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HUGGING THE WALL. NEW INSIGHTS INTO THE BUILDING HISTORY AND THE USE LIFE OF THE GREAT ENCLOSURE AT MUSAWWARAT

Rehabilitation measures conducted at the on-site museum at Musawwarat in the spring season 2015¹ incidentally led to the exposure of archaeological evidence which proved interesting for exploring hitherto little understood aspects of the chronology and the use life of the Great Enclosure. The evidence and its analysis are presented here in order to conclude the series of papers detailing the archaeological work conducted at the Great Enclosure from 2013 to 2015.²

TRENCH 227.N9

Trench 227.N9 was excavated when the drainage system of the on-site museum was rehabilitated and a new outlet channel and an infiltration well were constructed outside the northern enclosure wall, 227/N.³ The exposed stratigraphy (fig. 1) was informative primarily with regard to the original construction of wall 227/N. The foundation of this wall (227.N9-008) had been dug into the natural ground, consisting of the leached horizon (227.N9-007) and the *turab ahmar* proper (227.N9-019). A small foundation trench (227.N9-009) was still discernible. A 'fire pot' (227.N9-005) was sunk into a small pit, a mere 3.5cm from the foundation (figs. 2–3, 6–7). It was covered by the building layer (fig. 1: 227.N9-003, fig. 4) of the aboveground parts of wall 227/N, which was clearly defined by a matrix

including powdery sandstone material and numerous sandstone chips.

The exposed stratigraphy indicates that the 'fire pot' had been installed and used after the foundation had been built, but before the aboveground part of wall 227/N had been executed. Thus, the pot marks the short interval between the construction of the foundation and the rising wall. North of the 'fire pot', a large pit (227.N9-011) was situated (figs. 1, 5). It had been dug through a sandy layer (227.N9-018; only present in the western part of the trench) and the leached horizon (227.N9-007) into the natural ground (227.N9-019). The southern edge of the pit was about 1.15m from wall 227/N (figs. 1, 5). The pit exceeded the trench in size, but it was only about 45 cm deep. Its fill consisted of several layers of sediment, interspersed with some pottery and many animal bones (fig. 1). One of these layers (227.N9-006) also constituted the fill of the small pit dug for the 'fire pot' (figs. 1, 3). This indicates that both features are roughly contemporary. The layers on top of these features mainly consisted of windblown sand (fig. 1: 227.N9-014, 001). They were cut by the trench (227.N9-002), which had been dug when wall 227/N was reconstructed in 1998.⁴

The particular interest of this otherwise inconspicuous evidence lies in a 14C date which was obtained from a charcoal sample from the fill of the 'fire pot':

Poz-73432 (Musa15 IA-227.N9-005-012):

2210 ± 30 BP

68.2% probability

359BC (7.3%) 347BC

320BC (27.9%) 275BC

260BC (33.0%) 206BC

95.4% probability

371BC (95.4%) 199BC

1 See Näser 2015.

2 For earlier publications see the 2013 to 2015 issues of *Der antike Sudan*. This research was funded by the Qatar-Sudan Archaeological Project and the Berlin Cluster of Excellence TOPOI, whose support is gratefully acknowledged. The author would like to thank Christiane Dorstewitz who was the co-investigator in the field, Manja Wetendorf who conducted the pottery analysis, Nadine Nolde who analysed the faunal remains and the colleagues of the National Corporation for Antiquities and Museums of Sudan, in particular Dr Abdelrahman Ali Mohamed, for supporting this work.

3 For the position of the trench see Näser 2015: fig. 8, for the measures see ead. 2015: 19, figs. 20–21.

4 Cf. Wenig 2000: 11.

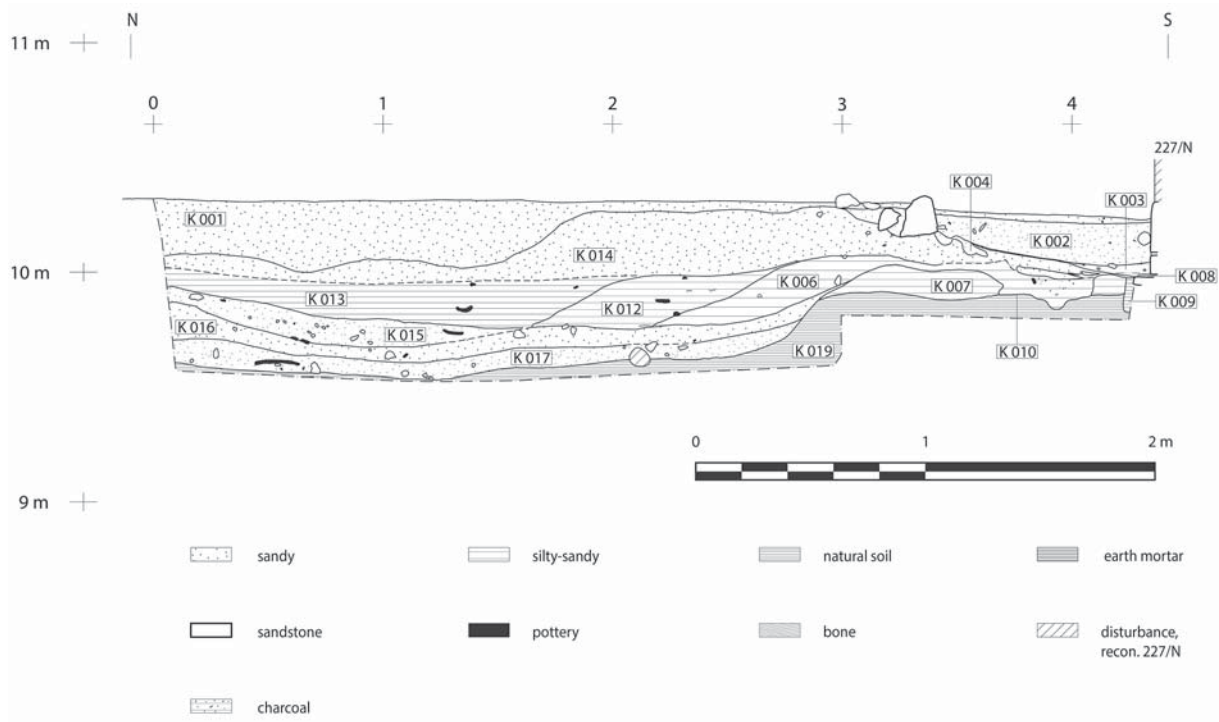


Fig. 1: Eastern section of trench 227.N9 (drawing and graphic implementation: Christiane Dorstewitz)

Its stratigraphic context relates this date directly to the construction of wall 227/N. It is thus of value for reconstructing the building chronology of the Great Enclosure.⁵ Beyond that, the record of trench 227.N9 opens a window into the everyday activities which accompanied building work at the Great Enclosure.

‘FIRE POTS’

‘Fire pots’ are common features in Meroitic occupation sites. Various called ovens, hearths, hearth pots, cooking places and fireplaces, they have been reported e.g. from Meroe⁶, Hamadab⁷ and Dangeil⁸. They represent a long-lived tradition of food preparation, as similar evidence from early Kushite levels at Kawa⁹ and the post-Meroitic fortress of Mikaisir on Mograt¹⁰ shows. Usually, ‘fire pots’ are reused large vessels which were placed upside down, i.e. with their openings downwards, in the ground (figs. 2–4).¹¹ The then upper edges of the vessels were

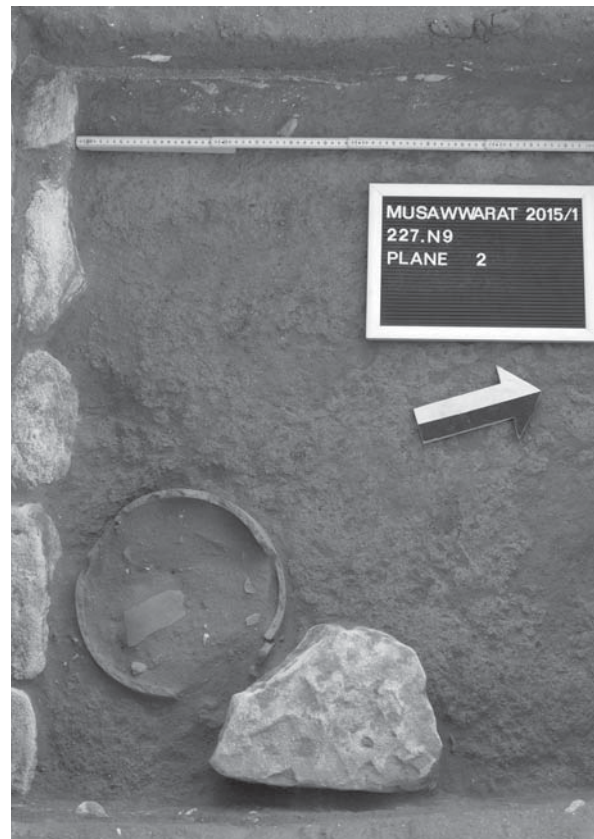


Fig. 2: Detail of plane 2 of trench 227.N9 with the ‘fire pot’ (photo: Claudia Näser)

5 Provided that the old wood effect is negligible; cf. Scheibner 2011: note 9.
 6 Garstang-George 1914: 4, pl. III.3; Shinnie and Bradley 1980: 38–39, pls. XV, XIX–XX, XXII
 7 Wolf et al. 2008: 216, fig. 78, 2009: 248–249, 255, figs. 38, 44, 2011: 232–234, 239, figs. 19–20.
 8 Anderson et al. 2014: 70–71, pls. 6–7.
 9 Welsby 2010: 48, fig. 1.
 10 Rees et al. 2015: 186, fig. 13.
 11 A specimen recently investigated in Dangeil, however,

turned out to be the lower part of an amphora; see Anderson et al. 2014: 71, pl. 7.

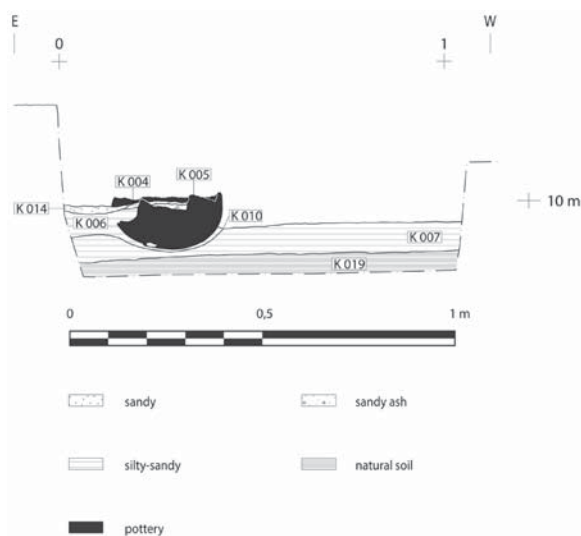


Fig. 3: Section of 'fire pot' 227.N9-005 *in situ* (drawing and graphic implementation: Christiane Dorstewitz)



Fig. 4: View of 'fire pot' 227.N9-005 with the building layer of wall 227/N visible in the section in the rear (photo: Claudia Näser)

trimmed to adjust them to their new function. As it is difficult to break a large vessel to a desired shape without support, it seems likely that the pots were trimmed only after they had been installed in the ground. Usually, concentrations of charcoal survive in the fill of these pots, showing that they had contained a fire. The actual cooking would have taken place in a second vessel on top of this installation.

In Musawwarat, numerous 'fire pots' were found. Summary documentation often complicates the evaluation of the evidence. Particularly when the fill of the pot or circumstantial evidence such as ashy deposits in the pot's surrounding were not recorded, it is impossible to differentiate between 'fire pots' and storage vessels sunk in the ground.¹² In most

¹² In other instance, traces of fire were evidently absent. This is true e.g. for two pots which were placed in the corners of a projection in the eastern courtyard wall of the Small Enclosure as well as for a series of pots in rooms XII and XIII of the Small Enclosure. These specimens may have

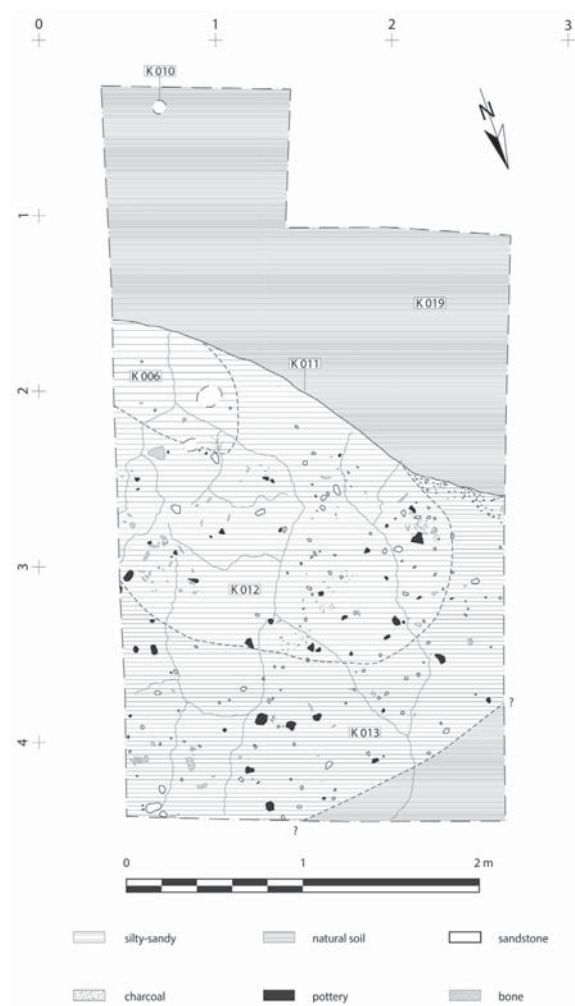


Fig. 5: Pit 227.N9-011 in plane 3 (drawing and graphic implementation: Christiane Dorstewitz)

instances, stratigraphic data are also missing, and it is open whether the pots belonged to a primary phase of use or a secondary occupation. However, the evidence that exists suggests that 'fire pots' were associated with four distinct locations. In the Small Enclosure¹³ they were situated:

- along the outer walls of buildings and courtyards, sometimes as isolated specimens, but often as 'batteries' of up to two dozen pots¹⁴
- in the corners of courtyards¹⁵

served for the storage of water. Fitzenreiter et al. 1999: 18–19 assumed that the rooms in question had functioned as bathrooms.

¹³ See Fitzenreiter et al. 1999: passim and Hintze 1984: 342–343, fig. 2.

¹⁴ E.g. along the southwestern corner of the Small Enclosure; Fitzenreiter et al. 1999: 21, fig. 58, pl. X,6.

¹⁵ Evidence from the Small Enclosure is ambiguous as to the function of the pots situated in the corners of the courtyard; cf. Fitzenreiter et al. 1999: fig. 58. But several specimens were recorded in this position in the Great Enclosure; see next paragraph.



- in the outer rooms of buildings, usually interpreted as kitchens, often in larger numbers¹⁶
- in the rear part of rooms or buildings, usually only one or two specimens per room.¹⁷

The significance of this pattern is confirmed by other instances, e.g. the sequence of three rooms in the Great Enclosure (507–509), dubbed the complex of the Holy Wedding.¹⁸ There, six pots were installed in the outer room (507). The walk-through room (508) had one fireplace, not furnished with a pot. The inner room (509) contained a small fireplace, a ‘fire pot’ – interpreted as the remains of a cosmetic smoke bath – and an inverted vessel without traces of burning in the centre of the room. From the published record it cannot be decided whether all these features were contemporary and associated with the primary use of the rooms. Likewise, there is no ceramological information on the pots. But the overall distribution coincides with other instances and should therefore not be used in support of the thesis that these rooms were the setting of a Holy Wedding.¹⁹

Apart from this assemblage, evidence of ‘fire pots’ in the Great Enclosure concentrates on Complexes 200 and 400. A summary review of the documentation revealed the following specimens:

- four pots inside and outside section 227/N of the northern enclosure wall²⁰
- fourteen pots inside and one pot outside section 226/N of the northern enclosure wall²¹
- one pot underneath the pottery deposit in courtyard 224 [context 626]²²
- one pot in the area of room 225 (225.3-030); since this specimen probably predates the construction of walls 225/224S+E it is to be classified as an ‘open area pot’²³
- three more pots in room 225 (225.3-003, 004, 005); these specimens were installed after walls

225/224S+E had been built, but may represent two successive phases of use²⁴

- possibly one pot in the southeastern corner of courtyard 226²⁵
- possibly one pot the southeastern corner of courtyard 227²⁶
- possibly one pot in room 402²⁷
- one pot in room 412²⁸
- two + x pots in room 418 and along the wall outside of it²⁹
- two pots in the northwestern and southwestern corners of courtyard 416³⁰
- possibly one pot near gate 416-529³¹
- possibly two pots in the northwestern corner of courtyard 417.³²

24 Näser and Wetendorf 2015: 61–65, figs. 25, 28, 35–38. Note that the brick wall, partitioning off the rear part of the room with two fire pots resembles an installation in room XXVII of the Small Enclosure; Fitzenreiter et al. 1999: 22.

25 Objektbuch Komplex 200 = Doku.-Vz. 89: 30, Archive of the Department of Northeast African Archaeology and Cultural Studies, Humboldt University Berlin. The diary entry of 2 January 1966 contains the remark “02261 o.B. Gefäß entfernen”. “O.B.” means “ohne Befund”, i.e. without findings”. “Gefäß” might refer to a ‘fire pot’.

26 Objektbuch Komplex 200 = Doku.-Vz. 89: 68. The diary entry of 1 February 1966 mentions “ein großes Vorratsgefäß dicht an der Mauer” in trench 22715. Whether it was a storage vessel or a ‘fire pot’ cannot be decided on the basis of the available documentation. Cf. also Raumbuch 100–400, no Doku.-Vz. number: page marked 200.

27 Objektbuch Komplex 400 = Doku.-Vz. 91: 5. The diary entry of 8 January 1966 mentions a “Boden eines größeren Kochgefäßes” in trench 4021. Whether this actually was a ‘fire pot’ is uncertain. Cf. also Raumbuch 100–400, no Doku.-Vz. number: page marked 402.

28 Objektbuch Komplex 400 = Doku.-Vz. 91: 19. The entry of 2 February 1968 mentions “die Oberkante eines großen Kochgefäßes” in trench 4121.

29 Objektbuch Komplex 400 = Doku.-Vz. 91: 17–18. The diary entries of 30 and 31 January 1968 mention “4 in die Grundsicht eingelassene Vorratsgefäße” in trench 4172 and “die oberen Ränder zweier in die Asche eingelassener großer Vorratsgefäße” in trench 4181. Objektbuch Komplex 400 = Doku.-Vz. 91: 23 mentions “weitere Vorratsgefäße” in room 418 in the entry of 5 March 1968. Whether all these vessels represent ‘fire pots’ is uncertain.

30 Objektbuch Komplex 400 = Doku.-Vz. 91: 11. The diary entry of 9 and 10 February 1964 mentions “90 cm v[on] der M[auer] 416/417 entfernt [...] ein dickwandiges Kochgefäß, vollständig erhalten” in trench 4164 and “90 cm von der M[auer] entfernt ein großes Kochgefäß mit grauer Substanz gefüllt” in trench 4165. Cf. also Raumbuch 100–400, no Doku.-Vz. number: pages marked 416 and “zu 400”.

31 Objektbuch Komplex 400 = Doku.-Vz. 91: 22. The entry of 12 February 1968 mentions “ein großes Vorratsgefäß” in trench 41611. Whether this was a ‘fire pot’ is uncertain.

32 Objektbuch Komplex 400 = Doku.-Vz. 91: 18. The entry of 31 January 1968 mentions “in 70–90 cm Tiefe [...] 2

16 E.g. in rooms II, IV, VI and VII of the Small Enclosure; Fitzenreiter et al. 1999: 13–15, fig. 58. Mind that rooms III and VII were unroofed courtyards according to Fitzenreiter et al. 1999: 14.

17 E.g. in rooms V and VIII of the Small Enclosure; Fitzenreiter et al. 1999: 13–14, fig. 58.

18 Eigner 2002; Wenig 2002: 8, 2003: 8–13.

19 Contra Eigner 2002; Wenig 2002: 8, 2003: 8–13.

20 See above for one specimen, and Wenig and Wolf 2000: 37–38 for further three specimens, the position of which was not reported in detail.

21 Wenig 1999: 21, fig. 9; Wenig and Wolf 1999: 33–34: five inside, one outside. Wenig 2000: 12: another nine inside.

22 Edwards and Onasch in Edwards 1999: 9, 36, fig. 11, pl. XV.

23 Näser and Wetendorf 2015: 60–61, 65, 71, figs. 30, 33–35.



Additional pots were found west of the Great Enclosure³³ and south of the Small Enclosure.³⁴

As excavations have privileged the areas along the walls and in the corners of courtyards and rooms during architectural investigations and conservation measures, this picture may not be wholly representative. On the other hand, it conforms to the distribution established from the evidence of the Small Enclosure. Demonstrably, pots were situated both inside and outside of courtyard walls and in corners oriented in different cardinal directions. This shows that wind directions and potential restrictions of access cannot have been exclusively deciding factors in the placement of the pots. Otherwise we would not have found specimens both on the inside and the outside of the northern enclosure wall 226+227/N.

CONTEXTUALISATION

As has been discussed above, the installation of ‘fire pot’ 227.N9-005 is closely associated with the construction of wall 227/N. Its chronological position between the building of the foundation and the erection of the aboveground part of the wall shows that a) some time must have elapsed between these two stages, and b) the installation of the pot was designed for a short period of use only.³⁵ From this observation and its position it is most likely that it served the workforce building the wall for the preparation of food.

The stratigraphic connection between the ‘fire pot’ and pit 227.N9-011 suggests that the content of the pit actually represents residues of food preparation and/or consumption. All in all, 1247 animal bones were recovered from the pit.³⁶ The total weight of 1917.4g shows that many of them were very small fragments. Only 147 specimens i.e. 11.8% could be identified by species. But these represent 38.7% (742.1g) of the total weight. Of the identified bones, 45 specimens were from cattle, representing 73.5% by weight (545.4g). 101 specimens were from sheep or goat, representing only 22.6% by weight

(167.1g). Finally, one bone was a femoral head of a horse (3.9%, 28.6g) – which is the first actual record of a horse from Musawwarat.³⁷ Leaving the latter aside, the pure cattle : ovicaprids ratio is 76.4%.

In sum, the evidence from pit 227.N9-011 indicates that beef constituted the main portion of the meat consumed by the people who used the ‘fire pot’ at the northern enclosure wall and dumped their debris closeby. The composition of the bones shows that all body parts of the cattle were intensely used, while the exploitation of goat and sheep was more selective.³⁸ However, the percentage of cattle in the 227.N9 corpus is still significantly lower than in the material from the pottery deposit in courtyard 224 and from the layers underneath this deposit. There, 91.0% respectively 90.6% were from cattle.³⁹ These figures entail 4.2% respectively 1.3% species other than cattle and ovicaprids. The pure cattle : ovicaprids ratio is 94.9% respectively 91.7%. Based on the ratios quoted by Chaix⁴⁰ for other Kushite sites, this places the consumption contexts from courtyard 224 near the corpus from the royal palaces in Meroe. People represented by these contexts ate significantly more beef than the communities from el-Hassa and Dangeil, whose dumps were also analysed by Chaix. The 227.N9 corpus is in between the latter two sites.

While the evidence is still too limited for detailed conclusions, it still shows that the preference for and/or the availability of cattle varied between the communities represented in these samples.⁴¹ Higher percentages of beef consumption could relate to social status and socioeconomic affluence, or to state or temple provisioning. In this respect it is interesting that the sample presumably connected with the labour force undertaking construction work at the northern enclosure wall comprised fewer cattle than other corpora from the site. On the other hand, the generally high ratio of cattle in Musawwarat, as compared e.g. to Dangeil, may indicate a centralised provisioning. It is surprising that almost no wild species occur in any of the faunal corpora from Musawwarat. Despite its privileged location for this activity, hunting obviously did not play a significant

große Vorratsgefäße” in trench 4173.

33 Scheibner 2002: 28, fig. 8.

34 Mucha 2005: 7, 13.

35 Based on the evidence of the pot found underneath the pottery deposit in courtyard 224 [626], Edwards and Onasch in Edwards 1999: 9 had already thought it “likely that such fireplaces in outside areas will have had a limited use-life”.

36 For this and the following see Nolde, this volume. In her contribution, 29 bones with a total weight of 22.1g from contexts other than the pit, namely 227.N9-005 and -006, have been included in the calculations. They are omitted here.

37 The depictions of horses in the graffiti of the Great Enclosure have been comprehensively dealt with in Eick 2010.

38 See Nolde, this volume, for this argument.

39 These statistics were compiled from the finds from trenches 224.14 and 224.15; see Nolde 2014 and this volume.

40 2010; cf. also id. 2011.

41 A hitherto unpublished corpus from late or post-Meroitic horizons of fortress MOG047 on Mograt Island comprises 56.4% cattle, 38.6% ovicaprids and 5% other species. The pure cattle : ovicaprids ratio is 59.4%, i.e. 5% lower than the figure from Meroitic Dangeil.

role in food acquisition. Only more data from other sites and contexts can help to clarify this picture and the underlying mechanisms of distribution and consumption.

CHRONOLOGY

The record of N227.N9 opens three approaches to chronology. The first relates to pottery. The vessel from which the 'fire pot' (227.N9-005) was reworked was a large amphora-like container with two small handles and a spout (figs. 6–7). The shape is without parallels in comparative corpora. Ceramological and archaeometric analyses indicate that it was made from Nile clay and must thus have been an import to Musawwarat.⁴² Other vessels from pit 227.N9-011 are also of non-local fabrics (fig. 8). In this respect, the pottery corpus from trench 227.N9 differs significantly from the material recorded in 'pottery courtyard' 224 where local fabrics clearly predominate.⁴³ This observation is interesting also with regard to other pottery assemblages from Musawwarat which represent distinct phases of use. E.g., three 'fire pots' from room 225 (225.3-003, 004, 005) which may relate to a phase in-between the early occupation present in trench 227.N9 and the 'pottery deposit' in courtyard 224⁴⁴ are all made from the same local clay in a variety which is exceedingly rare in the material from the 'pottery courtyard'.⁴⁵ This demonstrates that dating by pottery – i.e. shape, fabric and fabric composition – is a worthwhile effort also at Musawwarat.

Based on the analysis of architectural characteristics and building chronology, the excavators of the 1960s suggested that Complex 200 was added to the Great Enclosure in the 6th building period, more specifically in the first stage 6a of this period.⁴⁶ Prior to this extension, walls 122+304/227+307 and 304/E had formed the outer enclosure walls towards north and east. As it has been argued elsewhere,⁴⁷ these walls cannot have been built prior to building period 6. Complex 200 was then formed by enclosing an open area in the north, which thus became

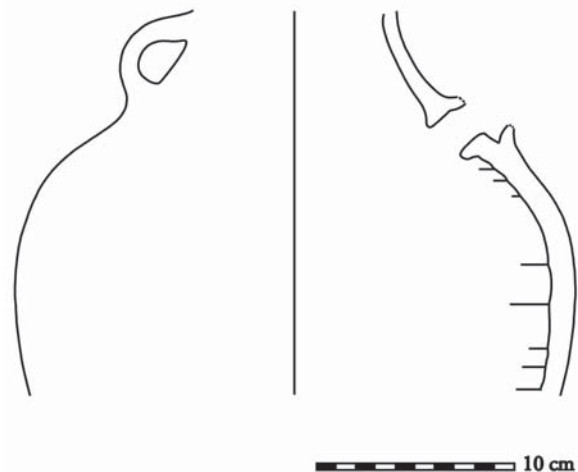


Fig. 6: 'Fire pot' 227.N9-005 (drawing: Jaroslav Halik; graphic implementation: Manja Wetendorf)



Fig. 7: 'Fire pot' 227.N9-005 (photo: Claudia Näser)

courtyards 227+226+224, with walls 227/307+E and 224–227/N. Only later walls 307/E+N were added.⁴⁸ In terms of building chronology Complex 200 postdates Complex 300, even if only for a short period of time. This, however, is not necessarily true for the two temples, the construction of which may have been more or less contemporary. In order to define their sequence more closely, we can consult a substantial series of 14C dates. Six dates come from contexts underneath Temple 300, providing a *terminus post quem* for its construction.⁴⁹ 18 dates were obtained from Complex 200 during the archaeological investigations of the years 2013 to 2015 (table 1: Poznan dates).⁵⁰ Four more dates derive from the 1960s excavations in and around Temple 200 (table 1:

42 The ceramological analysis was undertaken by Manja Wetendorf. Archaeometric analyses were conducted by Małgorzata Daszkiewicz and Gerwulf Schneider within the framework of the Musawwarat pottery project; cf. Näser and Wetendorf 2014, 2015.

43 For the latter see Näser and Wetendorf 2014, 2015.

44 Näser and Wetendorf 2015: 61–65, figs. 25, 28, 35–38.

45 This fabric has been assigned to a new reference group, Mus5. For the classificatory system see Näser and Wetendorf 2015: 50–52.

46 Hintze and Hintze 1970: 62, sketch 4.

47 Näser 2013: 12–13 with further references.

48 Cf. Scheibner and Mucha 2009: 28–29.

49 Cf. Scheibner 2011: fig. 2 with further references.

50 Cf. Näser 2013: 13–14 and Näser and Wetendorf 2014, 2015.

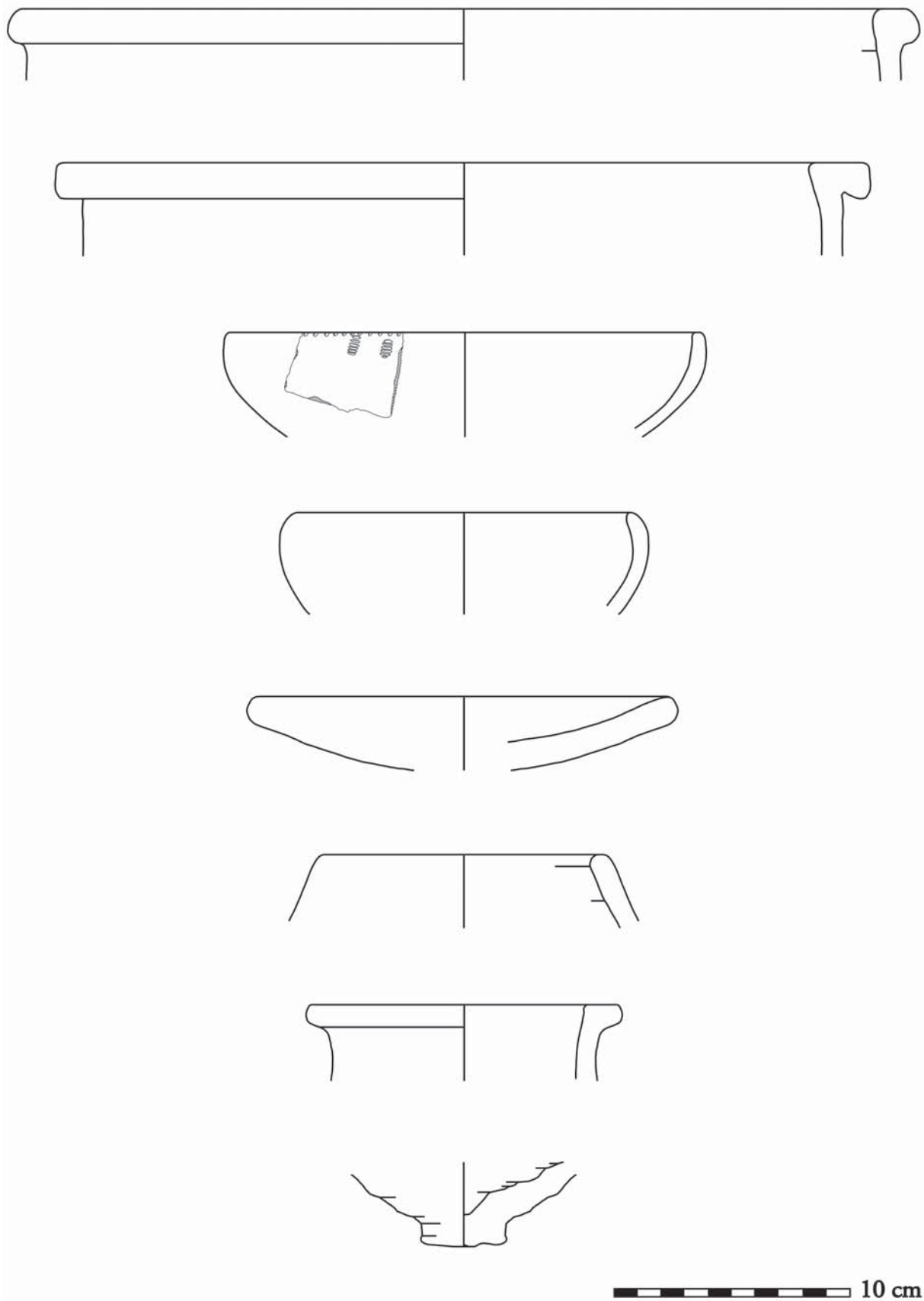


Fig. 8: Diagnostic sherds from pit 227.N9-011 (drawings: Stephanie Bruck, Jaroslav Halik; graphic implementation: Manja Wetendorf)



| Musawwarat es-Sufra, 14C dates, Great Enclosure IA, Complex 200 | | | unmodelled calibrated dates |
|---|---|---------------------|---|
| sample no. | context | Age BP $\pm \sigma$ | P = 95.4% |
| Poz-73427 | MUSA2015_IA-224.15-026-001: from fill of pit, oldest occupation episode in stratigraphical record of 224.15; predates wall 224+225/N | 2235 \pm 30 | 388BC (22.7%) 342BC 326BC (72.7%) 204BC |
| Poz-73432 | MUSA2015_IA-227.N9-005-012: from content of fire pot, postdates construction of foundation layer of 227/N, predates construction of aboveground parts of wall | 2210 \pm 30 | 371BC (95.4%) 199BC |
| Poz-63076 | MUSA2014/1_IA-224.14-015-001: from fill of pit, oldest occupation episode in stratigraphical record of 224.14; relation to wall 224/N undefined | 2170 \pm 30 | 360BC (92.9%) 156BC 134BC (2.5%) 116BC |
| Poz-76014 | MUSA2015_IA-225.3-030-002: from content of fire pot, relation to wall 225/N undefined, predates basin in room 225 | 2165 \pm 30 | 359BC (44.7%) 274BC 261BC (46.0%) 149BC 140BC (4.6%) 112BC |
| Poz-73425 | MUSA2015_IA-224.15-010-003: from fill of pit, postdates construction of wall 224/N | 2155 \pm 30 | 357BC (35.4%) 282BC 258BC (1.3%) 245BC 236BC (58.7%) 95BC |
| Poz-73436 | MUSA2015_IA-224.15-030-003: from fill of pit, postdates construction of wall 224/N | 2120 \pm 30 | 345BC (4.2%) 322BC 206BC (91.2%) 50BC |
| Poz-55576 | MUSA2013_IA-201.1.S10: from earth mortar between foundation blocks in sanctuary of Temple 200 | 2160 \pm 30 | 359BC (40.4%) 276BC 260BC (55.0%) 107BC |
| Poz-55573 | MUSA2013_IA-201.1.S03: from upper layers of the fill of the terrace in the sanctuary of Temple 200 | 2115 \pm 30 | 342BC (2.3%) 328BC 204BC (93.1%) 49BC |
| Poz-55574 | MUSA2013_IA-201.1.S05: from upper layers of the fill of the terrace in the sanctuary of Temple 200 | 2115 \pm 30 | 342BC (2.3%) 328BC 204BC (93.1%) 49BC |
| Poz-73431 | MUSA2015_IA-225.3-016-001: from layer which might predate wall 225/N and certainly predates construction of walls 225/224 S+E and fire pot 225.3-003 (possibly outlier, wrong stratigraphic interpretation or intrusive sample) | 2070 \pm 30 | 174BC (92.6%) 19BC 13BC (2.8%) 1BC |
| Poz-73424 | MUSA2015_IA-224.15-009-005: from 'lower' floor, postdates 'early' pits, predates mudbrick structure (outlier, wrong stratigraphic interpretation or intrusive sample) | 2190 \pm 30 | 361BC (95.4%) 178BC |
| Poz-63330 | MUSA2014/1_IA-224.14-009-001: from layer with traces of burning, inside mudbrick structure (equals 'lower' floor?) | 2020 \pm 30 | 107BC (95.4%) 59AD |
| Poz-63077 | MUSA2014/1_IA-224.14-005-001: from loamy-sandy layer, postdates mudbrick wall, predates deposit | 1975 \pm 30 | 45BC (95.4%) 80AD |
| Poz-63158 | MUSA2014/1_IA-224.14-004-001: from collapsed material of mudbrick wall, postdates destruction of wall | 1955 \pm 30 | 38BC (89.1%) 90AD 100AD (6.3%) 123AD |
| Poz-73430 | MUSA2015_IA-225.3-003-005: from content of fire pot, probably postdates construction of basin in room 225 | 1955 \pm 30 | 38BC (89.1%) 90AD 100AD (6.3%) 123AD |



| Musawwarat es-Sufra, 14C dates, Great Enclosure IA, Complex 200 | | | unmodelled calibrated dates |
|---|---|---------------------|--|
| sample no. | context | Age BP $\pm \sigma$ | P = 95.4% |
| Poz-73434 | MUSA2015_IA-224.15-024-002: lowest part of deposit (possibly representing lower part of layer IA-224.15-023 or an underlying floor) | 1900 \pm 30 | 28AD (1.9%) 39AD 50AD (88.5%) 180AD 186AD (5.0%) 214AD |
| Poz-73426 | MUSA2015_IA-224.15-023-002: lower part of pottery deposit, underneath main deposit | 1900 \pm 30 | 28AD (1.9%) 39AD 50AD (88.5%) 180AD 186AD (5.0%) 214AD |
| Poz-63159 | MUSA2014/1_IA-224.14-002-005: from main part of pottery deposit (outlier, or might indicate secondary dumping) | 2010 \pm 30 | 92BC (4.2%) 68BC 61BC (91.2%) 65AD |

Table 1: 14C dates from contexts in Complex 200 obtained from excavations between 2013 and 2015

| Musawwarat es-Sufra, 14C dates, Great Enclosure IA, Temple 200, sequential phases | | | unmodelled calibrated dates | modelled dates $A_{\text{model}}=145.5, A_{\text{overall}}=145.4$ | |
|---|--|---------------------|--|--|-------|
| sample no. | context | Age BP $\pm \sigma$ | P = 95.4% | P = 95.4% | A |
| Poz-73432 | MUSA2015_IA-227.N9-005-012: from content of fire pot | 2210 \pm 30 | 371BC (95.4%) 199BC | 368BC (95.4%) 209BC | 101.1 |
| Bln-633 | 'foundation deposit' under wall 227/207 | 2260 \pm 80 | 538BC (95.3%) 91BC 68BC (0.1%) 64BC | 326BC (95.4%) 192BC | 122.6 |
| Bln-568 | 'foundation deposit' under wall 227/207 | 2271 \pm 120 | 755BC (5.7%) 680BC 671BC (3.9%) 607BC 597BC (85.8%) 47BC | 326BC (95.4%) 192BC | 141.8 |
| Bln-569 | 'foundation deposit' from trench 2026 | 2187 \pm 80 | 397BC (95.4%) 51BC | 276BC (95.4%) 161BC | 118.7 |
| Bln-570 | 'foundation deposit' from trench 2026 | 2216 \pm 80 | 406BC (95.4%) 52BC | 277BC (95.4%) 162BC | 112.1 |
| Poz-55576 | Musa2013_IA-201.1.S10: from earth mortar between foundation blocks | 2160 \pm 30 | 359BC (40.4%) 276BC 260BC (55.0%) 107BC | 206BC (95.4%) 114BC | 105.5 |
| Poz-55573 | MUSA2013_IA-201.1.S03: from upper layers of the fill of the terrace in the sanctuary of Temple 200 | 2115 \pm 30 | 342BC (2.3%) 328BC 204BC (93.1%) 49BC | 204BC (95.4%) 113BC | 108.2 |
| Poz-55574 | MUSA2013_IA-201.1.S05: from upper layers of the fill of the terrace in the sanctuary of Temple 200 | 2115 \pm 30 | 342BC (2.3%) 328BC 204BC (93.1%) 49BC | 205BC (95.4%) 113BC | 108.2 |

Table 2: Model arranging the dates from the 'foundation deposits' under ramp 207, the dates from the 'foundation deposits' recovered from trenches in room 202 and the dates from foundation contexts in the sanctuary in sequential phases

| Musawwarat es-Sufra, 14C dates, Great Enclosure IA, lower layers of 'pottery deposit' in courtyard 224 | | | unmodelled calibrated dates | modelled dates $A_{\text{model}}=125.5, A_{\text{overall}}=125.4$ | |
|--|--|---------------------|---|--|----------------|
| sample no. | context | Age BP $\pm \sigma$ | P = 95.4% | P = 95.4% A | |
| Poz-63330 | MUSA2014/1_IA-224.14-009-001: from layer with traces of burning, inside mudbrick structure | 2020 \pm 30 | 107BC (95.4%) 59AD | 56BC (95.4%) | 58AD 104.4 |
| Poz-63158 | MUSA2014/1_IA-224.14-004-001: from collapsed material of mudbrick wall | 1955 \pm 30 | 38BC (89.1%) 90AD 100AD (6.3%) 123AD | 19BC (95.4%) | 68AD 109.7 |
| Poz-63077 | MUSA2014/1_IA-224.14-005-001: from loamy-sandy layer | 1975 \pm 30 | 45BC (95.4%) | 80AD 17AD (95.4%) | 81AD 107.2 |
| Poz-73434 | MUSA2015_IA-224.15-024-002: lowest part of deposit | 1900 \pm 30 | 28AD (1.9%) 39AD 50AD (88.5%) 180AD 186AD (5.0%) 214AD | 56AD (95.4%) | 126AD 116.9 |
| Poz-73426 | MUSA2015_IA-224.15-023-002: lower part of pottery deposit | 1900 \pm 30 | 28AD (1.9%) 39AD 50AD (88.5%) 180AD 186AD (5.0%) 214AD | 59AD (95.4%) | 131AD 120 |

Table 3: Model arranging the dates from the lower layers of the 'pottery deposit' documented in trenches 224.14 and 224.15 in sequential phases, with layers 224.15-023 and 224.15-024 being considered as contemporary

Berlin dates).⁵¹ Bayesian sequence modelling⁵² does not help in a plausible sorting of the dates directly related to the two temples, suggesting that they may fall in a very limited period of time.

Other models run with these dates are more informative. Thus, arranging the six dates associated with the construction of Temple 200 in the sequence before the date from wall 227/N gives an agreement index under 60% ($A_{\text{model}}=42.6, A_{\text{overall}}=51.1$),⁵³ indicating that this scenario is to be rejected. In contrast, the sequence arranging the two dates from the 'foundation deposits' of ramp 207 (Bln 568, 633) before the two dates from the 'foundation deposits' recovered from the trenches in room 202 and these again before the dates from the wall and the layers of the terrace fill gives a high agreement index (table 2: $A_{\text{model}}=145.5, A_{\text{overall}}=145.4$), indicating that the ramp was built at an early stage in the construction of Temple 200. All in all, we can assume that wall 227/N was built in the 4th or 3rd centuries BC, while Temple 200 is some-

what younger. The spreading of the dates associated with this sequence suggests that building period 6 may have extended over a considerable period of time, covering what is generally considered to be the late Napatan and the early Meroitic era.

The dates obtained from courtyard 224 and room 225 (table 1) testify to small-scale domestic activities continuing after the construction of the northern enclosure wall, up to the use of this area as a pottery workshop in the 1st centuries BC and AD. The only date from the main (upper) part of the deposit (224.14/15-002) is inverse, i.e. it is older than the five dates from the lower layers of the deposit.⁵⁴ Consequently, the arrangement of all six dates in a sequential phase model gives a very poor agreement index ($A_{\text{model}}=18.1, A_{\text{overall}}=35.6$), whereas the model excluding the stratigraphically uppermost date produces a high agreement index (table 3: $A_{\text{model}}=125.5, A_{\text{overall}}=125.4$). This may support the thesis that part of the deposit was dumped secondarily.⁵⁵ All in all, the potter's workshop seems to correlate with a phase of revived or enhanced activity at the site – possibly constituting the rather ill-defined building period 7, to which the excavators of the 1960s attributed the

51 Hintze 1984: 339, table 7. Cf. also Scheibner 2011: passim. Note that calibrations in the current paper were done with the latest curve, IntCal 13, resulting in slight deviations from the calibrated dates quoted by Scheibner 2011 who used the then current IntCal 09 curve.

52 For the basic principles of modelling 14C dates see Scheibner 2011.

53 For the agreement index cf. Scheibner 2011: 23.

54 For the stratigraphic record see Näser and Wetendorf 2014, 2015.

55 Cf. Näser and Wetendorf 2015: 68 with further references.



construction of courtyards 307, 415 and 601 among other things.⁵⁶

SUMMARY

The archaeological evidence which was incidentally exposed along the northern enclosure wall 227/N proved fruitful for exploring several little understood aspects of the chronology and the use of the Great Enclosure. The analysis of the different facets of this evidence shed light on how Complex 200 in the north of the Great Enclosure was developed in the Late Napatan and the Early Meroitic period and how it was used in the subsequent centuries. The results presented in this study also underline that an integral analysis which includes all categories of the archaeological evidence and does not prioritise individual classes of data at the expense of other material, can advance the understanding of past activities even in an environment as unwieldy as the Great Enclosure.

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56 Hintze and Hintze 1970: 62, sketch 4. A hitherto unpublished 14C date from a context in courtyard 415 (Poz-73433: MUSA2015_IA-415.E4-007-001) gave a date of 2040 ± 30 BP i.e. P = 95.4%: 162BC (6.9%) 131BC, 118BC (88.1%) 26AD, 44AD (0.4%) 46AD. The exact nature of the layer from which this date derives is obscure. It contains some collapse of walls 305/415 and 415/N, but theoretically the charcoal sample may have been associated with the original construction of the wall, its use or its collapse.

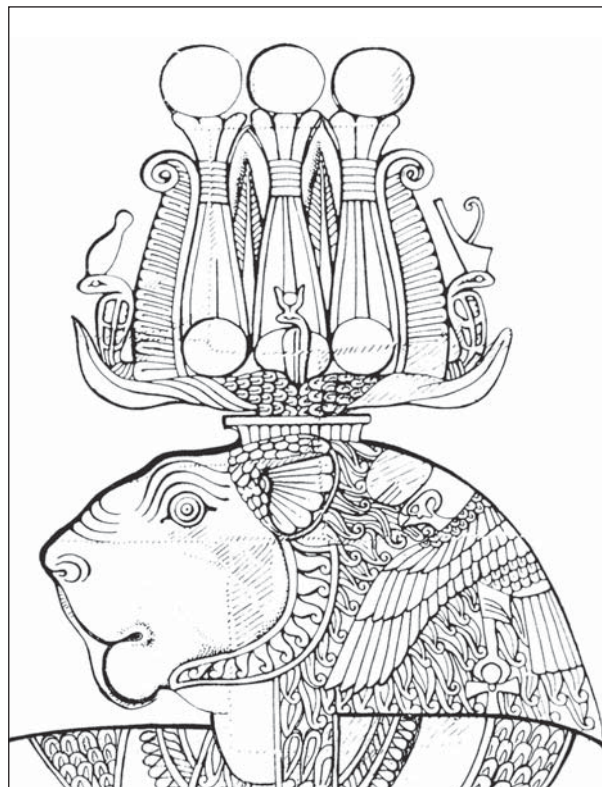


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ZUSAMMENFASSUNG

Der Aufsatz diskutiert Befunde, die in der Frühjahrskampagne 2015 im Zug von Sanierungsarbeiten am Wasserabfluss des Site-Museums an der nördlichen Umfassungsmauer der Großen Anlage erhoben wurden. An Hand der stratigraphischen Daten, der Tierknochen- und Keramikfunde sowie 14C-Datierungen werden Aspekte der Bau- und Nutzungsgeschichte des Komplexes 200 beleuchtet und mit Kontexten angrenzender Areale und Befunden der Kleinen Anlage in Beziehung gesetzt.

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