Season*, 39-43; S. Buławka, "House 55: The Lithic Assemblage", in: Sählhof, *et al.*, *Report on the 51st Season*, 38-42.

[102] For the building phases of House 55: C. von Pilgrim, 'Excavation of House 55', in: Seidlmayer, e*t al.*, *Report on the 44th season*, 10-12; C. von Pilgrim, 'Excavation of House 55 (18th Dynasty)', in: Seidlmayer, *et al.*, *Report on the 45th season*, 22-25; C. von Pilgrim, 'House 55: A workshop of the late 17th and early 18th Dynasty (Area VIII)', in Sigl, *et al.*, *Report on the 46th Season*, 27-35.

[103] M. Brandl, 'Work on the small finds and pottery from the excavations at the town wall in Area BXXXVI. Part E. Chipped stone assemblages', in: Sählhof, *et al.*, *Report on the 49th Season*, 69-72; Jeuthe and Hamdan, *MDAIK* 74 (2018), 99-122; Hikade, *Elephantine XXXV.*

forms). A large proportion of the pieces examined in the assemblage were flakes or blades with signs of use. They were categorised as tools.

Building phase	Room	Core	Debitage						Tools												Natural fragments/nodules	Total	
			Flake	Blade	Crested flake	Chip	Bladelet	Waste	Used flake	Used blade	Sickle blade	Scraper	Sidescraper	Burin	Notched flake	Denticulated tool	Bifacial tool	Bifacial knife	Combined tool	Pounder			
a	(D_E)		1	1					2												1	5	27
	(F_G)																		1			1	
	A						1		2					1						1		5	
	C			1																		1	
	E_F																		2			2	
	F	1	1						2	1									1			6	
	G		2						1										2			5	
	L		1																		1	2	
a/b	A		2	2	1			1	3	1												10	10
b	A	2	18	1	1	2		3	2	2			1		1	1	1	1		3	1	40	117
	B									1										1		2	
	C		6						2	1		1								1	2	13	
	C, D	1	1								1											3	
	D		2								1		1									4	
	D, E		3						1		1											5	
	E		1					1	6	1				1					1	1		12	
	F		1						1										1			3	
	H	1	16						11	3	3									1		35	
c	A		7	1				3	1			1			1				1			15	19
	C		1							1		1		1								4	
cd	C	1							1													2	2
d	C		3						1	1	1		1	1						1	1	10	10
Total		6	66	6	2	2	1	8	36	12	7	3	3	4	2	1	1	1	9	9	6	**185**	

Table 3: The lithic assemblage from House 55, seasons 18 to 32 (S. Buławka, © SIK)

The largest number of lithic artefacts were found in building phase ‘b’, the last phase of use of the house. There are 27 pieces from the building phase ‘a’ after the house was abandoned, when rubble from another district was deposited over the house. Slightly less numerous are the chert from earlier phases of use. Building phase ‘d’ is represented by six tools, three pieces of debitage and one natural fragment of the nodule. The tools included a flake and blade with traces of use, blade sickle insert, sidescraper, burin and pounder. They were all found in Room C of House 55. In the layers of the building phase ‘c’ of House 55, 19 lithic objects were found. Among them, seven tools and twelve pieces of debitage can be noted. Among the tools, it is possible to distinguish: a flake and blade with traces of use, two scrapers, noched flake, burin and a combined tool (flake with traces of use and pounder fragment). Most were discovered inside room A (15 pieces) and only four pieces were in room C.

The most significant number of lithic artefacts studied during this season came from the building phase 'b', the last and best-preserved phase of House 55. This collection consists of various forms of artefacts, which can be divided into tools (54), debitage (56), cores (4) and natural nodules (3). Tools include flakes and blades with use wear retouch, sickle blades, scraper, sidescrapers, burin, bifacial tool, bifacial knife fragment, denticulated tool, and pounders. The largest part of the above-mentioned set was discovered in rooms A and H of House 55.

There were only six cores in the entire chert assemblage studied this season, of which only one represents blade and one flake-blade technology. Among the debitage and tools, flake forms dominated. The technology of production was therefore relatively simple, not requiring specialised knowledge. A hard hammer technique was used to produce tools, which is evident in the numerous defects, such as hinges or plunges. Traces of ochre were visible on several tools. On a few sickle inserts, on the other hand, traces of residues were noticeable on the working edges. In addition, traces of adhesive were noticed on one of them. Some of the artefacts were burned (24 in total) and some were heated.

Most of the tools must have been made inside the workshop located in House 55. Many of them are known from similar assemblages from other sites in Egypt[104]. Undoubtedly all the tools, however, were used by the local craftsmen. They were employed for simple ad hoc daily tasks such as cutting, scraping, scratching, grooving, grinding and other similar activities.

(S. Buławka)

3.5 Wood analyses from workshop H210 in Area XXIX

This season's work completed the analysis of woods discovered in workshop H210 (30th dynasty), mainly wood chips found in layers alternating with diorite chippings. The wooden chips found in H210 are particularly abundant but have a poorly preserved anatomical structure, making it difficult to identify the species used. However, the abundance of wood chips has made it possible to increase the number of samples taken and to gather precise images of the different species used. The analyses carried out this season[105] (430 samples) complemented those carried out in spring 2022.[106]

Analytical protocol developed

For the majority of pieces, small samples (2 mm) were extracted from every object/ wooden chip whose anatomical structure has been preserved. Standard procedures were followed for examination under the optical microscope and identification of these wood samples: rehydration of the samples and preparation of thin sections for tangential, transverse, and radial examination. In the case of very dense wood, for example for the fragments of bark

[104] Giddy, *The Survey of Memphis II*, 226-243, pls. 51-52, 89-90; A. Tillmann,, *FRS* 4, 70-73; Buławka, *ÄgLev* 27 (2017), pl. 1.

[105] The work was carried out from 2nd to 28th November 2023.

[106] G. Eschenbrenner Diemer, 'Analysis of Wood from H55 and H21', in: Sählhof *et al.*, *Report on the 50th Season*, 43-51.

isolated in the various batches that could be identified for each archaeological stratum, these could be boiled in order to facilitate removal by softening the wood, facilitating the cutting of thin strips. This analytical protocol is developed at the Jodrell Laboratory in Kew Gardens and consists of boiling wood samples of varying densities before sampling with a microtome. This technique was adapted to the Egyptian terrain allowing the collection and identification of species that could not have been analysed without this process. Comparisons were made with thin sections of wood in the scientific reference collections at Jodrell Laboratory in Kew Royal Botanic Gardens and my own reference collection as the Inside Woods Database[107] online and reference books.

The artisanal area H210

Connected to the temple of Khnum as well as to the northern port of the site by a huge transportation route in the reign of Nectanebo II, this artisanal area of 4m x 7m had already been partially excavated by Charles Simon Clermont-Ganneau in 1908, who identified it as “la maison de quelque artiste”[108] due to the discovery of several "pithoi" inscribed in demotic. The excavations (2017-2018) carried out under the direction of C. von Pilgrim made it possible to understand that this area was initially used as a stable and was then used alternately and over a continuous period as a woodworking area, then as a diorite working area, due to the numerous cuttings discovered in successive layers which was used between the reigns of Nectanebo II and Ptolemy II. Additionally, ironworking was also identified. It is interesting to note that the wood shavings in the oldest layers do not mix at all with the diorite cuttings showing successive and not contemporary activities. Then the successive archaeological layers show a mixture of wood chips and diorite, raising the question of the development of the organisation of the craft activities that were carried out in H210.

Following on from the analyses carried out in 2022 on the oldest layers (47704S and 47704Z), I continued and finalised the analyses of the other archaeological strata in order to obtain a complete picture of the changing use of wood species in this workshop. Each bag was examined, the different types of wood sorted by colour and appearance. In parallel with the analysis of the offcuts, this year I learned of the existence of several wooden dovetail cramps from earlier seasons, some still in situ, the others now in the magazine of the Supreme Council of Antiquities in Aswan. I also carried out analyses of these construction elements in order to compare the species used in their manufacture with those identified in the offcuts. Following this sorting, several specimens from each batch were analysed to obtain a representative sample of each type of wood, 430 samples in total.

[107] InsideWood Database of the NC State University Libraries (https://insidewood.lib.ncsu.edu/ last accessed 16/12/2024).

[108] C. von Pilgrim, ‘A temple workshop of the 30th Dynasty north of the late Khnum temple (Area XXIX)’, in: Sigl *et al.*, *Report on the 47th Season*, 18-21.

Chips

The wood found in each stratum had been collected in plastic bags without distinguishing according to the colour of the wood or its type (hardwood, bark, branches). Bark fragments are omnipresent but in smaller quantities in the oldest strata.

On the other hand, bevelled off-cuts and fragments of indeterminate shape are very numerous. A first sorting was made in order to gather the samples by type of wood (fig. 50).

These different categories were kept within each bag, with each group being separated in its own plastic bag. The vast majority of these chips, which vary in size from 1cm to 5 cm (Module 1 to 4), are bevelled at each end (fig. 51).

Fig. 50: Classification of wood chips and fragments by type (bag 47702 W/a-1) (photo: G. Eschenbrenner Diemer, © SIK)

Fig. 51: Bevelled chips of different sizes (modules 2, 3, 4) (photo: G. Eschenbrenner Diemer, © SIK)

Analysis of the numerous offcuts of bevelled carvings discovered in the most recent layers of the workshop has revealed the omnipresence of *Vachellia nilotica (*VN*)* then of *Faidherbia albida* (FA) and, more sporadically, other species such as *Ziziphus spina Christi (*ZSC*)*, *Cedrus libani (*CL*)*, *Tamarix* (T) and *Ficus Sycomorus* (FS) and of *Phoenix dactylifera* (PD) for a single fragment as follows:

Building Layer 2A (Ptolemaic)
Module 1 (5-4 cm): VN: 1 sample; FA: 1 sample; CL:/; T: ; ZSC: ; FS:1 sample .
Module 2 (3,9-2,6 cm): VN: 100%; FA:/ ; CL:/ ; T:/ ; ZSC: / ;FS:/ .
Module 3 (2,5-1,5 cm): VN: 98%; FA: 1%; CL: 1% ; T:/; ZSC: / ; FS:/.
Module 4 (1,4 -1 cm): VN:100%; FA: /; CL:/ ; T: ; ZSC: / ; FS:/ .

Building Layer 2B (Ptolemaic)
Module 1 (5-4 cm): no chips
Module 2 (3,9-2,6 cm): VN: /; FA: 1 sample; CL: / ; T: /; FS:/.
Module 3 (2,5-1,5 cm): VN: 3 samples; FA: 2 samples; CL: 2 samples; T: ; PD : 1 sample ; FS:/.
Module 4 (1,4 -1 cm): VN: 2 samples; FA: / ; CL: 1 sample ; T:/; FS:/.

Building Layer 3 (Nectanebo II)
Module 1 (5-4 cm): VN: 97%; FA: 2%; FS: 1% ; CL:/ ; T:/ ; ZSC: /.
Module 2 (3,9-2,6 cm): VN:94%; FA: 3%; ZSC: 2%; T: 1%. FS: / ; CL:/.
Module 3 (2,5-1,5 cm): VN: 90%; FA: 5%; CL: 2%; T: ; ZSC: 2% ; FS:1%.
Module 4 (1,4 -1 cm): VN:98%; FA: 1%; CL:/; T:/ ; ZSC: 1% ; FS:/.

To these results should be added those obtained during the previous season, which highlighted the extensive use of *Vachellia tortilis* (Forssk.) Hayne subsp. *raddiana* (Savi) Brenan, and *Vachellia gerrardii* Benth, two species which are then no longer used in favour of *Vachellia nilotica*. It is interesting to note this change in the use of Acacia wood, with Nile Acacia rapidly replacing other types of Acacias. The reasons for this change are still open to question: was it a technological choice? Greater accessibility to Nile Acacia? A preference for Nile Acacia over the other two species because of the larger size of the trees and therefore the greater quantity of wood that can be processed per tree felled. We should also note the gradual reduction in the number of offcuts of bevelled carvings in the later chronological phases of the workshop, while the main phase of use of the workshop for the manufacture of wooden pieces concentrated during the reign of Nectanebo II.

Dovetail cramps

Additionally, several wooden dovetail cramps were analysed for anatomy. Three were analysed *in situ* in the field (52701A-1, 2, 3) and six in the magazine of the SCA in Aswan (18752c, 18753c, 23706 B, 25700, 27700, 30106 R/b-2). Of these 9 dovetail cramps, 3 were too damaged to be analysed under the microscope. The other six were all identified as being made of *Vachellia nilotica* wood. W. Niederberger proposed earlier that two of these dovetail cramps (probably 18752c, 18753c, fig. 52a) were made from acacia wood.[109] However, no analysis had been carried out at that time. On both pieces a black line marks the centre of the cramp, which was probably left when the block and the mortar were prepared (fig. 52b).

Fig. 52a: Dovetail cramps 18752c, 18753c (photo: G. Eschenbrenner Diemer © SIK)

[109] W. Niederberger, *Elephantine XX.*, 93 footnote. 502.

The results of the analyses carried out this season highlight the concordance between the species identified among the bevelled offcuts, which probably come from the preparation of the cramps used in the construction of the temple.[110]

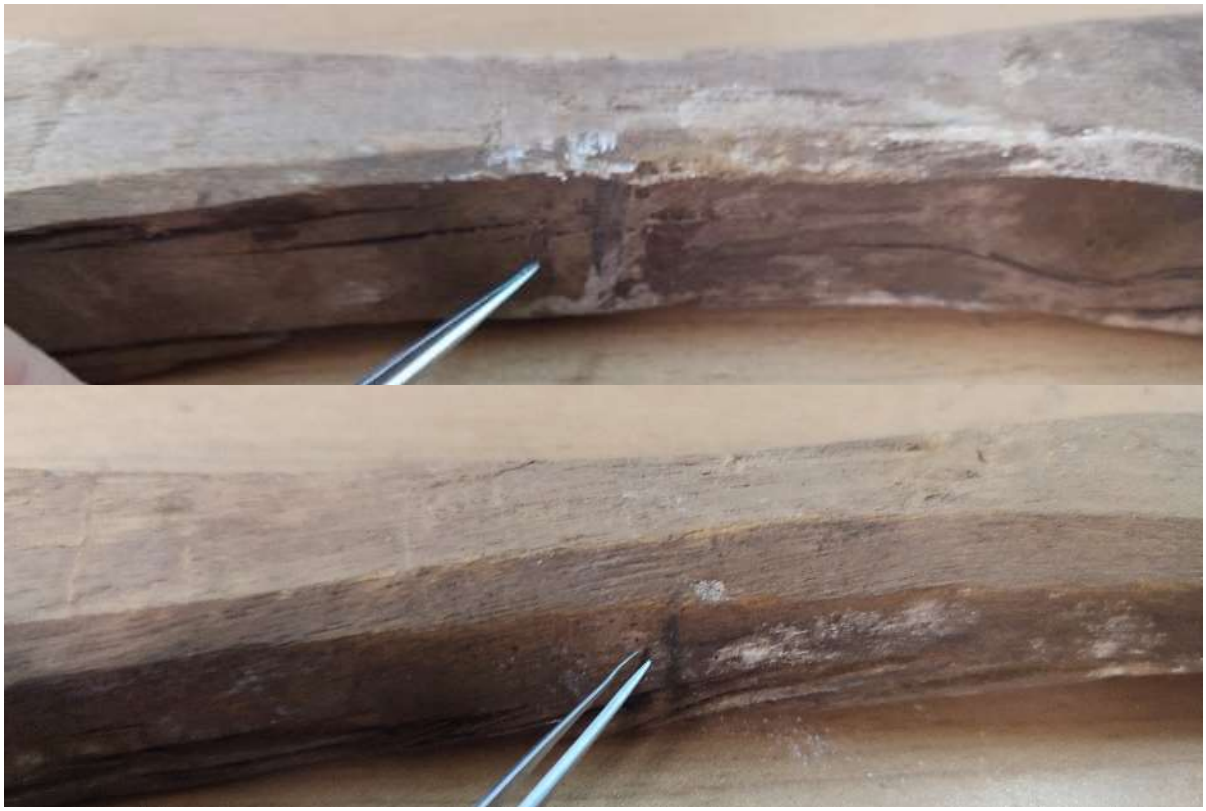

Fig. 52b: Dovetail cramps 18752c, 18753c, black lines in the centre (photos: G. Eschenbrenner Diemer © SIK)

Other identifications of bevelled offcuts in ZSC, CL, and one in PD raise the question of the use of denser species for the preparation of other elements of the temple: door elements, other dovetails cramps used in places requiring greater strength? No complete cramp made from one of these woods has been found. However, we know of dovetail cramps made from a very hard type of wood in an earlier period, for example one made of ebony from the temple of Ramses III at Medinet Habu.[111] However, given the difficulty of anatomically identifying this type of wood, it is difficult to know whether we are really dealing with wood from the Ebenaceae family, *Dalbergia melanoxylon* (known as the ebony of the pharaohs) or a dark wood falsely identified as ebony.[112]

[110] A previously expressed hypothesis is therefore obsolete, cf. Eschenbrenner Diemer, in: Sählhof *et al.*, *Report on the 50th Season*, 49-50.

[111] Lucas and Harris, *Ancient Egyptian Materials and Industries*, 436.

[112] G. Eschenbrenner Diemer, 'Ebony or not ebony? The case of black woods used in Ancient Egyptian woodcraft', in: *Proceedings of IWAA 2023 conference*, forthcoming.

Other Fragments

Some fragments of wood of undetermined shape include the same species as those identified for the bevelled offcuts (VN; FA; CL; T; FS) in the same proportions, but also several fragments of palm (PD) were identified from layer 2 and 3, as well as three fragments of *Mimusops laurifolia* (ML), a high- quality wood used mainly to make statuettes or pieces of furniture, identified in a Ptolemy phase of the building. These different identifications suggest that this workshop, where the dovetail cramps for the construction of the Khnum Temple might have been manufactured, was also a workshop where high-quality wooden objects (CL, ZSC, ML) were probably made (for the temple?) by the craftsmen working in this workshop.

Finally, the wood of a door element (47702W/b-1) from H210 has also been identified as Nile acacia wood.

(G. Eschenbrenner Diemer)

3.6 Late Period Sealings from Area XXVI

The sorting, inventory, and initial classification of all sealings found during the excavations south of the Khnum temple (Area XXVI), which were completed in 2019, was concluded last season. Large quantities of sealings were found in this area in four building layers of the Late Period (tab. 4). However, the smaller quantities in the two older building layers do not give reason to draw any conclusions about possible changes in sealing practices. The difference is most likely simply due to the much smaller excavation area in which the two older building layers were excavated as well as due to the different nature of deposits.[113]

Building Layer		Number of Sealings (total)	Sealings without Impressions	Sealings with Impressions	Sealings with incised marks/fingerprints
3	(30th Dyn.)	1639	935	691	13
4B	(late 26th Dyn.)	1304	618	676	10
4D	(early 26th Dyn.)	31	14	16	1
5	(25th/26th Dyn.)	273	150	123	2
Total		**3247**	**1717**	**1506**	**26**

Table 4: Number of sealings from area XXVI

Seal impressions are found on almost half of all closure fragments. In addition, there are a few fragments in each building layer that are marked with finger nicks or incisions. This type of marking on mud closures in Elephantine was previously only known from the First Intermediate Period and the early Middle Kingdom.[114]

[113] In contrast, only very few sealings (115) were found in the residential area from the contemporary Late Period Building layers 3 to 5. The low number is probably due to the only sporadic use of sieves during the excavation, as closures without impressions (21) were only found in Building layer 3, see Kuckertz and Nebe, *Elephantine XXII*, 208.

[114] Dorn, *Elephantine XXXI*, 88-89, 252-254.

The sealings from Building layer 4B

The sealings from Building layer 4B all come from a layer that was used to fill mortar pits and to level the site after the construction of the enclosure wall of the Khnum temple district.[115] The sealings therefore originate from waste deposits that were removed from other areas within the temple precinct. It can therefore be assumed that the levelled waste also contains older material, which chronologically dates mainly from the time of the previous Building layer 4C, which was largely removed for the construction of the enclosure wall and the complete remodelling of the temple district.[116] It is therefore not surprising that the names of older kings of the 26th Dynasty are also represented in the corpus of sealings from this building layer.

Royal names are not part of a basiliphorous name in any seal. They are either placed between the title and the name or after the name of the respective seal bearer. The prenomen of Psammetichus II is particularly well represented, with 26 fragments that can be assigned to five different seal types (tab. 5). The name of Amasis appears on 17 fragments belonging to four different seal types.[117] In addition, there are 13 fragments of two different seal types with the name *W'h-jb-Ra*, although it must remain open whether this is the nomen of Apries or the prenomen of Psammetichus I.[118]

Royal Name		Number of seal types	Number of fragments
3nm-jb-Ra	(Amasis II)	4	17
Nfr-jb-Ra	(Psammetichus II)	5	26
W'h-jb-Ra	(Psammetichus I /Apries)	2	13
Psmṯk	(Psammetichus I/II/III)	5	21

Table 5: Number of sealings with royal names from Building layer 4B

It is certainly not misleading to assume that Building layer 4C, of which only few remains escaped later destruction, covered at least the period from Psammetichus II to Amasis while the enclosure wall of the temple in Building layer 4B was most likely built in the time of Amasis.

About half of all sealings from Building layer 4B show remains of seal impressions (676). However, many fragments are too small to be assigned to a specific seal type or even to recognize the shape of the imprinted seal. About 500 fragments can be determined more precisely so far. However, only 315 fragments are of such a size that complete seal types can be defined or reconstructed from several fragments.[119]

A total of 116 different seal types have been identified so far. These are almost exclusively personal seals with names and/or titles. Only 12 larger fragments show several gods without

[115] No deposits or remains of buildings erected on top of this levelling layer have survived, as the area was later cleared away another time in Building layer 3, before the new Khnum temple was built under Nectanebo II.

[116] Cf. Aston, in: Sählhof, *et al.*, *Report on the 51st Season*, 43-48.

[117] C. von Pilgrim, 'Study work on materials from the area of the late Khnum Temple', in: Sigl *et al.*, *Report on the 48th Season*, 43-45, fig. 47.

[118] Cf. A. Leahy, 'Necho in Late Period Personal Names', in D. Aston, *et al.* (eds.), *Under the Potter's Tree*, *OLA* 204, 558-559.

[119] All absolute figures may change slightly in the further course of the analysis.

further inscriptions and only 6 fragments show individual signs or emblematic hieroglyphs. All of the latter are the imprints of scarab seals.

In contrast to sealing practice in earlier periods, no seal type is represented in exorbitantly larger quantities than the others.[120] There are no more than 11 fragments of any seal type, while 73 different seal types (from 116) are documented only once or twice.

The owners of the personal seals are exclusively priests. Two thirds of the seal bearers are a *ḥm-nṯr* (first, second, third or fourth prophet) (Fig. 54), one quarter have the title of a *wṯz-R*ʿ ('bearer of Re'), a title of unclear function that has so far only been attested in Elephantine and the region of the First Cataract.[121] About half of the seals of a prophet have a reference to Khnum or Khnum-Re; Satis and Anukis are not represented. There can therefore be no doubt that the entire corpus of sealings from Building layer 4B originally came from the context of the temple administration, and that the deposit in which the closures were found was only relocated within the temple precinct before it was levelled during the construction of the enclosure wall.

The practice of securing doors and containers with seals has been common practice throughout all periods. As the temple's economic facilities had been located in this area south of the temple since the New Kingdom, it is reasonable to assume that the sealings originate from an economic institution of the temple. However, no specific institution is explicitly mentioned in any of the seals, and the rather unspecific titles provide no further clues. It cannot therefore be ruled out that a good deal of the sealings originate from the temple itself, as the shrines of the gods and individual rooms of the temple were probably also regularly closed and sealed.

An analysis of the backs of the seals could provide more information about the surface on which the seals were affixed. However, it is not possible to determine the type of closure for the vast majority of sealings. The backs show either only broken edges or the imprint of cords and knots. They could therefore have been attached to any type of container or door that was closed with a cord. Less than 15 % of all 1304 sealings (with or without impression) can be attributed so far to a specific type of closures. Among these, peg-sealings dominate, which once secured doors (or less probable boxes and chests) closed with strings. There are also closures of wicker boxes, papyrus documents and vessels.[122]

It is not always possible to determine with certainty which type of sealing device was used for all imprints. The type of preferred seal already changed in the New Kingdom. Whereas previously scarabs and shield-shaped stamp seals were predominantly used, in the New Kingdom signet-rings came into fashion alongside large-format stamp seals for jar stoppers.[123] This trend towards signet rings seems to have intensified further in the Late Period. In the corpus of the present group of sealings from Building layer 4B, more than 90% are most likely

[120] von Pilgrim, *CRIPEL* 22 (2001), 161-172.

[121] Kuckertz and Nebe, *Elephantine XXII*, 283.

[122] In contrast, peg-sealings account for by far the largest proportion of closures in the Middle Kingdom, cf. von Pilgrim, *Elephantine XVIII*, 262.

[123] Cf. J. Wegner, 'The Evolution of Ancient Egyptian Seals and Sealing Systems', in: Ameri, et al. (eds.), *Seals and Sealing in the Ancient World*, 229-247; St. T. Smith, 'Middle and New Kingdom Sealing Practice in Egypt and Nubia: A Comparison', in: Ameri *et al*., *Seals and Sealing*, 319-324.

signet-rings (tab. 6). About three quarters of the signet-rings used had a rectangular bezel bearing the inscription (Fig. 53), the last quarter an elongated ovoid bezel. The signs are so sharply cut that these signet-rings must all have been made of metal.[124]

Fig. 53: Sealing fragment of a second prophet of Khnum, find no. 45702P/b-79
(photo: P. Mora Riudavets, © SIK)

Fig. 54: Sealing with several impressions of a scarab mounted on a finger ring, find no. 44702 K= c-9
(photo: A. Krause, © SIK)

Signet ring with rectangular bezel	Signet ring with elongated ovoid bezel	Signet ring with mounted scarab seal	Scarab seal (shaped)	undetermined
310	97	2	32	235

Table 6: Deduced sealing devices from sealings in Building layer 4B

Only occasionally did scarabs remain in use for sealing. In the present corpus, 34 sealings with scarabs can still be identified, two of which were recognizably set in a mount that was also imprinted (fig. 54).

In principle, all seals leave a flat, horizontal impression. Only on a convex surface such as a jar stopper can the impression sometimes also be convex, especially if a cylinder seal was used.

[124] Cf. signet-rings with very similar shapes and designs in: Andrews, *Ancient Egyptian Jewellery*, fig. 148.

However, the corpus of sealings from Building layer 4B also contains about 90 sealings with a *concave* impression (fig. 55). But it is simply impossible to produce a concave impression with a seal with a flat sealing surface.

Fig. 55: Sealing with two concave impressions of a personal seal of the Khnum priest *Nz-pꜣ-wḏa.t-mꜣa*, find no. 47701T/c-33 (photo: P. Mora Riudavets, © SIK)

Seals with a *convex* sealing surface, however, are not yet known in Ancient Egypt. One of the very rare exceptions is a faience plaque with a slightly convex upper surface.[125] Faience finger rings rarely have a curved sealing surface, and then only very slightly. Moreover, they usually have an elongated ovoid shape and are never rectangular.[126] However, a seal made of faience is hardly suitable for producing such sharp and legible impressions of the tiniest hieroglyphs of a personal seal as can be seen on the sealings from Building layer 4b. There must therefore have been another kind of sealing device. Presumably it was also made of precious metal, so that hardly any have survived. It is possible that they were all melted down again later,

[125] E. Hornung and E. Staehelin (eds.), *Skarabäen und andere Siegelamulette aus Basler Sammlungen*, 275 and pl. 45 no. 419; see also a hemicylindrical seal in Hayes, *The Scepter of Egypt* II, 345 fig. 217, which, however, would be technically difficult to use as a seal.

[126] Hornung and Staehelin, *Skarabäen Basler Sammlungen*, pls. 40-41

perhaps even in ancient times, if the use of a seal was linked to the respective office and the seal had to be returned after the function was given up.[127]

These could be finger rings in the shape of a broad 'wedding-ring', of which only a single example in gold from a 21st Dynasty tomb in Tanis is known to date.[128] However, personal seals of this type would not have had a surrounding inscription like this one but would have had the title and name engraved only on the top of the ring.

All in all, the sealings from Building layer 4B form a very coherent corpus in which priestly seals dominate. They not only provide a wealth of prosopographic data, but also a new insight into the development of sealing practice in the Egyptian temple administration. Further insights into the hitherto largely unknown practice of sealing in the Late Period can be expected from the even more extensive assemblage from the overlying Building layer 3.

(C. von Pilgrim)

3.7 Archaeobotanical Material Analysis

The archaeobotanical analyses of the 52nd season focused on materials from prior excavations. This work included examining samples following the analysis of samples from Reinder Neef, as well as sieving and analysing materials from earlier excavations by Felix Arnold and Cornelius von Pilgrim. Additionally, soil samples from the newly excavated area of the Eastern town were studied. Furthermore, organic and inorganic components in mud bricks, mortar and plaster from various historical periods were also examined.

Archaeobotanical Material Analysis

One of the main objectives of the archaeobotanical research started at the site is to process the extensive inventory of archaeological material stored in the repository. In this endeavour, the team from the DAI Berlin collaborates closely with Reinder Neef (DAI), Viola Podsiadlewski (DAI) and Claire Malleson (AUB), who have been engaged in this process for several years already.[129] A total of 115 samples were analysed in the 52nd season, most of them from previous excavations, as well as soil samples from the newly opened excavation area dating to the Early Dynastic Period and early Old Kingdom. In most cases, these samples came from settlement debris such as general organic waste, residues from threshing and cleaning processes, and ashes from cooking and heating fires, as well as from singular contexts such as stalls.

[127] For the association of signet rings with an office in the New Kingdom, see Smith, in: Ameri *et al.*, *Seals and Sealing*, 307.

[128] Andrews, *Ancient Egyptian Jewellery*, 167 fig. 15; Stierlin and Ziegler, *Tanis. L'or des pharaons*, 268 no. 102.

[129] R. Neef and V. Podsiadlewski, 'Archaeobotany on Elephantine Island', in: Arnold *et al.*, *Report on the 42nd Season*, 17-18; C. Malleson, 'Preliminary report on archaeobotanical studies on Elephantine', in: Sigl, *et al.*, *Report on the 46th Season*, 2-27; Malleson, *Realities of Life on Elephantine: Archaeobotanical Database* (https://doi.org/10.6078/M7445JN1, last accessed 14/06/2024).

Summary of results

Hand-picked remains as well as soil samples were examined, whereby the preservation state of the hand-picked samples was predominantly desiccated, whereas the soil samples contained both desiccated and charred plant remains. Soil samples (excluding mudbricks) were dry-sieved, following recommendations by R. Neef and V. Podsiadlowski, as well as methodological literature on the investigation of desiccated material.[130]

Cereals	Cerealia indet.	xxx
	Hordeum distichon/vulgare	xxx
	Hordeum vulgare	**XXX**
	Setaria italica	xx
	Triticum aestivum s.l./*durum/turgidum*	x
	Triticum dicoccum	**XXXX**
	Triticum durum/turgidum	xxx
	Triticum spec.	x
Fibre / Oil Crops	*Linum usitatissimum*	xx
	Carthamus tinctorius	x
Fruits, Trees, and Palms	*Ficus carica*	**X**
	Olea europaea	x
	Pinus pinea	x
	Vitis vinifera	xx
	Acacia nilotica	xx
	Balanites spec.	xx
	Ceratonia siliqua	x
	Citrullus colocynthis	xx
	Citrullus lanatus	xx
	cf. *Citrullus* spec.	x
	Cordia myxa	xx
	Cucumis melo/sativus	xx
	Cucumis sativus	xx
	Cucurbitaceae	x
	Ficus sycomorus	**XXX**
	Hyphaene thebaica	xx
	Mimusops laurifolia	x
	Phoenix dactylifera	xx
	Tamarix spec.	xx
	Ziziphus spina-christi (L.)Desf.	xx
Legumes	Fabaceae	xx
	Lathyrus spec.	x
	Lens culinaris	xx
	Pisum sativum	x
	Trifolium alexandrinum	**X**
	Trigonella foenum-graecum	x
	Vicieae	x
	Lupinus albus	xx
Herbaceous plants	*Ranunculus* cf. *aquatilis* agg.	x
	Cichorium spec.	x
	Convolvulus arvensis	x
	Portulaca oleracea s.l.	xxx
	Chenopodiaceae	xxx
	Raphanus raphanistrum	xxx

[130] Chiou, *et al*., *JFA* 38 (2013), 38-53.

	Silene gallica	xx
	Sinapis arvensis	xx
	Apium cf. *graveolens*	x
	Brassicaceae	x
	Caryophyllaceae	x
	Euphorbia spec.	x
	Galium spec.	x
	Lamiaceae	x
	Rumex spec.	xx
	Solanaceae	x
	Anthemis spec.	x
	Boraginaceae	xx
	Inula bifrons	x
	Picris spec.	x
	Rapistrum spec.	x
	Scorpiurus muricatus	x
Reeds and Sedges	*Eleocharis* spec.	x
	Eleocharis ovata/uniglumis	x
	Isolepis setacea	x
	Carex spec.	x
	Cyperaceae	xxx
	Phragmites spec.	x
Wild Grasses	*Bromus* spec.	x
	Deschampsia spec.	xxx
	Lolium cf. *perenne/rigidum*	xxx
	Molinia cf. *caerulea* ssp. *arundinacea*	xxx
	Phalaris spec.	xxx
	Cf. *Phleum* spec.	x
	Poaceae	**X**
	Setaria spec.	x
Indeterminata	Indeterminata	xxx

Table 7: Presence of species in all samples (key: x: 1–10, xx: 10–100, xxx: 100–500, xxxx: 500–1 000, **X**: 1 000–2 500, **XX**: 2 500–10 000, **XXX**: 10 000–25 000, **XXXX**: 25 000+)

The examined materials yielded 217.714 items (tab. 7), primarily consisting of cereals (mostly *Hordeum vulgare* and *Triticum dicoccum*, but also some *Triticum durum*/*turgidum*) and many fruits (e.g. *Ficus sycomorus*, *Balanites*, *Olea europaea*, *Hyphaene thebaica*, *Vitis vinifera*, *Ziziphus spina-christi*, *Citrullus colocynthis* and *C. lanatus*, *Cucumis sativus*). In addition, the samples included various pulses (*Lupinus albus*, *Lens culinaris*, *Pisum sativum*), grasses and sedges (*Cyperus*, *Lolium*, *Eleocharis*, *Phalaris*), as well as wood remnants (Palmae, *Tamarix* and *Acacia*), indicative of the historical agricultural practices on and around Elephantine. The samples will be integrated with archaeological records from previous excavations to enable comprehensive interpretation. Currently, we can illustrate the diversity of plant species found on the island. A total of 74 taxa were identified, ranging from cultivated plants to wild grasses.[131]

[131]. Most samples date to later periods. A more precise dating and an overview of all work conducted in the past years by the DAI Berlin team is detailed in the forthcoming work by the authors, in collaboration with Reinder Neef and Viola Podsiadlewski.

Hand-picked samples

These samples have been gathered for the last decades and they will take a few years to revise and identify, since they are not proprietary. Their interest lies in the type of plant remains sampled, usually fruits of larger size, and that they may come from singular contexts where no sediment samples. About 7000 finds from almost 70 samples have been revised. Most of the samples consisted in cereal remains (ca. 4800). Fruits were also very important, such as *Ficus sycomorus, F. carica*. Rare finds include *Prunus persica*, *Balanites* spec. or *Citrullus lanatus*.

Sector 7, 38th season, Area XXVI

A series of Late Antique samples were analysed, where naked wheat and hulled barley, along with fig, a few dates and olive stones (besides wild plants) were possible to identify.

Sector 7, 47th season

Samples from a burnt cereal layer (Area XXVI) were analysed, indicating that it was probably an *in situ* burnt store of emmer spikelets (figs. 56 and 57). Non-charred emmer storage layers from a nearby area were also investigated. These were characterized by the presence of thousands of remains of the grain weevil (*Sitophilus granarius*) (fig. 58). Usually it is said that this insect has difficulties in feeding from glume wheats but these samples show that they can completely destroy a large concentration of glume wheat spikelets.

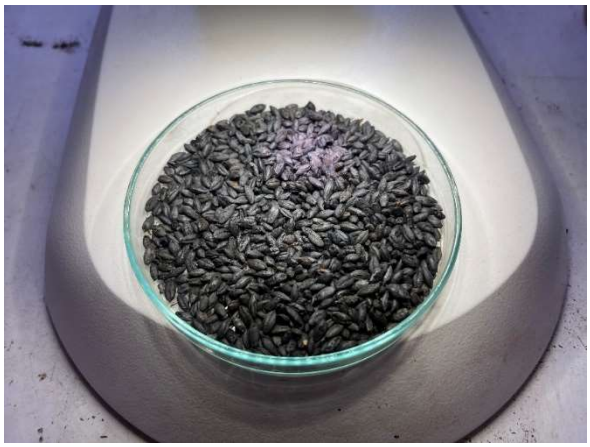

Fig. 56: Charred *Triticum dicoccum* (Emmer wheat) (photo: F. Antolin, © DAI)

Fig. 57: Large concentration of a store of spikelets of *Triticum dicoccum* (Emmer wheat) before being subsampled (photo: F. Antolin, © DAI)

Fig. 58: Spikelet of emmer belonging to a cereal store apparently being attacked by one corn weevil (*Sitophilus granarius*) (photo: F. Antolin, © DAI)

Fig. 59: Fragments of glume of *Setaria sp.* found in dung remains of the ram's stall (photo: F. Antolin, © DAI)

Sector 7, the sacred ram's stall (Area XXXI)

Large numbers of excrements were retrieved from this context, potentially indicating the diet of the sacred ram. A mixture of barley and emmer was observed. Their preservation was different from other contexts. The materials looked slightly squashed and yellowish. Another sample yielded abundant fragments of glumes of *Setaria* sp. (fig. 59). This is so far an interesting result, considering that foxtail millet was not a crop in ancient Egypt and it most likely corresponds to one of the wild species growing locally.

Sector 3, Eastern Town

The soil samples collected from the ongoing excavation site within the southern area of the former museum garden have provided only charred archaebotanical findings. Over several decades, continuous irrigation has caused the destruction of all non-charred organic matter in the soil. The lowest archaeological layers of Elephantine have been affected by centuries of flooding, with the soil and sand of the island absorbing the water and hence yielding no desiccated plant macroremains. As a result, our analyses have focused on examining soil samples from ash layers and pits, where preservation conditions are comparatively more favourable.

The samples were characterized by a combination of barley (with abundant chaff finds), thorns of *Acacia* sp., other unidentified pulses (perhaps *Vicia lutea*), wild grasses (*Lolium/Festuca, Phalaris* spec.*),* a few tuber fragments and sheep/goat dung. Potential barley grain fragments (bulgur-type), along with calcined fish and mammal remains were also present in the samples. This could suggest that these samples are connected to food preparation practices (either *in situ* hearths or secondary deposits from hearth contents). It seems that animal dung was being used as fuel associated to these features, considering the broad spectrum of wild plants present in the samples.

(F. Antolin and J. Izak)

3.8 Mudbrick Analysis

Mudbricks are an essential architectural element of Ancient Egyptian settlements but there is still very limited information on production techniques and particularly on types of plant remains used as temper. These may differ for different regions (due to ecological particularities), time periods (due to economic changes) or even according to the type of construction within one chronological phase. The analysis of the selected mudbricks was conducted as part of a pilot project to gain initial insights into the composition of mudbricks from Ancient Egypt. The aim was to identify the types of organic and inorganic inclusions present and investigate potential correlations between these components. Another focus was on resource management—specifically, determining the origins and pathways (routes of entry) of the organic and inorganic inclusions used in production.

Additionally, the study sought to explore how the "recipes" for mudbricks, mortar, and plaster differ from one another. The three distinct earthen construction components—mudbricks, mortar, and plaster—can be expected to exhibit variations in their composition, as each serves

a specific functional purpose within the architecture. Mudbricks form the stable structural core of the masonry, providing the necessary strength and support for the walls. Mortar acts as a binding agent, securing the bricks together and ensuring the integrity of the construction. Plaster, on the other hand, serves primarily as a protective layer, shielding the structure from environmental factors while also fulfilling aesthetic functions by providing a finished surface. This differentiation in purpose logically necessitates tailored material compositions for each component to optimize their respective roles in the overall architecture.

Sample ID	Period	Context
LZ02	Third Intermediate Period	House BC, Wall M400
LZ03	Middle Kingdom (Sesostris I)	Satet enclosure, eastern tower of pylon
LZ04	New Kingdom	NW Town, House 95
LZ05	New Kingdom	NE Town, Wall Collapse
LZ06	Ptolemaic	Cellar N1
LZ07	Ptolemaic	House f 9

Table 8: List of analysed mudbrick samples with their dating according to the archaeological context of sampling points

For this study, mudbricks were selected from contexts that did not involve the destruction of standing masonry. The samples included materials from various chronological phases, ensuring that all three sample types—mudbricks, mortar, and plaster—originated from the same context. Six mud bricks, six mortar and seven plaster samples were analysed for composition (table 8), with the main focus on botanical remains. Also mud bricks from the recently excavated area (Sector 3, Eastern Town) were analysed. However, as stated above, due to the destruction of non-charred organic material by irrigation, these analyses have been excluded from the results.

Mudbricks

The analysis of mudbricks yielded interesting results: the composition of mudbricks not only changed over time but also varied in some cases within the same period depending on the context (fig. 60). The diversity and preservation state of the identified plant remains indicate that the brickmakers utilized whatever resources were readily available. Fresh straw was rarely observed; instead, the inclusions predominantly consisted of remains from dung (evident in digested plant fragments) as well as materials from burnt contexts, such as charcoal and charred cereal remains, which might have originated from kitchen waste or other domestic refuse. This opportunistic use of materials demonstrates adaptive resource use but also reflects broader environmental and economic dynamics.

Conversely, the absence of certain species in the samples could hint at changes in environmental conditions or intentional choices in resource utilization, possibly driven by a shortage of organic materials. Furthermore, the possibility of reusing old mudbricks in the production of new ones emerges as a plausible explanation for the elevated organic content in some samples. This practice, which involved breaking down bricks from demolished structures and reprocessing the material for new bricks, could lead to a higher concentration of organic remains. However, further research is needed to better understand how the organic

composition differs between bricks used for the first time and those produced from recycled materials.

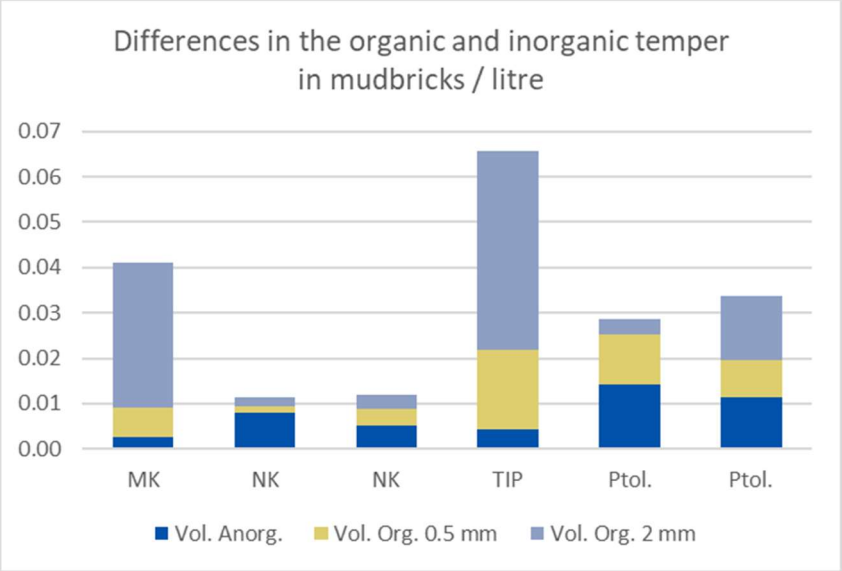

Fig. 60: Differences in the organic and inorganic temper in mudbricks / litre (chart: J. Izak, © DAI)

Another observation from this analysis is the similarity in proportions among bricks from the same period when comparing New Kingdom and Ptolemaic samples. This suggests certain shared practices or standardized approaches within those periods. By contrast, a notable difference was observed in bricks from the Middle Kingdom. Mudbricks from residential contexts on Elephantine typically contained little to no organic inclusions. However, a brick from the enclosure wall of the Satet Temple exhibited a significantly higher organic content. This discrepancy raises intriguing questions about the variability of production methods, pointing to the likelihood of individualized production for residential buildings versus a more centralized, standardized manufacturing process for royal or large-scale construction projects, such as enclosure or city walls. Further analyses are essential to better understand these distinctions and their implications for mudbrick production in different contexts.

Mortar

The analysis of mortar samples from the same contexts as the mudbricks reveals significant variations in composition (fig. 61), with differences observed not only between periods but also within the same period. These variations are more pronounced than those seen in the mudbrick samples, suggesting a broader range of manufacturing techniques for mortar. Mortar consistently contains a higher proportion of inorganic material compared to mudbricks, with a notable increase in organic content observed in the Ptolemaic period.

In the Third Intermediate Period, mortars display an almost negligible amount of organic material, contrasting sharply with the mudbricks from the same period, which exhibit a high organic component. In the Ptolemaic samples, a stark difference was observed between mortar from a residential house and that from a cellar vault. This raises questions about the extent to which mortar compositions were tailored to specific construction types.

The predominance of inorganic material in the mortar likely reflects its role as a key structural component, where strength, stability, and durability were prioritized. This coarser composition would have provided enhanced resilience, helping to withstand environmental pressures and ensure the longevity of the construction.

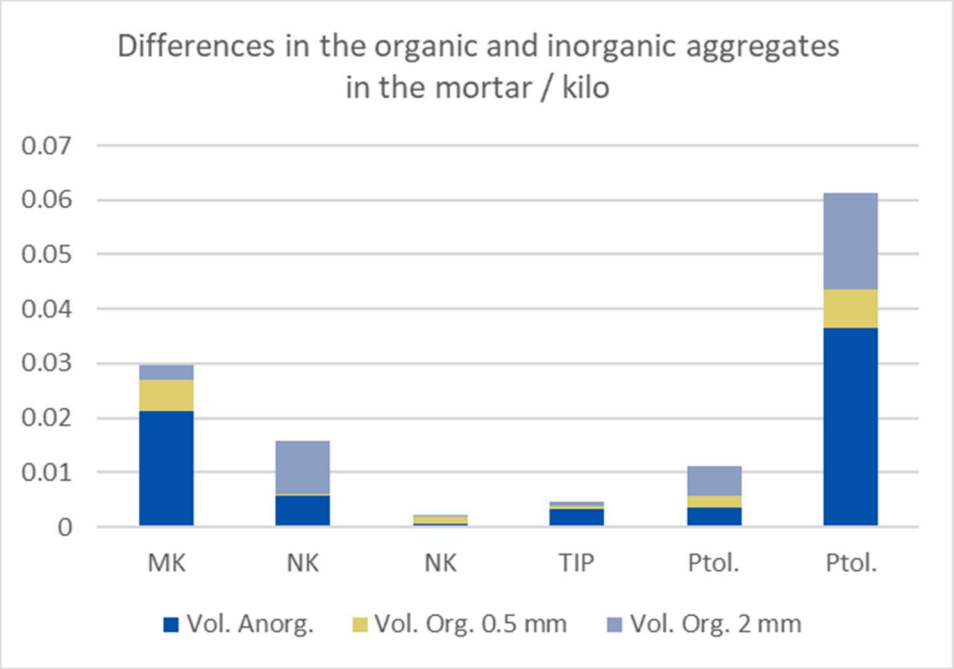

Fig. 61: Differences in the organic and inorganic aggregates in the mortar / kilo (chart: J. Izak, © DAI)

Plaster

The analysis of plaster from the mudbrick contexts revealed notable findings, particularly in comparison to mortar (fig. 62). Primarily fine botanical material (< 2 mm) was used as an additive, with small amounts of inorganic materials such as bone, ceramics, and stones. This suggests that the plaster needed to be easy to work with and free from large additives that might detach after drying. A significant increase in inorganic material can be observed during the NK, though this anomaly is attributed to a single large pottery sherd that distorted the data.

Two plaster samples from the Ptolemaic period (bars 5 and 6 in the graph), the first one from the interior of a house and the second from the exterior wall of the same structure, exhibit notable differences in composition. The analysis shows that the interior plaster was made with a finer mixture, containing fewer organic particles larger than 2 mm and fewer inorganic materials, such as gravel, compared to the outer wall plaster. This difference likely reflects the practical and aesthetic considerations of ancient builders, with the interior plaster designed for smoothness and refinement, while the exterior plaster prioritized durability and structural integrity.

Generally, the plaster contained as many or more inclusions than the mortar but was significantly smoother due to the use of finer materials. These compositional variations highlight the intentional selection of materials based on functional requirements and environmental conditions, demonstrating the builders' adaptability and attention to detail in different areas of construction.

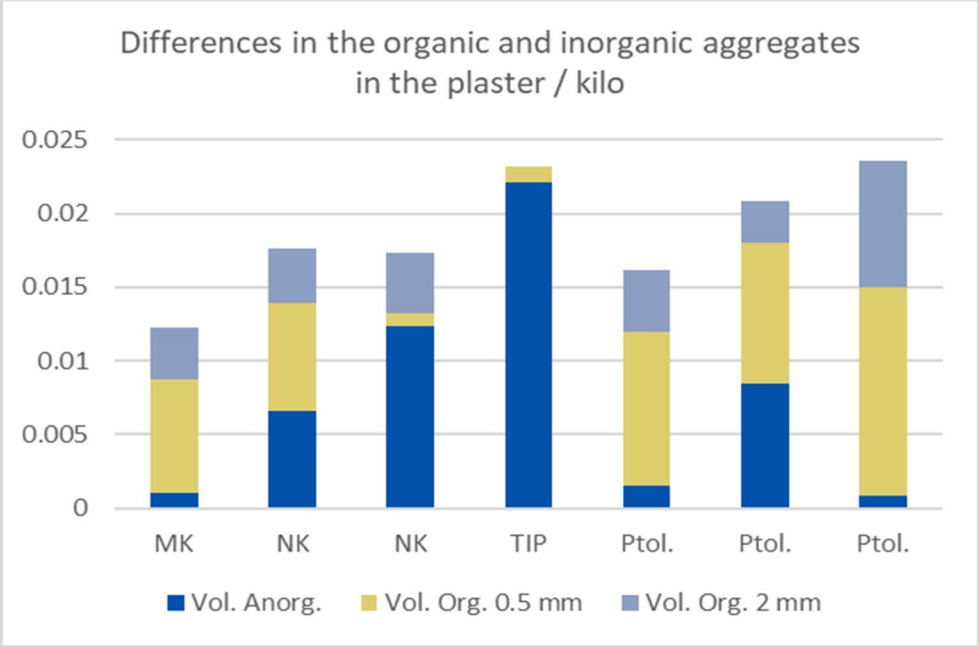

Fig. 62: Differences in the organic and inorganic aggregates in the plaster / kilo (chart: J. Izak, © DAI)

Taxa

The highest diversity of taxa was observed in the mudbricks (n=27), followed by mortar (n=18), with the lowest diversity found in the plaster samples (n=10). The analysis reveals that the most frequently encountered taxa include various cereals, with barley and emmer being consistently detected in all samples (table 9). Wheat appears only in mudbricks from later periods.

	Bricks	Mortar	Plaster
Acacia nilotica	X	X	X
Capsella bursa-pastoris	X	X	X
Citrullus cf. *lanatus*	X	X	X
Cyperus	X	X	X
Ficus sycomorus	XXX	XX	X
Hordeum vulgare	XXXX	X	XX
Phalaris sp.	X	X	X
Tamarix	X	X	X
Triticum dicoccum	XX	X	X
Vitis vinifera	X	X	X

Table 9: Some taxa present in mudbricks, mortar, and plaster samples (X: < 100, XX: 100–500, XXX: 501–1000, XXXX: > 1000)

Other notable taxa with high occurrence rates include the sycamore fig, whose small seeds are present in every sample, as well as other fruits such as grapes (fig. 63a) and melons. Wild plants, such as *Capsella bursa-pastoris* (fig. 63b) and *Phalaris* sp. (fig. 63c), were also identified, suggesting the presence of ruderal and grassland species in the material. Additionally, trees such as acacia and tamarisk are detectable in all contexts. Although some seeds of Cyperus grass are present, their limited quantity suggests a lower prevalence of water plants than expected in the mud-based materials.

Fig. 63a: *Vitis vinifera*
(photo: J. Izak, © DAI)

Fig. 63b: *Capsella bursa-pastoris*
(photo: J. Izak, © DAI)

Fig. 63c: *Phalaris* sp.
(photo: J. Izak, © DAI)

Table 9 presents only the taxa identified in multiple samples that were consistently found in mudbricks, mortar, and plaster, while excluding those present in only one or two contexts.

Experiments

Additionally, the research addresses the practicality of mudbrick analysis through applied experiments. A comparative study between flotation in chemical solutions (chloride and sodium carbonate) and the standard wash-over method was conducted. The goal was to identify the quickest and easiest approach, saving the need for mechanical pre-treatment of the mudbricks. Another experiment aimed at determining the optimal subsample size for analysing the organic fraction. Three differently sized random sub-samples were taken, analysed, and compared to establish an efficient sub-sample size, ensuring representative results and reducing the time required for the analysis of large samples.

Comparing Mudbrick Dissolving Solutions

Fragments of 125 grams each from one modern, untreated mudbrick were soaked in three solutions: pure water, a 1:3 sodium chloride solution,[132] and a sodium carbonate solution (dishwashing detergent) to determine the most effective method (fig. 64). The analysis of the organic material after soaking that a simple dishwashing detergent is highly effective compared to other methods (fig. 65). Sodium carbonate proved to be the most efficient in breaking down mudbrick material, making it ideal for subsequent flotation processes. In contrast, the sodium chloride solution required a significant amount of salt, which is costlier

[132] Recipe based on Henn, *et al.*, *Vegetation History and Archaeobotany* 24.3 (2014), 1-14.

compared to the minimal amount of detergent soap needed. This solution worked slower (more than twice as long with 1 hour and 15 minutes) and less thoroughly than sodium carbonate, resulting in more residue and increased clumping. Additionally, during the drying process, organic remains extracted from mudbrick soaked in sodium chloride became crusty and more difficult to handle. Pure water, while efficient in dissolving speed, was less effective in removing organic material during flotation.

Fig. 64: From left to right: pure water, sodium chloride and sodium carbonate solutions (photo: J. Izak, © DAI

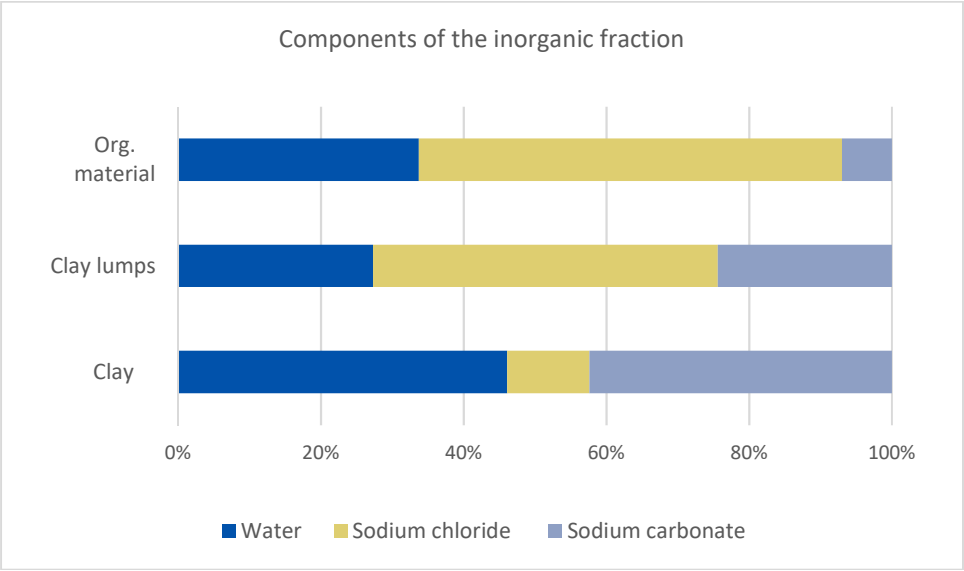

Fig. 65: Components of the inorganic fraction (chart: J. Izak, © DAI)

Subsample sizes

This experiment aimed to determine the optimal size of a subsample to accurately represent mudbricks containing significant organic material, primarily composed of threshing residues. The objective was to improve the efficiency and speed of analysing threshing material. Four samples of different volumes (25 ml, 50 ml, 75 ml, 100 ml) were tested to assess their ability to reflect the composition of the entire sample (fig. 66).

Fig. 66: Three samples of organic material from the TIP mudbrick LZ02 (photo: J. Izak, © DAI)

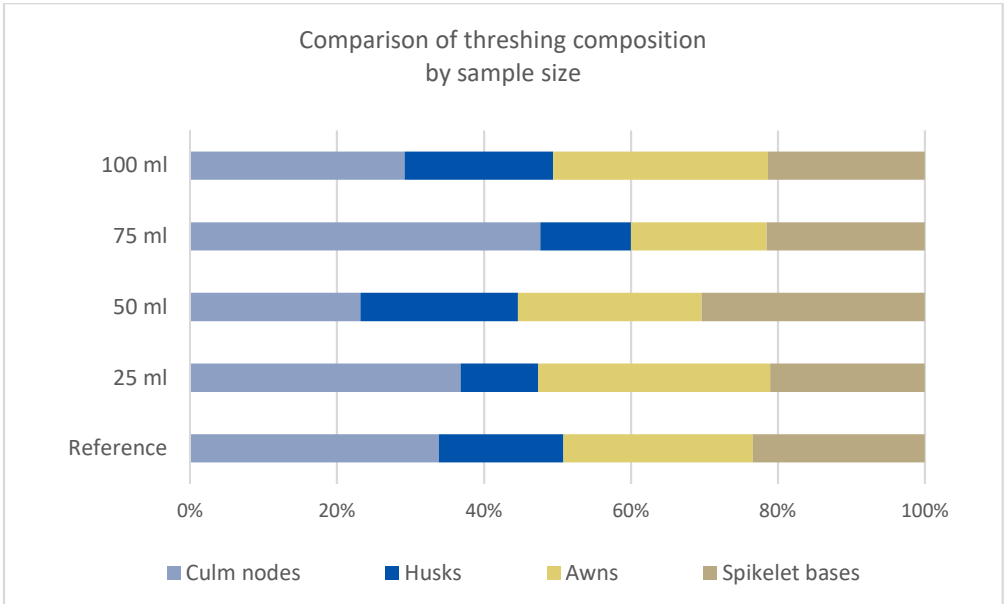

Fig. 67: Components of the inorganic fraction (chart: J. Izak, © DAI)

The findings show that a thorough examination of a 25-ml subsample effectively captures the characteristics of the threshing material within the organic content (fig. 67). However, it remains essential to conduct a comprehensive examination of the entire sample to identify any seeds present, which becomes easier once the focus shifts away from the threshing components. This study provides a practical method to save time during fieldwork, particularly in regions like Egypt where analysing samples on-site is necessary.

(J. Izak)

3.9 The Realities of Life Project[***]

The Realities of Life Project (RoL), directed by Johanna Sigl (German Archaeological Institute, Commission for Archaeology of non-European Cultures, Bonn/Germany), was established in autumn 2013 in the scope of the research of the German Archaeological Institute Cairo at the archaeological site of Elephantine, Aswan.[133]

Excavations until 2018 focussed on domestic buildings in the north-western part of the ancient settlement dating to the late Old to late Middle Kingdom, with the best-preserved strata coming from the late 12th to late 13th dynasties, approx. 1800-1650 BCE.[134] Find processing on site was conducted parallel to the excavation work and is ongoing until the present, as are scientific analyses of chosen samples of soil, pottery, metal, and other materials in suitable laboratories in Egypt.

The aim of the combined archaeological and archaeometric work is to get a multi-perspective view on found objects, never forgetting the archaeological context they came from. Through this approach we hope to gain insight into the realities of everyday life of the inhabitants of the island settlement at the first Nile cataract.

The focus of the project is on House 169 (H169), a large residential building, in which a well-preserved stratigraphic sequence of around 150 year of occupation at the end of the Middle Kingdom was excavated.[135] However, material from highly disturbed contemporary and earlier strata in the vicinity of this house is studied as well for comparison and to enlarge the timeframe as well as the dataset.

[***] Our sincere thanks go to our D. el-Meliegy, A. Nageh and their colleagues of the Centre of Research and Conservation of the Ministry of Tourism and Antiquities for supporting our sample transport from site to the laboratory, N. Mounir and A. Quiles of IFAO Cairo for the preparation of sample for analysis and the provision of the laboratory equipment to study them. We are sincerely grateful for the administrative work and financial support of the endeavour to the directors of the DAI Cairo, St. J. Seidlmayer and D. Raue, and the Elephantine project director M. Sählhof. For their assistance of our work on site and in the excavation house we thank the workmen under Rais el-Amir and A. El-Amir, and the staff of the DAI's excavation house. We are grateful for the support by the local inspectors of the MoTA, especially by M. Abdallah Abdellah.

[133] Results and further publications are available on the RoL project homepage (https://ly.my/3FExPFqmuw, last accessed 10/06/2024).

[134] Dates after Erik Hornung, *et al. Ancient Egyptian Chronology*, 491-92.

[135] Research questions and overview over methodology in detail see Sigl, et al., *MDAIK* 74 (2018), 161-65; see also the DAInsight online lecture J. Sigl, A.E.A Elshafaey, C. Malleson and L.A. Warden 'Family Dinner – Feeding the Inhabitants of a Middle Kingdom House on Elephantine Island, Aswan' (https://www.youtube.com/watch?v=hsw-oVcOmOo, last accessed 24/06/2022).

In autumn 2023 on site laboratory work was carried out with the focus on textiles and wickerwork, mollusk remains as well stone tools. Metal remains were studied in autumn 2023 on site and in early 2024 at laboratories in Cairo. This report provides preliminary results only, which will be refined by further studies in upcoming seasons.

(J. Sigl)

3.9.1 Metal Studies on the site and at IFAO Laboratory

From 17th to 29th of November 2023, Egyptologist Martin Odler (Newcastle University, UK) and archaeometallurgist Jiří Kmošek (Academy of Fine Arts Vienna, Austria; Academy of Sciences of the Czech Republic) continued the study of the metal remains in the storerooms on Elephantine Island.[136] So far unstudied fragments of copper and bronze excavated by the RoL project were measured by portable X-ray fluorescence (pXRF). Further work focused on comparable material from other parts and chronological phases of the German Archaeological Institute's excavation on Elephantine Island, to enable a deeper understanding of the context of copper metallurgy in this area in the past.

On 5th of March 2024, seven samples from the RoL project were analysed at the Desert Research Center, which is part of the Egyptian Ministry of Agriculture and Land Reclamation, with permission of the Ministry of Tourism and Antiquities (MoT&A) and with the help from the IFAO laboratory staff (Le pôle archéométrie de l'Institut français d'archéologie orientale du Caire). The samples were selected from a corpus of 48 samples transported to the IFAO in 2022. They were analysed with scanning electron microscopy (SEM) and energy dispersive spectroscopy (EDS), which are providing high resolution data for understanding the particular phases of the metallographic samples.

The material from the RoL project, including the samples analysed by the SEM, was presented in 2024 at several conferences, in the form of conference papers and posters, with the authors Jiří Kmošek, Martin Odler, Peter Kopp, and Johanna Sigl.[137] The publication of first results will be available from September 2024 open access in the proceedings of the conference 'Excavating the Extra-Ordinary 2 – Challenges & merits of working with small finds' (2022 at the Johannes Gutenberg University, Mainz).

(J. Kmošek and M. Odler)

[136] See previous reports: J. Kmošek and M. Odler, 'Metal Studies at IFAO Laboratory', in: Sählhof, *et al.,* 'Report on the 51st Season, 13-35; J. Kmošek and M. Odler, 'Metal Studies on Site and at IFAO Laboratory', in: Sählhof, *et al., Report on the 50th Season,* 31-33; J. Kmošek and M. Odler, 'Archaeometallurgical samples from Elephantine', in: Sählhof, *et al., Report on the 49th Season*, 29-30. Jiří Kmošek was awarded with a Research Scholarship of the German Archaeological Institute in 2023 for the project 'Copper metallurgy on the Elephantine Island during the Middle Kingdom'. Martin Odler's research was carried out as part of the UKRI-funded 'EgypToolWear – Metalwork Wear Analysis of Ancient Egyptian Tools' project, a Horizon Europe Guarantee (originally Marie-Sklodowska Curie Fellowship), project reference no. EP/X026434/1. The site and laboratory work in Egypt of both researchers was partially supported by the action spécifique 19463, funded by the IFAO.

[137] UK Archaeological Sciences (UKAS) 2024 conference at the University of York, April 3-5, 2024; 44th International Symposium on Archaeometry at the University of Melbourne, May 27-31, 2024; 6th International Conference on the Archaeometallurgy in Europe in Falun, Sweden, June 11-14, 2024.

3.9.2 Stone tools

Since April 2023 archaeologist and draftsman Pieter Collet continued the study of stone tools from the RoL excavations, which are made from other materials than silex. Work focusses on objects excavated during seasons 46 and 47 in the north-western town, mainly in H169, which are stored in the laboratory on Elephantine Island underneath the so-called Annex Museum. The tools were documented by drawings, photography and three-dimensional rendering of photographs. The focus lay on material, shape, dimensions and all the kinds of macroscopically visible traces of alteration and use found on the objects. These give evidence for the purpose of handling, and thus allow typological sorting of the stone tools. They furthermore allow selecting objects for targeted microscopic use wear and residue analysis by stone tool specialist Giuseppina Mutri (University of Connecticut, USA; Universita di Firenze, Italy) in future seasons. The following report represents a short summary of work in the past season and explains the method of determining handling positions and identification of the studied tools.

Fig. 68: Various kinds of grinders and pounders from the RoL excavations (photos: P. Collet, © DAI)

A total of 333 objects from the Realities of Life excavations have been identified as stone implements and studied in detail so far. The objects were made from shards or fragments of granodiorite or granite, sandstone or silicified sandstone as well as, surprisingly, quartz, gabbro and limestone. They were shaped into miniature as well as medium and large sized tools for pounding, grinding, and polishing (fig. 68).

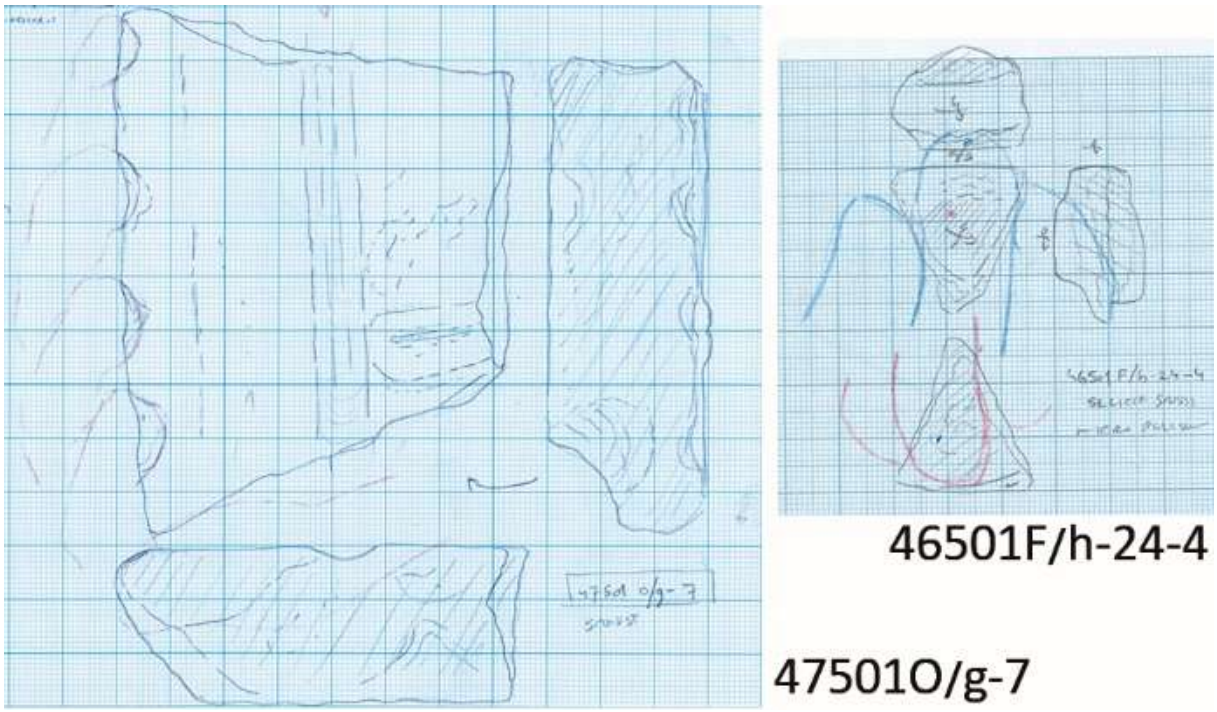

Fig. 69: Grinding stone with chipped out finger-grips (47501O/g-7) and a micro-grinder exhibiting the traces of fingertips (46501F/h-24-4) allowing the reconstruction of its handling (drawings: P. Collet, © DAI)

Traces of hacking or chipping to create so-called finger-grips (find no. 47501O/g-7, fig. 69) from the raw (or re-used) stone proof the shaping of the object for use and are one of the most visible indicators for how the object was in the end meant to be handled. Less obvious are those alterations, which came onto the tool during its use life. On the sides of the stones use-specific abrasions of the surface can be found, which enhanced optimal control over the tool. Especially hard stones like granite, granodiorite, basalt and crystalline limestone additionally show a pattern of sheen on their rough surface, which probably came from the user's greasy or sweaty hands rubbing the stone during working the tool. From these traces it can be deduced that some big objects were utilized with two hands. However, a large number of tools are actually very small polishers and grinders (the smallest of which are referred to as 'mini and micro polishers, mini pounders') which had to be held with only the tips of fingers, without the palm of the hand touching the stone (find no. 46501F/h-24-4, fig. 69). It has to be noted that most stone tools are rarely used in only one position or for only one purpose: The combination of grinder/pounder, grinder/polisher, pounder/polisher and other uses have been documented through the above macroscopically visible markers. Microscopic use-wear analysis will hopefully confirm these preliminary observations in the near future.

(P. Collet and J. Sigl)

3.9.3 Cordage, matting, and basketry

Eleven items from the category of cordage, matting, and basketry were recovered in the RoL excavations from 2013 to 2018 and could be studied during the autumn 2023 season.[138] This modest number is in stark contrast to the paramount importance this category of objects held in everyday life situations.

As packing materials, as containers, and for transportation bags and baskets were of wide utility; in addition, mats and baskets, in particular, played a crucial role in structuring the domestic environment. Being light, flexible, and unbreakable they were functionally superior to many other categories of objects of daily use, in particular – as containers and transportation vessels – to pottery.

In terms of economy and technology objects made from fibres and stalks of grasses and reeds held the advantage that the raw materials could be harvested in the natural environment without spending work on their cultivation or using valuable agrarian land –very much in contrast to, e.g., linen textiles. Further, the manufacturing techniques, being purely manual and requiring no or minimal equipment put this group of objects within easy reach of even the most simple household economy.

The limited number of actual finds from the settlement area is essentially due to the fact that mats, baskets etc. ended their use life as fuel in the domestic hearth.

Very appropriately this important group of artefacts received increasing archaeological attention over the past decades.[139] However the low number and heavily fragmented state of such objects from settlement contexts poses a challenge to technological analysis and functional interpretation. Therefore, it is fortunate that, from the same site – Elephantine – and, by and large, from the same period – the late Old and the Middle Kingdoms – another much more comprehensive corpus of such items exists. It derives from the cemetery of ordinary townspeople situated close to the area excavated by the RoL project. The cemetery was excavated mainly from 1978 to 1982 and studied thoroughly.[140]

In the cemetery the ropes, matting, and baskets were used in secondary or extended functions as containers for the bodies of the dead and for bedding the burials. Nevertheless, all these

[138] The archaeobotanical analysis of the plant materials used in the finds from Elephantine still needs to be accomplished. The terms used in this interim report are therefore preliminary and generic. A number of detailed studies on other collections (e.g. R. Hamdy and N. El Hadidi, 'Identification of Plant Materials Used in the Coiled Basketry Collection at the Agricultural Museum (Giza, Egypt)', in Fahmy, *et al.* (eds)., *Windows in the African Past*, 137-151; Veldmeijer, *AntOr* 6 (2008), 39-97; L. Kubiak-Martens 'Identification of Materials', in: Veldmeijer, *et al.*, *The Basketry from the Tomb of Tutankhamun*, 37-43, all with further literature) demonstrated that different species of grasses but also the leaves of date- and doum-palms were used in the manufacture of basketry items; for a general account see W. Wendrich, 'Basketry', in: Nicholson and Shaw (eds.), *Ancient Egyptian Materials and Technology*, 254-255.

[139] E.g., Gourlay, *Les sparteries de Deir el-Médineh: XVIIIe - XXe dynasties*; Seidlmayer, *Ausgrabung in der Nordweststadt von Elephantine*, 623-649; Wendrich, in: Nicholson and Shaw (eds.), 254-255; Wendrich, *Who Is Afraid of Basketry*; Wendrich, *The World According to Basketry.*

[140] St. J. Seidlmayer, 'Nordweststadt und Friedhof', in: Kaiser, *et al.*, *MDAIK* 36 (1980): 280-289; St. J. Seidlmayer, 'Nekropole, Keramikwerkstatt und königliche Anlage in der Nordweststadt', in: Kaiser, *et al.*, *MDAIK* 38 (1982): 284-306; St. J. Seidlmayer, 'Nordweststadt und Nekropole', in: Kaiser, *et al.*, *MDAIK* 40 (1984): 181-184; Seidlmayer, *Ausgrabung in der Nordweststadt von Elephantine.*

materials derive exclusively from normal domestic production. None of the objects recovered in this cemetery were made specifically for funerary use.[141]

A comparison of the heavily fragmented finds from the settlement with the much better preserved material from the cemetery allows to clarify all technological issues raised in the analysis of the settlement finds and to form an idea of the appearance of the objects in their original state. Contrasting the settlement finds and those from the cemetery with an aim to elucidate different selection preferences of both functional spheres is still hampered by the low number of finds from the settlement. However, a few first observations indicate that such differences did exist.

Fig. 70: Fragment of a rough grass mat (photo: St. J. Seidlmayer, © DAI)

One case in point is matting. Among the finds from the settlement there are three, even relatively large fragments of rough mats made from relatively thick (diam. ca. 15 mm) bundles of grass leaves and stalks (warp) joined with strings made from grass fibres (weft) through twining (fig. 70). This type of matting does occur in the cemetery as well, however only rarely (three specimens). The most common type of matting there (31 specimens) are mats woven on a loom (cf. depictions in Beni Hassan[142]) using grass fibre string as warp and single reed stalks in the weft. A mat of this kind is represented by just one specimen in the settlement, which, however, shows an interesting technique of finishing the closing border of the mat, a variety unattested, in this precise form, among the rich material from the cemetery. This difference in relative frequency might be due to mere coincidence, of course; but the softness

[141] Basketry objects made specifically for symbolic use do exist, of course, at other sites, in Aswan area e.g. in the necropolis of Qubbet el-Hawa, see e.g. Edel, *et al.*, *Die Felsgräbernekropole der Qubbet el-Hawa*, 480: fig. 15, 505: fig. 4, 1713: figs. 7-8.

[142] Crowfoot, *Ancient Egypt* (1933), 93-99; Kanawati and Evans, *Beni Hassan VI*, pl. 21(a) and pl. 95.

of the thick grass mats and the better thermic insulation they assured might have offered a functional advantage over woven mats which was of relevance (only) in the settlement context.

Other very frequent objects of daily use were large bags created in both warp and weft from grass fibre strings through twining. According to the 'scenes of daily life' in the tombs, they were used for many transportation tasks;[143] in the cemetery context they do appear frequently (34 specimens) as containers for the dead bodies. Among the finds from the settlement, at least one fragment does represent this common type of bags.

Fig. 71: Small basketry dish (photo: St. J. Seidlmayer, © DAI)

[143] L. Hudáková, 'Some aspects of Middle Kingdom agriculture. Basketry products and their utilization as represented in art', in: Jánosi and Vymazalová (eds.), *The art of describing*, 181-214.

Remains of baskets, all of them produced in the common technique of coiling,[144] are also attested in three examples. One of them is a fragment of what must have been quite a large piece with a diametre at the bottom of more than 30 cm; another one is a nearly complete, flat dish (dm. 15, h. 4 cm; fig 71); and finally, there is an imprint of a medium sized basket (bottom dm. 21 cm) in the surface of mud floor. Similar baskets do occur in the cemetery in a few cases as the containers for the bodies of small children; consequently none of them is as big as the first mentioned specimen from the settlement, and a dish like the second specimen would be of no use in the functional context of burial. Again, different selection preferences between the domestic and the funerary contexts are apparent – always against the backround of complete technical continuity between both spheres.

Apart from the thinner strings (dm. ca. 5-6 mm) used in the production of mats and bags, the craft of cordage is represented in the material by two fragments of relatively thick ropes from grass fibres (dm. 18-20 mm), one of which exhibits very clearly the three-stage process of Ancient Egyptian rope making,[145] namely producing an initial yarn by hand, spinning a string from two yarns with a spindle, and finally twisting the rope from two or, in the present case, three such strings to achieve a thick and tightly twisted product.

Fig. 72: Bundles of grass plants harvested and stored as raw material (photo: St. J. Seidlmayer, © DAI)

[144] Wendrich, *Who Is Afraid of Basketry*, 73.

[145] Teeter, *JEA* 73 (1987), 71-77; a detailed analysis of cordage Veldmeijer, *AntOr* 6 (2008), 39-97.

Arguably the most interesting find from the settlement, however, might be a group of four bundles of grass (probably halfa grass) harvested as raw material (fig. 72). The bundles are of about 11 cm in diameter – an amount which can be grasped with both hands – and consist of grass plants of more than 1 m in length which were torn out, with their roots, and tied together with a thin bundle of the same type of grass plants. Tearing out the whole plants is of course the same procedure as it was used in harvesting flax. The freshly harvested bundles of grass plants were stored to be later used directly in the production of raw grass mats (actually in the warp of these mats complete grass plants including their root end are attested) or for the production of grass fibers which were the primary material for the production of strings, ropes, and baskets. Finding this raw material stored in the settlement offers proof that rope-making, matting, and basketry were (like the production of textiles) part of the crafts which were practiced within the framework of household economy.

Even viewing their limited number, the finds of ropework, matting, and basketry from the RoL excavations in the settlement of Elephantine hold a considerable potential. They represent a class of objects which were crucial in structuring the living environment, both through their functions as finished objects but also as a component of the profile of activities and competences present in the domestic sphere. Comparison and contrast to the finds from the cemetery offer the possibility to highlight the functional properties which were sought for in both environments and to understand how these requirements were served by different varieties in the range of products. On this basis we can understand the motifs which governed the development and the considerable diversification in this branch of craft production.

(St. J. Seidlmayer)

3.9.4 Textiles

From October 27th to November 9th, 2023, the study of the Middle Kingdom textiles excavated by the RoL project in the MoTA storage rooms on Elephantine Island was continued. The objectives of this second season on site were to complete the study of the textiles from H169, and to undertake and complete the study of the textiles from H166.

Procedures established and study

Data is recorded since spring 20222 in an excel table, which is based on the German Institute's fieldwork database, iDAI.field, upload sheet configuration. Separate files were created for the data on textiles from H169 and H166. Apart from the archaeological background and storage, a general description of the samples (number of textiles/fragments, description, mention of any attached object or material if at all, analysis needed Y / N, function/Usage/reuse, parallels, notes/comments), measurements and details on the technical analysis (weaving structure, warps, wefts, any specific technical or decorative features (fringes, selvedges, borders, etc.) are recorded.

The textiles are studied bag by bag after initial preventive conservation by removing any dust, deposit or foreign material from their surface using soft brushes. Photographs were taken on a white background as general and detailed shots using a Lumix camera and a scale, and the pictures thus generated were saved in dedicated folders as study documentation. Each

fragment was then measured, before a complete technical analysis was carried out. Each assemblage was finally rehoused to measure in acid-free tissue paper and placed in acid-free plastic bags of varied, fitted, sizes. Feature, find and sub-item numbers, were inscribed using a pencil on the outer side of the tissue paper to facilitate an easy identification of the items through the bag, limiting this way unnecessary handling which could cause damages to the textiles in the future.
The studied textiles were then sorted with the previously analysed samples in bags labelled by house and season context.

Textiles from House 169

The 12 bags[146] with material from H169 which were studied this season comprised around 120 textiles fragments in total. As it was already observed in 2022, they mostly consist of small fragments, heavily deteriorated, torn, ragged, creased, burnt or attached to clay, of average measurements of 2–12 cm by 0.5–6 cm wide. The fragments were mostly excavated in Rooms 8 and 4, and only linen could be identified.

Fig. 73: 46501M/s-6: details of binding material, 46501C/q-11: possible wick (photos: A. Merat, © DAI)

The main weaving structure was faced weave, further identified as warp-faced weaves when a selvedge was preserved (fig. 73).[147]
No other specific technical features nor any type of decoration could be seen, with the exception of a few strings, possibly identifiable here as end-border fringes rather than binding material such as ropes.[148]

Textiles from House 166

Conditions, provenance and function of the textiles

Like the textiles from H169, samples from H166 were stored since discovery in 83 bags in total (or so-called hereafter assemblages), each containing between one to up to fifty fragments, often from multiple cloths, for a total of circa 900 samples.

[146] 46501K/a-6; 46501O/z-2-9; 46501F/l-6; 46501G/c-2-15; 47501I/b-2-14; 47501I/f-2-4; 47501G/n-2-10; 47501H/w-6; 47501M/k-6; 46501B/y-6; 46501P/f-6 and 48501A/h-4.

[147] See for example 48501A/h-4 (reinforced selvedge) and 46501P/f-6 (simple selvedge).

[148] See for example 46501P/f-6.

76 assemblages on a total of 83 (or 91.6%) come from Room 2, while three assemblages (or 3.6%) come from Room 5 and four assemblages (or 4.8%) have no know context within H166, the stratigraphy of which was for the most part destroyed during earlier excavations.[149]
Again mostly small fragments of fabrics, heavily deteriorated, torn, ragged, creased, burnt and/or attached to clay, with average measurements of 2–12 cm by 0.5–6 cm were recorded. However, a few assemblages comprised several large fragments (over 20 cm long and over 11 cm wide) of soft textiles[150], the use and reuse of which could not be identified. Other assemblages (thirty-six in total) preserved a large number of strings and ropes, identifiable as binding material, remains of nets (more likely for the household objects rather than fishing nets) and possibly fragmentary lamp wicks (fig. 74). [151]

Fig. 74: 48501A/h-4 full assemblage and close-up of the reinforced selvedge (photos: A. Merat, © DAI)

Technical and decorative features

Fibres and threads

The study of the circa 900 samples confirmed the first observation made during the sorting of the textiles, that linen, the sovereign fibre in Egypt coming from domesticated flax (*Linum usitatissumum*),[152] seem to have been the only fibre used (or at last preserved) in House 166. Representative of the Egyptian textile tradition at the time,[153] linen was mainly used undyed (with natural shades ranging from light beige to dark brown)[154] or bleached.[155] Only six red dyed assemblages were found.[156] Linen threads were equally used in woven fabrics and ropes or nets (fig. 75).

[149] Cf. Sigl, et al., *MDAIK* 74 (2018), 161-75.

[150] See for example 47501B/b-8.

[151] See for example 46501M/s-6, 43501C/s-4, 46501C/t-22 and 46501M/l-6.

[152] Hall, *Egyptian Textiles*, 9.

[153] Examples of dyed linen remain rare in ancient Egypt, due to the nature of the fibre itself, which, unlike wool, is not suitable for fixing colours. For more information, see Hall, *Egyptian Textiles*, 10.

[154] Variations in linen natural coloration can be explained by its level of maturity at harvesting. See Hall, *Egyptian Textiles*, 9.

[155] For more information on bleached textiles and the process of bleaching in Ancient Egypt, see Hall, *Egyptian Textiles*, 10. Further analysis needs to be carried out the textiles from House 169 to figure out which bleaching process was used here.

[156] 43501C/e-15, 43501C/f-41, 43501C/t-22, 43501C/v-13, 48501M/g-18 and 48501M/x-7-1.

48501M/x-7-1 was stored separately and packed to be sent to Cairo for dye analysis.

Fig. 75: Faced weave red dyed, find no 43501C/v-13 (photo: A. Merat, © DAI)

Fig. 76: Strings, ropes and possible wicks, find no. 46501C/p-14 (photos: A. Merat, © DAI)

Yarns were spun in the S-direction after the Egyptian tradition of spinning and splicing to join two S-spun yarns ends.[157] Warps and wefts were mostly single yarns, and only sometimes S2s threads.[158] Strings, ropes and possible wicks were found in abundance among the textiles from H166, and show the wide range of finesses and methods of production (fig. 76).[159]

Weaving structures,[160] *selvedges and borders*

Like in H169, the most common weaving structure found in H166 is the faced-weave, seen in fifty-two assemblages, further identified as warp-faced weave in six assemblages.[161] Plain weave was found only three times,[162] while no basket weaves nor looped fabrics could be identified. Selvedges were recorded in seven assemblages, of which two were simple selvedges,[163] and five reinforced selvedge.[164] End-borders were identified in two assemblages only.[165] Finally, five assemblages preserved evidences of darning, using Z3s threads, Z2s threads, or S-spun yarns grouped by two to four in undyed or bleached linen as sewing threads[166] and overcast stitches.

[157] For further information regarding spinning and splicing in ancient Egypt, see Hall, *Egyptian Textiles*, 12-13.

[158] Two S-spun ends joined and plied together in the S direction to add length to a yarn.

[159] More than 10 ways of making such strings and ropes were seen. They are as follows: S2s, Z3s, Z4s, Z8s, S2Z2s, S2Z4s, S2Z5s, S2Z6s, S2Z7s, S2Z8s, Z2S2s, Z2S4s and Z20+s (possible wick for the later).

[160] The weaving structure was unidentifiable in twenty-three assemblages due to the poor preservation of the samples. For more information on weaving process and structure, see Harris, *5000 Years of Textiles*, 9-24.

[161] 43501C/g-6, 46501M/t-3, 47501B/b-8, 48501M/f-14, 48501M/g-18 and 48501N/l-2-4.

[162] 43501B/d—11, 43501C/p-17 and 43501C/q-11.

[163] 46501M/t-3 and 47501B/b-8.

[164] 43501C/g-6, 43501C/u-30, 48501M/f-14, 48501M/g-18 and 48501N/l—2-4.

[165] 46501M/t-3 and 48501M/f-14.

[166] 48501M/x-7-6, 43501C/k-6, 43501C/g-6, 46501M/l-6 and 46501M/o-6-5.

Decorative features

Fig. 77: Close-up of selvedge and self-band on a warp-faced weave, find no. 46501M/t-3 (photo: A. Merat, © DAI)

The majority of the textiles from H166 are plain, with no evidences of decoration, with the exception of the red dyed sample and two samples with self-bands (fig. 77), which could equally be tone-on-tone decoration and weaver marks.[167]

(A. Merat)

3.9.5 Animal Remains

In autumn season 2023 the focus of faunal studies conducted by Mariam Adel William Eskharoun (Luxor University) and Johanna Sigl (DAI KAAK) was on mollusks excavated from the north-western region of the ancient settlement of Elephantine in the scope of RoL project. Our aim was to finish a complete inventory of all present mollusk remains, no matter if they have been altered by the ancient people or are just random fragments of shell. We also revised identifications and descriptions done in earlier seasons to produce a comprehensive table of species and objects made from molluscan shell.

[167] Self-bands are paired undyed linen S2s threads, inserted during the weaving process that can either be tone-on-ton decoration or weaving/weaver's marks, mostly located close to the borders and selvedges.

See 48501M/x-7-5 and 48501N/l-2-4.

The mollusk remains were identified by using the small on-site reference collection, which contains freshwater as well as some marine mollusks excavated in earlier seasons of the Elephantine project and identified by Joachim Boessneck, Angela von den Driesch and Joris Peters and their team. Additionally, online picture sources, such as MOLLUSCABASE (https://molluscabase.org/), WoRMS (https://www.marinespecies.org/), Conchology (https://conchology.be) and MUSSELp (https://mussel-project.uwsp.edu), and several print publications were used.[168]

A total of 4822 shell fragments were studied, which resemble approx. 1412 individual bivalve or gastropod shells at a weight of around 2.3 kg (tab. 10).

Most of the large fresh-water clams *Etheria elliptica* and *Chambardia sp*. first of all served as food. Unaltered shells were later used as containers for, e.g., pigments.[169] In a third stage several mollusk shells were shaped for certain purposes, foremost as decorative items or jewellry.

Signs of deliberate human alterations are visible on NISP 279, MNE 219 recorded objects. In NISP 191, MNE 46 incidents such signs might be present but they are not clear enough to be certain. Of the worked shells, a big Chambardia valve has been identified as a scraping tool.[170] Four further objects might have come from similar tools.[171] Other shells had been shaped as pendants or inlays in square, round or drop-like shape,[172] hooks(?),[173] rings(?)[174] or bracelets(?).[175] One larger fragment of an unidentifyable fresh-water Unionidae might even resemble half of a bowl (de: "Laffe") of a spoon.[176] But most often gastropoda of the family of Cowries, or of the species *Cleopatra bulimoides*, *Tritia gibbosula*, *Theodoxus sp.*, *Conus sp.*, *Columbella sp.* or *Nerita sp.* or were perforated or the apex or body was cut off to be able to thread them on string and use them as beads or decorative ornaments (fig. 78).

[168] E.g., D.T. Bosch, P. Dance, R.G. Moolenbeek and P.G. Oliver, *Seashells of Eastern Arabia* (Dubai, 1995); G. Falkner, 'Molluskenfunde der Ausgrabungen des Deutschen Archäologischen Instituts Kairo im Satettempel auf Elephantine', in: Boessneck and von den Driesch (eds.), *Studien an Subfossilen Tierknochen aus Ägypten*, 152-66; Graf and Cummings, *Invertebrate Zoology & Parasitology* 53 (2007), 89-118; S. Hamilton-Dyer, 'Worked Bone, Ivory and Shell', in: Peacock and Maxfield (eds.), *The Roman Imperial Quarries* 2, 336-354; Lotfy and Lotfy, *Folia Malacologica* 23,1 (2015), 19-40; Radtke and Golubic, *Facies* 51 (2005), 118-34; Rusmore-Villaume, *Seashells of the Egyptian Red Sea*; Tchernov, *IJZ* 20 (2013), 209-21.

[169] See above A. Merat, section 3.9.4 Textiles; cf. B. Gehad, 'Brief report on pigments investigations in spring 2020', in: Sählhof, *et al.*, Report on the 49th Season, 28-29.

[170] Cf. Mutri and Sigl, *JAS Reports* 61 (2025).

[171] 47501B/k-7, 47501V/m-38, 44501I/p-3, 43501H/a-2.

[172] 43501C/k-5, 46501M/s-53, 43501D/v-10.

[173] 47501K/a-4.

[174] 43501H/g-9 (2x).

[175] 44501H/c-21.

[176] 47501U/m-4.

Species	NISP	MNE (estimated)	Weight (g)
Glycymeris sp.	5	2	6,2
Cerastoderma glaucum	6	5	4,2
Cardiidae	1	1	0,1
Donax sp.	1	1	0,4
Pinna sp.	1	1	4,0
Etheria elliptica	1629	245	1022,5
Chambardia rubens	18	10	31,6
Chambardia sp.	477	116	518,2
Mutela dubia	21	14	14,3
Coelatura aegyptiaca	2	1	14,7
Nitia cf. *acuminata*	3	2	3,8
Nitia tereticuscula	8	4	2,8
Unionidae	546	119	101,8
Corbicula fluminalis	65	52	21,3
Corbicula sp.	3	3	1,3
Veneridae?	2	1	0,1
Bivalvia indet.	552	78	26,9
Lanistes ovum	1	1	0,6
Pila sp./Helix sp.	1	1	0,0
Cerithium sp.	1	1	0,2
Cleopatra bulimoides	452	374	23,6
Nerita polita	5	5	6,1
Nerita sp.	4	4	2,0
Neritidae	2	2	0,5
Theodoxus niloticus	10	10	0,7
cf. *Theodoxus niloticus*	1	1	0,0
Cypraea cf. *tigris*	1	1	0,9
Cypraea turdus	2	2	4,1
Cypraea sp.	5	4	3,2
Cypraeidea	3	3	1,4
cf. *Hydrobia musaensis*	5	5	0,9
Naticarius sp.	1	1	1,1
Tricornis tricornis	1	1	3,6
Planorbis planorbis	1	1	0,4
Columbella sp.	10	10	4,3
Conus venticosus	3	3	0,8
Conus sp.	10	10	2,8
Rapana sp.	1	1	8,4
Tritia gibbosula	11	11	3,8
Turbo radiatus	2	1	0,6
Gastropoda indet.	30	15	18,4
Mollusca indet.	919	289	453,2
sum	**4822**	**1412**	**2315,9**

Table 10: Fragment count (NISP), estimated minimum number of elements/shells (MNE) and weight of all identified mollusk species.

Fig. 78: Several snail shells that were used as beads exhibited intentional removal of the dorsal (top) side (44501I/g-2 top), others were perforated near the aperture (44501I/g-2 below, 44501F/m-3) or had the apex removed (43501Q/a-3) for threading (photos: M. Adel William Eskharoun, © DAI).

In one case a snail shell was worked so extensively that is formed a small round bead similar to the ones produced from ostrich eggshell.[177] The presence of modified molluscan artifacts highlights the resourcefulness of the Elephantine inhabitants in utilizing available resources from their environment. Further studies will investigate the modifications of molluscs and the reasons for it to fully understand the meaning and usage of these artifacts at Elephantine. The planned study will also look at modification techniques, species selection, and functional roles.

(M. Adel William Eskharoun and J. Sigl)

[177] 48501M/g-32; Kopp, *JEA* 108 (2022), 254-56.

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