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AcrossBorders 2

Living in New Kingdom Sai

Julia Budka

Austrian Academy of Sciences Press

JULIA BUDKA

ACROSSBORDERS 2

LIVING IN NEW KINGDOM SAI

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Edited by Julia Budka, Felix Höflmayer and Barbara Horejs

Volume 1

JULIA BUDKA

ACROSSBORDERS 2

Living in New Kingdom Sai

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Cover: Overview of southern part of the town on Sai Island (Julia Budka)

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Preface by the Series Editors

This publication is the first volume in the new monographic series "Archaeology of Egypt, Sudan and the Levant" (AESL), published by the Institute for Oriental and European Archaeology (OREA). This new Austrian Academy of Sciences publication series is dedicated to current archaeological research throughout the Levant, Egypt and Sudan, with a particular emphasis on the multifaceted interconnections between these cultural spheres. This series is implemented in the publication canon of the Division of Humanities and Social Sciences of the Austrian Academy of Sciences. The scientific quality is ensured by international peer review organised by the Austrian Academy of Sciences Press under the auspices of the Academy's Publication Committee and its integration into an active scientific environment.

It seems timely to offer a new general platform for books on archaeological research in the Levant, Egypt and Sudan since these regions have always been in contact with each other. Modern fieldwork in these parts of the ancient world is becoming increasingly comparable, with teams and projects applying similar methodological approaches, the same or analogous techniques, and facing similar challenges in terms of endangered heritage and restrictions regarding preservation. The AESL series editors are active field archaeologists in the areas and cover not only a very long time span from the early Holocene onwards (Barbara Horejs), but epitomise particularly the connectivity of the Levant and Egypt (Felix Höflmayer) and of Egypt and the Sudan (Julia Budka). As a joint team and with this new publication format, we hope to illustrate recent advances in the understanding of the intertwined histories of these regions throughout the ages by publishing archaeological studies that focus especially on new results from fieldwork, material, cultural and theoretical studies, as well as interdisciplinary analyses related to the focus region, which are of interest to a wide audience.

The series is planned to represent the OREA institutes' and associated research in that area, including cooperation partners and collaborative science conducted in the field. The coordination of the editing and publication procedure lies in the experienced hands of Ernst Czerny.

We hope that both the present volume on the results of the ERC project AcrossBorders and the new monographic series "Archaeology of Egypt, Sudan and the Levant" (AESL) will be of interest to experts and a broad readership, extending beyond classical borders of academic fields such as Egyptology and Levantine archaeology.

Julia Budka, Felix Höflmayer, Barbara Horejs
Vienna, October 2019

Preface

The present volume is the second in a series of monographs dedicated to the results achieved within the European Research Council Project AcrossBorders. Sai Island in northern Sudan, the prime example for settlement policy of New Kingdom Egypt in Upper Nubia, was the focus of this project. The AcrossBorders project aimed to provide new insights on the lifestyle and living conditions in New Kingdom Nubia thanks to new fieldwork and multi-layered research on Sai Island. The main hypothesis that was tested was whether the settlement on Sai Island can be evaluated as an Egyptian microcosm, despite its location outside of Egypt and its specific topographical, environmental and cultural situation. Various approaches – from geoarchaeology and micromorphological sediment analysis, ceramic analysis and petrographic analysis, architectural studies, ethnoarchaeological approaches to Strontium Isotope Analysis and Instrumental Neutron Activation Analysis (INNA) – were utilized to investigate the multifaceted lives of the citizens of New Kingdom Sai.

The principal focus of the present volume is the material remains of two sectors excavated by the AcrossBorders project in the fortified New Kingdom town of Sai: the excavations, architecture and material culture, with emphasis on the pottery and small finds, from SAV1 East and SAV1 West are presented. Questions of dating, stratigraphy and possible implications of material remains about the lifestyle and activities at SAV1 North complete this volume. The environmental conditions, above all the geologic realities, of the New Kingdom town at Sai will be presented. The examination of pottery, tools and small finds was complemented by an assessment of the environmental remains, in particular of the botanical and faunal remains. Evidence for people on New Kingdom Sai is also discussed and allows placing the town within the New Kingdom macrocosm.

All in all, the evidence gathered by the AcrossBorders project and brought together in this volume leads to an understanding of New Kingdom Sai as a complex microcosm with a significant evolution, reflecting aspects of the macro-history of New Kingdom Nubia. Sai Island can serve as a case study for the fruitful combination of archaeological investigations on both the micro- and the macro-level.[I] Together with the recent publication on the architectural assessment of the southern part of the New Kingdom town of Sai,[II] and the analysis of the material remains from sector SAV1 North,[III] this volume therefore underlines the important role Sai plays in investigating settlement patterns in New Kingdom Nubia.

Acknowledgments

The research leading to this publication has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP/2007-2013) / ERC Grant Agreement no. 313668. Research for the present study was also partly financed by Julia Budka's START-prize of the Austrian Science Fund: Y615-G19. The ERC AcrossBorders project was hosted at the Austrian Academy of Sciences from 12/2012 to 03/2015 and was then transferred to Germany at the Ludwig Maximilians University Munich (LMU, 04/2015 to 04/2018). At the LMU, I am particularly thankful for

I See Budka and Auenmüller 2018.

II Adenstedt 2016 (an outcome of Julia Budka's START-prize of the Austrian Science Fund: Y615-G19).

III Budka 2017e.

the generous support by the University Executive Board which allowed an extension of five months of the project, granted by the ERCEA – this extra time was simply necessary because of the rich outcome of the AcrossBorders' excavation both at Sai and at Elephantine.

The work on Sai presented in this volume was conducted with the kind permission of the National Corporation for Antiquities and Museums of Sudan (NCAM). My sincere thanks are in particular due to Abdelrahman Ali Mohamed (Director General) and El-Hassan Ahmed Mohamed (Director of Fieldwork). I am especially grateful to the project director of the Sai Island Archaeological Mission (SIAM) of Charles-de-Gaulle – Lille 3 University (UMR 8164 HALMA-IPEL), France, Didier Devauchelle for allowing AcrossBorders to start work under the patronage of the French concession on Sai. Florence Doyen, the field director of the SIAM mission was of much help during this phase of planning and I am grateful for all her support to realise a new project on Sai. Although work permission was granted and the work plan was composed with the help of Devauchelle and Doyen in 2012, thanks also go to the current concession holder of Sai, Vincent Francigny (SFDAS Khartoum) who took over the responsibilities from Devauchelle in the winter of 2014/2015. Francigny started with a direct follow-up project within the New Kingdom town immediately after AcrossBorders' last field season in 2017. I am furthermore very thankful for all of the support by NCAM during AcrossBorders' field seasons on Sai (2013–2017), especially to Huda Magzoub. Many thanks also go to the Sudanese staff of the dig-house under the supervision of Sid Ahmed and Abdel Fatah. These thanks also include our gang of local workmen, supervised by Imad Shorbagi Mohamed Farah and by Hassan Dawd. All present occupants of Sai had a considerable share of making AcrossBorders' work in Sudan successful – I am very grateful for their kind hospitality and sincerely hope that our assessment of one aspect of the rich heritage of 'their' island makes them proud.

Special thanks are due to all AcrossBorders team members – those who participated in the field season at the site are listed in Chapter 3.8. As an AcrossBorders team member, Johannes Auenmüller paid Sai several visits while he was working at Amara West – his analysis of the 'social fabric' of New Kingdom Sai (Chapter 6) profited a lot from the knowledge of material from Amara West and thanks are here due to the generosity of Neal Spencer and Michaela Binder. Martina Ullmann did not have the opportunity to join us in the field during her employment for AcrossBorders, but collected all relevant data about textual references for sandstone from Sai (Chapter 2.4). I am particularly grateful to Dietrich and Rosemarie Klemm who not only came as external experts to Sai and worked in the field there, sharing their vast knowledge about sandstones and quarrying with us, but continuously supported the processing of the geoarchaeological data in Munich. Chapter 2 would not have been written without their valuable input and advice. Thin section analysis at the Geology Department of the LMU was possible thanks to the generous support by the chair of the department, Anke Friedrich, and her complete team. I am furthermore very grateful to Charles French for enabling AcrossBorders' research at the McBurney Geoarchaeology Laboratory of the University of Cambridge.

Several chapters of this volume are based on unpublished reports for the ERC AcrossBorders project – here, many thanks go in particular to Erich Draganits, Sayantani Neogi, Silvia Prell, Miranda Semple, Anna Sonnberger, Andrea Stadlmayr, Sean Taylor and Marlies Wohlschlager. In terms of excavations and architecture, much of the outcome presented here is based on the efforts by Martin Fera and Cajetan Geiger who also composed detailed plans and surface models used in this volume. For the digitalisation of the original field drawings I am much indebted to to Nicola Math (2013), Patrizia Heindl (2016) and Hassan Ramadan Aglan (2018). Due to these changing responsibilities and draftspersons, the archaeological maps and drawings included in this volume differ slightly in terms of colouration. However, legends clearly illustrate the convention used in the respective figures.

A big load of thanks goes to all of the assistants involved in documenting and analysing pottery and small finds from SAV1 East and SAV1 West (in order of their appearance): Nathalie Bozet, Fatma Keshk, Huda Magzoub, Giulia D'Ercole, Victoria Grünberg, Julia Preisigke, Nicole Mosiniak, Sebastian Stiefel, Elke Schuster, Arvi Korhonen, Daniela Wölfl, Meg Gundlach, Kenneth Griffin, Oliver Frank Stephan, Daniela Penzer, Michaela Janker, Lucia Sedlakova, Julian Putner and Patrizia Heindl. The digitalising of the original drawings of pottery and objects was done by the AcrossBorders student assistants Elke Schuster, Vanessa Becker and Daniela Penzer as well as team member Oliver

Frank Stephan. Most photos used for illustrating objects and finds were made by Meg Gundlach and Cajetan Geiger.

Last but definitely not least, Veronica Hinterhuber deserves the biggest thanks. She joined the Across-Borders project in autumn 2017 and was deeply involved in the realisation of this volume, with editing the object database prior to its processing, preparing the find lists for Chapter 4 (Appendix), as well as the bibliography, and offering much productive feedback and very useful comments on all chapters.

Julia Budka
Munich, August 2018

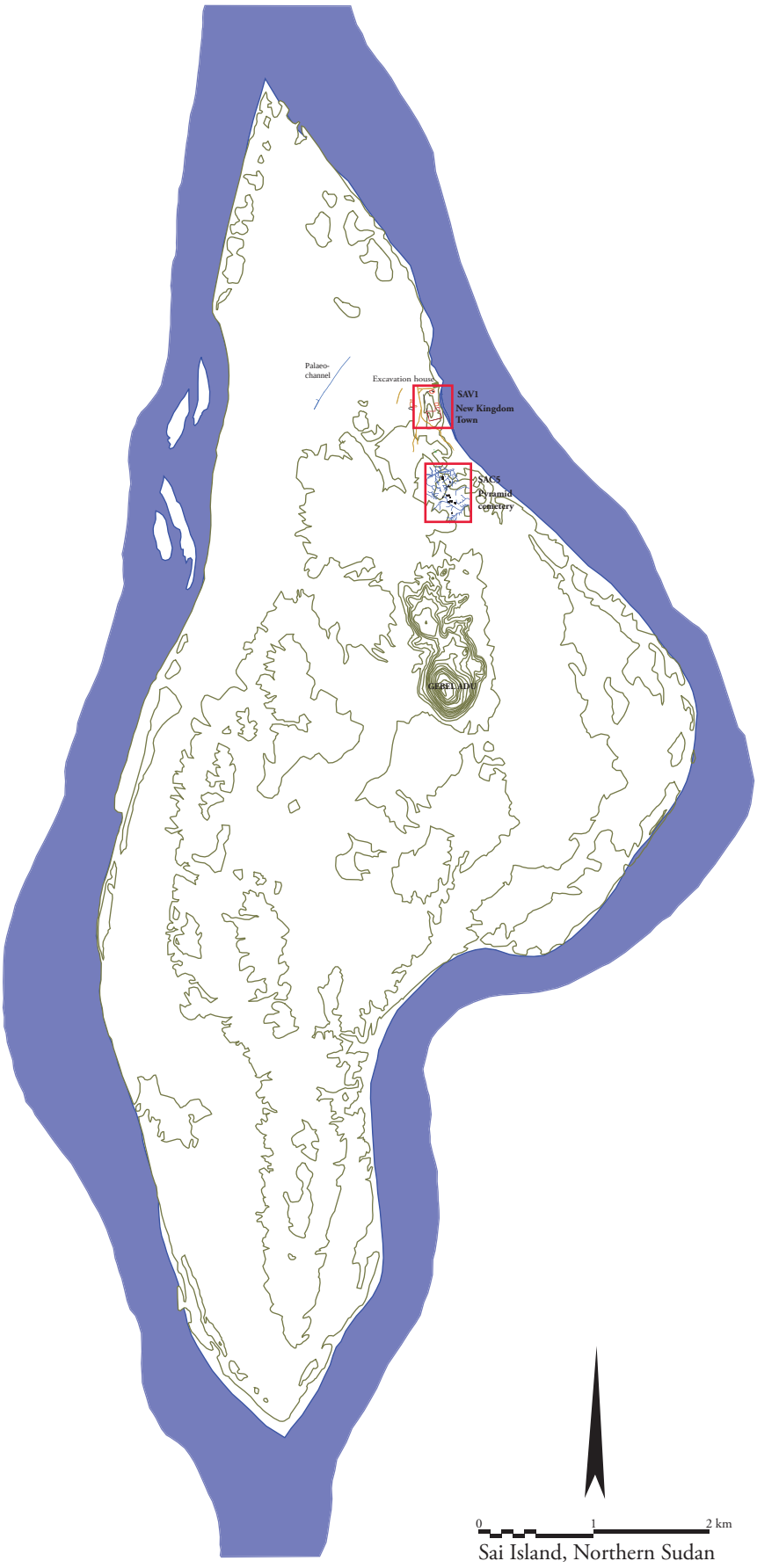

Fig. 1 Map of Sai Island with location of New Kingdom town and cemetery SAC5 highlighted

Chapter 1: Introduction

by Julia Budka

1.1 The site

Sai Island is a prominent archaeological site located approximately halfway between the Second and Third Cataracts in Upper Nubia (Pl. 1).[1] The large Nile island (12 x 5.5km, Fig. 1) provided good conditions for settlement and cultivation and is located in a position of strategic value at the southern end of the Batn el-Haggar. Its history of occupation extends from prehistory to Ottoman and modern times, including the period of the Egyptian New Kingdom.[2] Sai can be regarded as one of the key sites to understanding the settlement policy of New Kingdom Egypt in Upper Nubia, being a "bridge head"[3] into the realm of Kerma. Its significant role derives from a strong Kerma presence on the island prior to the New Kingdom[4] and from the possibility to investigate both the town and cemetery of the 18th Dynasty.[5]

Sai is located in a typical border region, being situated close to the Second Cataract area which has been the spotlight of various and changing interactions between ancient Egypt and Kush since Predynastic times.[6] Mutual influences across cultures are attested for the region of Nubia throughout the ages.[7] The two ruling powers of the areas in the Second Millennium BC were Pharaonic Egypt on the one hand and the Kingdom of Kush, based at the town of Kerma, on the other hand. Before the 18th Dynasty, the territory of Upper Nubia (Kush), in which Sai Island is located, had been ruled by the kings of Kush.[8] The Egyptian 'colonisation' of the region began with the reign of Ahmose Nebpehtyra, introducing major changes for the local population as they were confronted with Egyptian culture and representatives of Pharaonic administration.[9]

Sai Island was the focus of the European Research Council project AcrossBorders from 2013 to 2017.[10] The project aimed to provide new insights on the lifestyle and the living conditions in New Kingdom Nubia based on new fieldwork and multi-layered research on the island. The New Kingdom town, located at the eastern side of the island, was the emphasis of the project, being complemented by research on the contemporaneous pyramid cemetery on the island and also a comparative approach with sites outside of Sudan (Elephantine and Abydos, see below). Work of the project could strongly build upon research conducted by the French Sai Island Archaeological Mission (SIAM) from 2008 to 2012.[11] One of the research questions of the fieldwork undertaken by this mission was directed towards establishing a firm date for the foundation of the town (see also below, Chapter 1.2).[12]

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1 Vercoutter 1986; Geus 2004a; Doyen 2009; Budka 2017a, 15; Budka 2017b, 45–47.
2 See, e.g., Vercoutter 1986, 11–16; Geus 1994a; Geus 2004a; Budka 2017b, 48–59.
3 Davies 2005, 51. See also Budka 2015a, 40.
4 See Arkell 1950, 33–34; Gratien 1986, passim; Vercoutter 1986, 12.
5 Budka 2015a; Budka 2017c, 71.
6 Cf. O'Connor 1993, 585; Smith 2003a; see also Bonnet 2017.
7 These were traditionally addressed from an Egyptocentric perspective, resulting in several shortcomings in reconstructing the Egyptian-Nubian relations; see Edwards 2004, 7 and below, Chapter 8.1.
8 Török 2009, 280 with references. See also Zibelius-Chen 2013, 135–137.
9 Smith 2003a, 56–96; see also Budka 2015a; Spencer et al. 2017.
10 ERC Grant agreement no. 313668.
11 Doyen 2009; Budka and Doyen 2013; Doyen 2014.
12 Doyen 2009; Doyen 2014. See also Budka and Doyen 2013.

According to epigraphic evidence, the Egyptian name for Sai Island, respectively the region, is well-attested as *Šꜣꜥ.t* (see Chapter 2.4).[13] References to the Egyptian kings of the 18th Dynasty have also survived in considerable quantity from the site, in particular for the rulers Ahmose Nebpehtyra, Amenhotep I and Thutmose III, but also for Thutmose I, Amenhotep II and Amenhotep III.[14] Viceroys and other high officials of the Egyptian administration are well-attested as well (see Chapter 6).[15] Among the textual sources from Sai Island for king Ahmose, the founder of the 18th Dynasty, the most prominent object is a sandstone statue of the king (Khartoum SNM 3828 and 63/4/4).[16] This monument has been used as key evidence for the assumption that Ahmose founded the Egyptian town on the island.[17] However, the iconography and style of the seated statue in a heb-sed cloak have inspired some scholars to the alternative interpretation of its posthumous dedication by Amenhotep I in honour of his father.[18] Amenhotep I had dedicated a similar seated statue of his own on Sai (Khartoum 63/4/5).[19] Due to the uncertainties deriving from the state of knowledge in 2010 and the range of possible interpretations of the epigraphical sources, the founding of the town on Sai Island by Ahmose was not generally accepted. Important fresh data were unearthed in this respect by SIAM in sector SAV1 North in the New Kingdom town. These new records were assessed and published within the AcrossBorders project and provide firm evidence of a very early 18th Dynasty presence at Sai.[20] Nevertheless, the precise identification of the founder of Sai remains hypothetical; based on the ceramic evidence, king Ahmose seems indeed very likely.[21]

Like the other major Egyptian settlements in Upper Nubia, the town on Sai falls into the category of the so-called Nubian temple towns – fortified towns built in the New Kingdom with an enclosure wall and a sandstone temple.[22] Temples as key elements of Egyptian towns are especially prominent in the Abri-Delgo Reach (Sesebi, Soleb, Tombos and Sai) from Thutmoside times onwards and seem to be connected with the character of the area as a rich gold ore region (see also Chapter 7).[23] A common feature for the specific urban layout of temple towns is the limited domestic space, with much of the room instead occupied by storage facilities and magazines, putting these sites into direct connection with the Egyptian administration of Kush.[24] Until recently, most studies on these temple towns have therefore focused on the temples and their economic aspects from a broad perspective, leaving aside the specific microhistories of the individual sites. Essential questions like the character and density of occupation still remain unclear.[25] Current excavations have rich potential to answer some of these open questions as will be highlighted within this volume, especially because recent work is carried out in combination with landscape archaeology and includes various applications of archaeometry and material sciences.[26]

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13 Vercoutter 1956, 73; Posener 1958, 58–60; Vercoutter 1958; Devauchelle and Doyen 2009; see also Rilly 2007 for Meroitic references (the Meroitic name of Sai was first noted by Griffith 1912, 9).

14 See Vercoutter 1956; Vercoutter 1973; Minault-Gout 2007; Gabolde 2012.

15 Gabolde 2012; Davies 2017a. See also Budka 2017d, 35–39.

16 Davies 2004, 103, fig. 79; Minault-Gout 2007, 280–281, fig. 1b; Gabolde 2012.

17 Vercoutter 1973; Davies 2004, 103; Valbelle 2004, 94; Török 2009, 159. See also the summaries by Budka and Doyen 2013; Budka 2017b.

18 Lindblad 1984, 21; Gabolde 2012.

19 Lindblad 1984, 27–28, pl. 12d; Davies 2004, 102–103; Minault-Gout 2007, 282, fig. 1c.

20 Budka 2017a, 18–21.

21 Budka 2015a; Budka 2016a.

22 Kemp 1972, 651–656; Morris 2005, 5; Budka 2018a, 251–252; Vieth 2018.

23 See Klemm and Klemm 2013, 9 and passim.

24 Budka 2017b, 45.

25 Budka 2015a, 41.

26 E.g. Spencer et al. 2012; Budka 2015a; Spataro et al. 2015; Woodward et al. 2015; Budka 2017c. See also as an excellent overview of the current state of research: Spencer et al. 2017.

1.2 History of research

Being a prominent landmark along the Nile, Sai Island has been regularly visited by travellers and archaeologists since the 19th century AD.[27] Furthermore, an early account about Sai comes from the Turkish traveller Evilya Çelebi who visited the site and here in particular the Ottoman fortress in 1672/1673.[28] This fortress, Qalat Sai, was the southernmost of the fortresses built by the Ottoman empire, being erected in 1560/1585[29] and still in use when Çelebi came by, lasting most probably until 1798 as garrison and beyond 1820 as living quarter.[30] The fortress was built directly above the southern part of the New Kingdom town, being responsible for the good state of preservation of the Egyptian ruins in this sector (Fig. 2).[31]

1.2.1 Research prior to the French excavations

Table 1 provides a summary of research on Sai in the 19th century and the first half of the 20th century AD.[32] Comments on the Pharaonic remains were at the beginning quite scarce[33] and in some respects also confusing.[34] Most important are descriptions and comments by the Egyptologists Carl Richard Lepsius,[35] Ernest A. Wallis Budge[36] and Frederick William Green[37] whose visits to Sai date between 1844 and 1906.

The observations of the early researchers are especially important regarding the temples of Sai, as was already highlighted by Jean Vercoutter.[38] Some scholars reported that parts of a Pharaonic temple were visible not only north of the Ottoman fortress on the sandstone cliff, but also within the fortress, raising the question whether another stone temple existed besides Temple A, which is located outside the northern wall of Qalat Sai (see Fig. 2).[39] Vercoutter discussed descriptions of doorjambs with hieroglyphic texts from the interior of the fortress which had been interpreted by Joseph Bonomi, Frédéric Cailliaud,[40] Louis M. A. Linant de Bellefonds and Carl Richard Lepsius as the standing remains of an Egyptian temple.[41] 17

Especially remarkable is the report by Lepsius, because he was "a trained epigraphist":[42] "Auf dem Felsen stehen die Rundmauern des Tempels. Oben drüber, mitten in der Burg, lag ein Tempel, von wel-

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27 For an overview, including early visits in the 18th century, see Vercoutter 1986, 7–8.

28 In the translation by Prokosch 1994, 115–120.

29 For the fortress, its history and importance, see Alexander 1997.

30 For the historical events connected with Bonaparte in 1798 and Mohamed Ali Pasha in 1820, see Alexander 1997, 19; relevant for the continuous use of the fortress as living quarter is the drawing by Linant de Bellefonds from 1822, showing it largely intact, see Vercoutter 1958, pl. XLIII and Alexander 1997, 19, pl. 2; Alexander 1997, 19 recorded in 1997 "local oral traditions" that Qalat Sai was occupied by "farming families" until the Mahdist offense in 1889.

31 See Azim 1975.

32 This overview could build upon data kindly collected by Jördis Vieth as part of her employment for AcrossBorders in 2014; Table 1 was created by Julia Budka and finalised by Veronica Hinterhuber in 2018.

33 According to Hoskins 1835, 257 the island "contains no remains of Egyptian antiquities"; see Budge 1907, 463. On George Alexander Hoskins' travels to Egypt, northern Sudan and Kharga, see most recently Morkot 2013a.

34 See the overview by Vercoutter 1958.

35 LD II, 149a; LD III, 59b–c; LD, fünfter Textband; Lepsius 1853; see Naville 1913, 226–228.

36 Budge 1907.

37 For Green's unpublished notes and diaries, see Davies 2014a.

38 Vercoutter 1958, 162–164.

39 Vercoutter 1958, 162–163. For this question, see most lately Adenstedt 2016, 44; Budka 2018a, 258–259.

40 Cailliaud 1826, 366: "Au sud, est une grande construction en terre, reste d'une ancienne forteresse. J'y vis les ruines d'un très-petit temple égyptien, où l'on remarque encore les deux montants d'une porte, ornés de quelques hiéroglyphes, et deux fragments de colonnes. Il serait difficile de deviner quelle était la distribution d'un bâtiment totalement détruit: On trouve épars quelques morceaux de pierres de taille, couverts aussi d'hiéroglyphes."

41 Vercoutter 1958, 163.

42 Vercoutter 1958, 163.

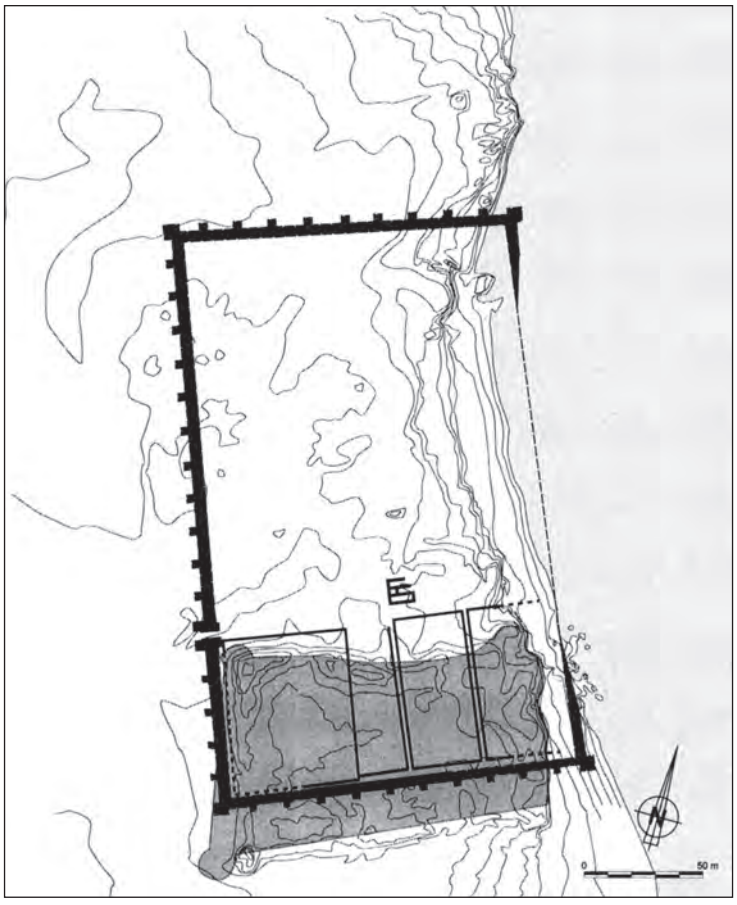

Fig. 2 Reconstruction by Azim of the New Kingdom town with shaded area of the Ottoman fortress overlying its southern part

chem noch zwei Säulenfragmente stehen, andere liegen am Boden. Sie sind rund und waren mit Skulptur bedeckt; neben den Säulen stehen noch zwei Türpfosten mit den Schildern von Thutmosis III. An der Innenseite steht […, Inschrift].”[43] Based on this in situ description, Vercoutter concluded as a summary of all the early descriptions: “It seems, therefore, that from 1820 to 1844 at least small parts of the original temple were still in existence and that they were dismantled later on as a result of marog digging.”[44]

Among the early archaeologists visiting Sai, the notes by Anthony John Arkell and Ernest A. Wallis Budge are significant for the history of research of the Egyptian remains on the island because they believed the fortress dated to the Middle Kingdom.[45] In the words of Budge: “I believe it [Sai] was first fortified by Usertsen III., a king of the XIIth Dynasty. Under the XVIIIth Dynasty it was occupied by troops under the command of Egyptian officers, and a very strong fort was built there. Within the fort was a temple, built as we have seen by Amen-ḥetep III.”[46] It is clear that here Budge is referring to the blocks inscribed by Amenhotep III which were found within the Ottoman fortress. From this statement by Budge, the date of the fortress of Sai as Senwosret III also entered the Porter-Moss bibliography.[47]

43 LD, fünfter Textband; quoted after Naville 1913, 226–227.
44 Vercoutter 1958, 163. “Marog” digging corresponds to “sebbakh” digging in Egypt.
45 Arkell 1940, 10; Budge 1907, 462; see Vercoutter 1958, 153.
46 Budge 1907, 462.
47 PM VII, 164; see also Vercoutter 1986, 11.

Name	Publication (and page number/s on Sai)	Year	At Sai on site	Reason/ background	References	Comments
Burckhardt, Johann Ludwig	Travels in Nubia; 55	1819	no	Travels	Vercoutter 1958	
Waddington, George & Hanbury, Barnard	Journal of a Visit to Some Parts of Ethiopia	1822	no	Travels	Vercoutter 1958	
Cailliaud, Frédéric	Voyage à Méroé, au Fleuve Blanc etc.; 366	1826	1821	Travels	Vercoutter 1958	see also Chauvet 1989; Dewachter 1994
Linant de Bellefonds, Louis M. A.	Journal d'un voyage à Méroé dans les années 1821 et 1822; 191	1958	1821	Travels	Vercoutter 1958	
Bonomi, Joseph	unpublished diary, entry of 14 December 1829	unpub-lished	1829	Travels	Vercoutter 1958	diary entry, unpublished
Finati, Giovanni	Narrative of Life and Adventure, II; 422	1830	1829	Travels	Vercoutter 1958	
Hoskins, George Alexander	Travels in Ethiopia; 257	1835	1833	Travels	Vercoutter 1958	see also Morkot 2013a
Lepsius, Carl Richard	Denkmaeler aus Aegypten und Aethiopien, Bd 5 (Text): 226–228 [Naville 1913]; Bd 3: 59b–c und Bd 4 (Tafeln)	1849	1844	Archaeology	PM VII	
Lepsius, Carl Richard	Letters from Egypt, Ethiopia, etc; 237	1853	1844	Archaeology	Vercoutter 1958	
Wilkinson, John Gardner	unpublished		1848	Archaeology	Vercouttter 1986	
Clarke, Somers	Christian Antiquities in the Nile Valley; 45	1912	1909	Archaeology	Vercoutter 1958	was 1894–95 and 1898–99 in Sudan
Budge, Ernest A. Wallis	The Egyptian Sûdân. Its History and Monuments. Vol. 1, 461–464	1907	1905	(Archaeol-ogy)	Vercoutter 1958	accompanied by J.W. Crowfoot; see Vercoutter 1986
Green, Frederick William	diaries and notes (volume on second journey with Sai studied by Vivan Davies)	unpub-lished	1906	Archaeology	Davies 2014	two diaries, was 1906 and 1909–1910 in Sudan; see also Welsby Sjöström 1999
Breasted, James H.	Second Preliminary Report of the Egyptian Expe-dition; 98–100	1908	1907	Archaeology	Vercoutter 1958	
Bates, Oric & Dows Dunham	Excavations at Gemmai; 117	1927	1915	(Archaeo-logy)	Vercoutter 1958	

Tab. 1 Overview of research on Sai Island prior to the French excavation

Name	Publication (and page number/s on Sai)	Year	At Sai on site	Reason/ background	References	Comments
Monneret de Villard, Ugo	La Nubia Mediaovale; 328	1935	*c.* 1930	(Archaeo-logy)	Vercoutter 1958	between 1923 and 1934
Kirwan, Laurence P.	Oxford University Excavations at Firka; 2–29	1939	*c.* 1934	(Archaeo-logy)	Vercoutter 1958	was 1929–1934 and 1934–1937 in Sudan
Apted, Michael R.	[-]		1937	(Archaeo-logy)	Vercoutter 1958	visited Blackman (Sesebi) and removed Middle Kingdom statue (Kerma) to Khartoum
Blackman, Aylward M.	unpublished inspection notes in the Archives of the Sudan Antiquities Service	unpub-lished	1937	(Archaeo-logy)	Vercoutter 1958	report is dated 28/2/1937
Arkell, Anthony J.	Report for the year 1939 of the Antiquities Service in Anglo-Egyptian Sudan	1940	1937	Archaeology	Vercoutter 1958; PM VII	was 1939–1945 in Sudan; on Sai with Kirwan
Arkell, Anthony J.	JEA 36, Varia Sudanica; 24–40	1950	1937	Archaeology	Vercoutter 1958	stresses the importance of the Kerma cemetery
Arkell, Anthony J.	unpublished inspection notes in the Archives of the Sudan Antiquities Service	unpub-lished	1937	Archaeology	Vercoutter 1958	for the cache of statues brought to Khar-toum under Arkell see Davies 2017a
Fairman, Herbert W.	JEA 25; Preliminary Report on the Excavations at ʻAmārah West, 1938–9; 142	1939	1939	Archaeology	Vercoutter 1958	
Fairman, Herbert W.	unpublished inspection notes in the Archives of the Sudan Antiquities Service	unpub-lished	1939	Archaeology	Vercoutter 1958	
Thabit, Hassan Thabit	Preliminary Report of an Archaeological Survey of Sai Island, SAS Archives	unpub-lished	1954	Archaeo-logy/ Fieldwork	Vercoutter 1958	

Tab. 1 *continued* Overview of research on Sai Island prior to the French excavation

Also notable for the history of research on the New Kingdom site of Sai is Aylward Blackman's idea, elaborated in an unpublished report from 1937, that the fort is actually New Kingdom in date.[48] Already in 1908 James Henry Breasted expanded on the New Kingdom history of the site, mentioning a now lost inscription by Thutmose I as the oldest record from the site.[49] Furthermore, Breasted attributed the small Egyptian temple to Thutmose III because he had discovered its building inscription by viceroy Nehy (pillar S.1, see below and Chapter 6, Doc. 5) within the Ottoman fortress.[50] Soon after, more evidence for Pharaonic activity on Sai came up – Herbert Walter Fairman, working at the neighbouring site Amara-West, reported in 1937 a seated statue of king Ahmose Nebpehtyra.[51] More than a decade later, its head was found by locals in the surroundings of the small sandstone temple on Sai, Temple A.[52] As mentioned above, this statue of Ahmose (Khartoum SNM 3828 & 63/4/4), and a similar representation of his son Amenhotep I (Khartoum 63/4/5), resulted in the hypothesis that either Ahmose[53] or Amenhotep I founded the Egyptian town at the site (see above).[54]

Similar to the head of the Ahmose statue, a substantial cache of Egyptian statues was also discovered by accident on Sai in 1939. These statues of elite officials, comprising several important pieces of viceroy Usersatet (Amenhotep II), were brought to Khartoum under the charge of Arkell.[55] The significance of these deliberately broken statues from the 18th Dynasty was recently recognized by William Vivian Davies who conducted and published a detailed study (see also Chapter 6).[56]

1.2.2 French excavations

Scientific excavations on Sai started under the directorship of Vercoutter in 1954.[57] One of the tasks within the area of the New Kingdom town was to understand the comments by earlier researchers regarding the existence of one temple or two temples. To check the suggestion by Thabit Hassan Thabit that all Pharaonic stone blocks were brought to the fortress from the Egyptian temple outside, Vercoutter undertook a first cleaning of Temple A located just outside the northern enclosure wall of Qalat Sai.[58] He then raised the question whether the Egyptian blocks of this temple could have been re-used at much later times, maybe during the Meroitic period.[59] Vercoutter thus first believed the temple to belong to Post-Pharaonic times, presumably the Meroitic period.[60] Thanks to the discovery of foundation deposits,[61] Temple A could later be confirmed to be of 18th Dynasty date with a cella built by Thutmose III;[62] by now, its evolution is well-established thanks to the work of Michel Azim and Jean-François Carlotti.[63]

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48 Vercoutter 1958, 153.

49 Breasted 1908, 100: "The oldest document on Sai is to be found on a huge piece of the cliff which had fallen out of the east face of the rocks north of the fortress, and now lies close to the river on the east shore of the island. Having turned over in its fall the inscription is now up-side down. It is so badly weathered that it was some time before I discovered that it is upside down, not at first thinking that so large a rock (thirty feet square and fifteen or twenty feet high) could have turned over since the making of such an inscription. However, I at last made out, 'Year 2 under the majesty of the King of Upper and Lower Egypt, Okheperkere (Thutmose I).' It was therefore placed here by Thutmose I on the march for his Dongola campaign. A second line is so weathered that I gave it over." See also Budka and Doyen 2013, 168, note 24 with further references.

50 Breasted 1908, 98.

51 Fairman 1939, 142, note 1.

52 For details, see Gabolde 2012, 118, note 23.

53 Davies 2004, 103; Valbelle 2004, 94; Török 2009, 159.

54 See Gabolde 2012; Budka 2016a.

55 Arkell 1940, 10–11; Arkell 1950, 34.

56 Davies 2017a (see p. 133 with references to earlier studies on these statues).

57 Vercoutter 1958, 144.

58 Vercoutter 1958, 164.

59 Vercoutter 1958, 164.

60 Vercoutter 1974, 11–26. See also Francigny 2015, 202.

61 See Thill 1997.

62 Thill 1997, 105–117; Azim and Carlotti 2012, 39 and 45; Budka 2015d, 60; Adenstedt 2016, 34.

63 Azim and Carlotti 2012.

Of particular importance for the building and its complex phases is the text (pillar S.1) dedicated by viceroy Nehy and dated to year 25 of Thutmose III (see also Chapter 2.4).[64] The question of the location of the Meroitic temple originally proposed by Vercoutter was recently re-assessed by Vincent Francigny.[65] Although its precise position cannot be confirmed at present, it is clear from Meroitic stone blocks and column drums that there once was a sanctuary during the Meroitic period within the general area of the New Kingdom town.[66] All in all, the question of the existence of a second temple from the 18th Dynasty overbuilt by the Ottoman fortress is until now still not completely answered,[67] but the main sanctuary was most likely located just north of the Ottoman fortification, labelled as Temple A by Vercoutter.[68]

Two fieldwork seasons in the mid-1950s, followed by five campaigns between 1969 and 1974 under the directorship of Vercoutter, were all conducted by the architect Azim as the field director.[69] The southern part of the ancient town, surrounded by a mud brick enclosure wall and labelled as SAV1, was exposed at that time. Within this area of still standing ruins six levels of occupation were recorded by Azim. These levels were only roughly dated and assigned to the Pharaonic, Meroitic and Post-Meroitic periods as well as to two phases within Medieval times and finally to the Islamic period (Ottoman fortress).[70] In the context of these early excavations, the Pharaonic level (Level A) corresponds to the Egyptian New Kingdom, first of all according to the epigraphic evidence from the town site attesting almost every king of the 18th Dynasty.[71]

Approximately 1km to the north of the New Kingdom town a domestic site, SAV2, was first tentatively identified by means of aerial photography and consequently investigated by fieldwork in 1969 and 1971. SAV2 was interpreted by Albert Hesse as a camp site of possibly Middle Kingdom or New Kingdom date featuring a ditch and being of roughly rectangular shape.[72] Nearby Christian remains and a mixture of the Pharaonic ceramics with pottery of Medieval date make a close assessment difficult at the present state. The site would definitely be worthy of additional fieldwork and requires more data for a full interpretation. In general, the question of Pharaonic settlement activities outside of the town enclosure of SAV1 has not yet been investigated in detail.[73]

Work of the French mission on Sai also focused on cemeteries and tombs of diverse periods.[74] Besides the substantial Kerma cemetery in the southern part of the island,[75] Egyptian cemeteries were investigated. The two main cemeteries of the New Kingdom are located south of the town and were labelled as SAC5 and SACP1.[76] Another Egyptian cemetery, SAC4, interestingly with strong links to the Kerma culture, is situated towards the north.[77] The largest New Kingdom cemetery is SAC5, which was discovered in 1971–1972 by Vercoutter. It was excavated in several seasons until 2004[78] and subsequently published as a substantial monograph in two volumes by Anne Minault-Gout and Florence Thill.[79]

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64 Vercoutter 1956, 74–75, doc. 13; see also Kirwan 1939, pls. VI.1–2; Geus 2004a, 115; Azim and Carlotti 2012; Davies 2014a, 7–8.
65 Francigny 2015.
66 Francigny 2015, 206.
67 See Vercoutter 1986, 13; Adenstedt 2016, 44; Budka 2018a, 258–259.
68 Vercoutter 1986, 13.
69 Azim 1975.
70 See Azim 1975, 93–95; Geus 2004a, 115.
71 Vercoutter 1973; Vercoutter 1986; Geus 2004a, 115; Minault-Gout 2007; Gabolde 2012.
72 See Hesse 1981; for the proposed Middle Kingdom date, see Vercoutter 1986, 11–12. See also Miellé 2012 for the problems connected with this dating.
73 Cf. Kemp 1972, 653–654 for the little work dedicated as yet to extramural settlements of the Egyptian temple towns in Nubia.
74 Cf., e.g., Geus 1994b; Geus 1996; Siguoirt 2012.
75 See Gratien 1986.
76 Vercoutter 1986, 14; Minault-Gout and Thill 2012.
77 Gratien 1986; Gratien 2002.
78 For the history of research, see Minault-Gout and Thill 2012, 1–4.
79 Minault-Gout and Thill 2012; Thill 2017.

From 2008–2012, fieldwork was conducted by the Sai Island Archaeological Mission (SIAM) of Lille 3 under the directorship of Didier Devauchelle and the field director Florence Doyen at a site named SAV1 North, along the northern enclosure wall of the New Kingdom town, unearthing remains dating back to the early 18th Dynasty.[80] Nine 10m squares were excavated in SAV1 North; sections of the northern town wall (Enclosure Wall N4) as well as several mud brick structures of Egyptian type were exposed and documented.[81] Another major advance in understanding the layout of the New Kingdom town was achieved by the SIAM by means of a geophysics survey, conducted in 2011 by Sophie Hay and Nicolas Crabb, British School at Rome and the University of Southampton.[82]

With the kind permission of the SIAM, the AcrossBorders project was carried out from 2012–2017 with new excavations on-site (see Chapter 3 and passim). Since 2017, new excavations as follow-up of the SIAM mission are conducted in the northern part of the New Kingdom town by SFDAS, directed by Francigny, the present concession holder of Sai Island.[83]

1.3 Methods by the AcrossBorders project

The AcrossBorders project has undertaken five seasons of archaeological fieldwork on Sai from 2013 to 2017.[84] Three new excavation areas within the town were opened (SAV1 East, SAV1 West and SAV1 Northeast) and added important knowledge concerning the general layout of the town, its evolution and changing character which will be highlighted below (Chapter 3). The archaeological excavations were complemented with kite aerial photography,[85] Structure from Motion approaches, terrestrial 3D laser scans, geoarchaeological surveys, micromorphological soil sampling and various archaeometric analyses of diverse materials, which allow some new insights on the layout and function of the site as well as on processes and activities.[86] Of particular relevance was the geophysical survey picture from 2011 which, with the kind permission of the SIAM, could be used for the preparation of the AcrossBorders fieldwork.

Since 2014, AcrossBorders applied a single-surface-documentation during excavation using 3D techniques. Structure from Motion (SfM) approaches were developed to a site-specific application based on a model established in Austria (see Chapter 3.1.3).[87] The aim of the documentation of the stratigraphical *single-surface*-excavation[88] was to gain a complete volumetric 3D model of the excavated areas which could be processed further within the GIS project.

In 2014, the complete documentation of the New Kingdom town with the help of a 3D terrestrial laser scanner was realised. Robert Kalasek from the Vienna University of Technology, Department of Spatial Development, Infrastructure and Environmental Planning was responsible for the scanning process; Ingrid Adenstedt processed and published the data.[89] An Image Laser Scanner Riegl VZ-1000 was used for the scanning and a Nikon D800 camera with a 14mm lens was mounted on the scanner in order to record the texture. The complete scan of the remains of the New Kingdom town required 155 different scan positions. The point clouds in a local coordinate system as results of each scan were then joined

80 Doyen 2009, 17–20; Budka and Doyen 2013, 168–171; Doyen 2014, 367–375; Doyen 2017.
81 See the detailed publication by Doyen 2017.
82 Crabb and Hay 2011.
83 The first season in winter 2017 continued directly at SAV1 North, building upon the published results by Budka and Doyen (Budka 2017e) and yielded new evidence concerning the town enclosure, later phases and the question of an "extra-mural" settlement. All of these new results will soon be published by the excavators and could not be considered throughout this volume.
84 Budka 2014a; Budka 2015a; Budka 2017c; Budka 2018b.
85 Aerial photography by kite had already been conducted by the French mission, in particular for Holocene sites, see Hesse and Chagny 1994; Hesse 1996; Garcea 2007, 107–108.
86 Adenstedt 2016; Budka 2017d; see also Fera and Geiger 2018.
87 Fera and Budka 2016.
88 Cf. Tassie 2015.
89 See Adenstedt 2016, 15–17 and passim. These works were financed by Julia Budka's FWF START project Y615-G19.

with other scans in a next step with the help of a multitude of reflector points distributed throughout the ruins. These reflector points were additionally measured with a total station so that the registered scans could be placed into a georeferenced net.[90] The 3D laser scan focused on the standing remains of SAV1, the southern part of the New Kingdom town. SAV1 North, the area excavated from 2008 to 2012,[91] and the AcrossBorders' trenches SAV1 East and SAV1 West were also scanned and georeferenced.[92] In order to collect data for the topographic understanding of the surroundings of the town, four long-range scans (range of 1.2km) from elevated points were undertaken as well (Pl. 2). From these, together with an aerial photograph, a digital terrain model was compiled by Kalasek.[93]

As a follow up of the 3D laser scan, aerial photography of the environment of the New Kingdom town was conducted for topographical landscape recording in form of high resolution orthophotographs and digital elevation models (DEM) from 2015 to 2017. In total, an area of 44ha along the east coast of the island (3.7km north-south expansion) was photographed by kite aerial photography (KAP). More than 80 ground control points were taken to calculate a DEM from several thousand photographs. For the New Kingdom town, a surface resolution of 7cm could be achieved, both for the surface model as well as for the orthophotographs (see Fig. 3).[94]

Geoarchaeological surveys and geological sampling was conducted on Sai Island between 2014 and 2016, in order to place the New Kingdom town in its environment (see Chapter 2). A micromorphological sampling programme was implemented in 2015 to explore aspects of social practice within the community on Sai from a multifaceted perspective (see Chapter 3.6).[95] The application of soil micromorphology is a technique that takes intact block samples of sediment and analyses them in thin section under a petrological microscope. A detailed understanding of site formation processes and a contextualised knowledge of the material culture can be achieved through careful and systematic observation of the changing facies.[96]

The wide range of archaeometric analyses conducted by the AcrossBorders project on material from Sai will be presented elsewhere – this includes first of all a large set of data from pottery[97], but also pigments.[98]

1.3.1 Work tasks of the AcrossBorders project

The AcrossBorders project was organised in six individual work tasks with strong overlaps, exchange and interconnections (Tab. 2). Work task 1 focused on the analysis of domestic architecture in the New Kingdom town of Sai.[99] The relevant material was analysed by means of a contextual study, i.e. the prominent consideration of the location, date and associated finds for the archaeological data (see Chapter 3). Spatial patterns of the town were primarily addressed with a micro-spatial approach, at the level of the individual houses and units, but also including the meso-spatial sphere (Sai as settlement) and the macro-spatial analysis (Sai within Upper Nubia).[100]

Work task 2 was dedicated to the reconstruction of life on Sai according to the material evidence, taking the complete set of archaeological material into account. Pottery, small finds, tools and various equipment were assessed in detail and in relation to their associated finds, architecture and past human

90 Adenstedt 2016, 15.
91 For SAV1 North, see Doyen 2017.
92 Adenstedt 2016, 15.
93 Adenstedt 2016, pl. 52.2.
94 Fera and Geiger 2018, 132–133, fig. 5.
95 Budka 2017f, 173–174.
96 See, e.g., Dalton 2017.
97 Analysis by Giulia D'Ercole.
98 Analysis by Kate Fulcher.
99 As one of the major outcomes of this work task the assessment of the architecture of sector SAV1 North was already published: Doyen 2017.
100 For this approach, see Trigger 1967; Koltsida 2007, 2.

Work task 1: **Analysis of domestic architecture in the New Kingdom town of Sai**	Work task 2: **Reconstruction of life on Sai according to the material evidence**	Work task 3: **Microarchaeology on Sai Island – signatures of human activities in the New Kingdom town**
Work task 4: **The world of the living and the world of the dead – the occupants of Sai Island**	Work task 5: **Contextualising cultic installations in the New Kingdom town of Sai**	Work task 6: **Landscape archaeology and environmental remains at Sai**

Tab. 2 The structure of the AcrossBorders project reflected in this volume

actions (see Chapter 4).[101] The functional, economic and social significance of these finds have been discussed in order to answer questions about Nubian vs. Egyptian lifestyle (Chapter 8). Whether a clear distinction of objects within certain areas allows the reconstruction of the division of work, of working processes or gender-related household activities and/or identities associated with specific actions like cooking were of interest within this work task.[102] Scientific analyses of materials and micromorphological techniques contributed to the archaeological classification and interpretation of the finds and thus strongly overlapped with work task 3.

Work task 3 applied microarchaeology for tracing signatures of human activities in the New Kingdom town of Sai. Micromorphology and geochemistry were conducted to investigate formation processes and cultural activities within the town site of Sai. Both anthropogenic activities and natural processes were investigated by chemical analyses, petrographical studies and thin sections of archaeological deposits. Most challenging was to distinguish primary activities, when the New Kingdom town was occupied, from secondary activities, after it was deserted (Chapter 3.6). New information about the life history of individual buildings therefore contributed to the analysis of the domestic architecture (work task 1) – boundaries that are often blurred in the functional interpretation of structures (as houses, as workshops etc.) can become more well-defined with additional information on the use lives of buildings derived from scientific analyses.[103]

Work task 4 focused on the world of the living and the world of the dead – the occupants of Sai Island. One of the main goals of the project was to improve our understanding of the population on the island and to explore the nature of the coexistence of Egyptians and Nubians.[104] Traditional Egyptological methods like epigraphical studies and textual analyses of inscribed finds were applied for the New Kingdom town at Sai (Chapter 6). In addition, the mortuary evidence was considered – the excavation of Tomb 26 yielded important new data about the occupants of Sai which can be understood as complementary to the data from the New Kingdom town.[105]

Work task 5 aimed at contextualising cultic installations in the New Kingdom town of Sai. The goal was to obtain as much information as possible on religious beliefs and cultic activities associated with Temple A and other cultic installations within the town area.[106] Following lines of research conducted at Amarna,[107] all possible sources for the evidence of "domestic religion" at Sai were investigated.[108]

101 This approach follows Kemp and Stevens 2010a and b.
102 See Smith 2003b.
103 Cf. Budka 2017f, 173–175.
104 See Budka 2017g; for close parallels from Tombos and the phenomenon of "biological entanglement", see Smith and Buzon 2014; Smith and Buzon 2017.
105 Tomb 26 will be published as another monograph; see Budka forthcoming c.
106 Budka 2015b; Budka 2017d.
107 Stevens 2006.
108 Budka 2017g, 438–440; Budka 2018c.

Possibilities to establish frontiers between 'Nubian' and 'Egyptian' religion were in the foreground, both at the level of materiality and at the conceptual level as created by customs, self-representation and projected images of identities (cf. Chapter 8).[109]

Work task 6 focused on landscape archaeology and environmental remains at Sai: environmental settings and changes were investigated by geoarchaeological methods including surveying, aerial photos, drilling and test pits (Chapter 2). Petrographical, mineralogical and chemical analyses of pelitic and pottery samples were conducted to relocate production sites for ceramics and mud bricks.[110] The analyses of the wood fuel burnt in the town, of botanical samples and zooarchaeological remains all contribute to a much closer reconstruction of real living conditions in the past (see Chapter 5).[111]

1.4 Hypothesis by the AcrossBorders project

Previously, settlement sites in northern Sudan were primarily touched upon within studies of urbanism and colonialism.[112] Egyptian towns in Nubia were thus mostly addressed from a macro perspective, concentrating on the general organisation and Egyptian administration of the region which are quite well-understood.[113] Sites like Sai and Sesebi were studied on the basis of textual references and were interpreted within the administrative matrix (which was again reconstructed by means of texts and inscribed records). This approach from the macro perspective allowed assessments within the larger historical picture but had clear shortcomings on the micro-level of individual sites.[114] These shortcomings have been addressed by the recent boom of settlement archaeology in Northern Sudan. Thanks to new fieldwork with a bottom-up approach, detailed information on selected sites is now available and their analysis is still ongoing.[115] Sai may serve as a case study, illustrating how much information can be added with detailed excavation records in combination with the analysis of the material culture, textual records and architecture.[116]

Prior to the AcrossBorders project, Sai was mainly addressed as an Egyptian foundation and centre of the Egyptian administration in Upper Nubia, leaving aside living conditions and the occupants of this town. Within the AcrossBorders project, a bottom-up approach to the investigation of the society at Sai as a New Kingdom temple town was applied. At the micro-spatial level, "standards of living" for Sai according to the material culture and architecture were evaluated and compared systematically with data from two authentic Egyptian sites, the New Kingdom town of Elephantine and the Ahmosidian site at South Abydos, both located within the boundaries of New Kingdom Egypt (see Chapter 8.2). This comparative assessment aimed at achieving a more complete understanding of the New Kingdom town of Sai in both its regional setting and its historical context. This new detailed data-based understanding of life can be understood as a representative case study and thus be assigned – with certain *caveats* – to general living conditions in the New Kingdom.

The main hypothesis tested by AcrossBorders was whether the settlement on Sai Island can be evaluated as an Egyptian microcosm, despite its location outside of Egypt and its specific topographical, environmental and cultural situation. To investigate Sai as an Egyptian microcosm,[117] various methods, including analytical approaches of archaeometry, were conducted as outlined above. Prior to the start of the project, little was known about the setting of New Kingdom Sai within the landscape, of its evolution

[109] See Smith 2003a, 188–206; cf. Budka 2017g, 444.
[110] Cf. Muntoni et al. 2011.
[111] Cf. Kemp and Stevens 2010a and b.
[112] See, e.g., O'Connor 1993 and Budka 2018b with more examples and references.
[113] Müller 2013.
[114] See as a summary Budka 2018b.
[115] See Spencer et al. 2017; Budka 2018b.
[116] Budka 2017f; Budka 2017g.
[117] This builds upon the seminal work undertaken by Kemp on Amarna, cf. chapter "Egypt in microcosm: the city of El-Amarna" in Kemp 2002, 261–317; see also Kemp 1977.

and history, its internal structure and occupants. Considering this lack of knowledge, the topographical, environmental and cultural situation of Sai and its occupants during the New Kingdom were the key questions. These research questions were tackled not only by fieldwork on Sai, but also by a close comparison with the contemporaneous town of Elephantine in Egypt. In cooperation with the Swiss Institute for Architectural and Archaeological Research on Ancient Egypt, Cairo, directed by Cornelius von Pilgrim, AcrossBorders has studied the material culture from 18th Dynasty buildings on this important site at the southern border of Egypt.[118] Of particular interest was the common appearance of both Nubian and Egyptian cooking wares, providing very close parallels for the situation on Sai Island.[119]

Such a comparative approach has already been applied successfully for other sites within Egypt[120] and promised also in our case new data for assessing aspects of the function and especially the social fabric of an exemplary Nubian temple town. In respect to AcrossBorders' major aim to reconstruct "standards of living" on Sai, a special focus was placed on the material culture and here on the question of the lifestyle. Whether objects refer to the cultural identities of their users or reflect more complicated processes was investigated by several lines of actions and from various perspectives, as will be illustrated throughout this volume.[121]

1.5 Recent outcome

This volume brings together the most significant results from the work tasks carried out by the interdisciplinary AcrossBorders project. The environmental conditions of the New Kingdom town at Sai will be presented. Excavations and architecture are discussed, with a focus on the question of an Egyptian character of the remains of the temple town. In line with this, the material remains from the sectors excavated by AcrossBorders were analysed. The examination of pottery, tools and small finds was complemented by an assessment of the environmental remains. Evidence for people on New Kingdom Sai is also discussed and allows placing the town within the New Kingdom macrocosm. Answers to the basic hypothesis of Sai as an Egyptian microcosm in Nubia will be sought and debated. Once more, it must be stressed that the focus of the AcrossBorders project and also of this volume is the period of the New Kingdom. As Sai is not a single-period site, this era is embedded within the archaeological remains of various other periods which are not discussed in detail here but have always been considered. Not included in this volume is also a detailed analysis of the pottery because there will be another monograph focusing on ceramics from Sai only.[122] Also forthcoming is a detailed examination of cellars and storage facilities in SAV1 East, first of all of Feature 15 – this volume will also include the faunal remains, the fish bones and small finds like clay sealings from the mid-18th Dynasty cellar.[123]

One important outcome of AcrossBorders' research is that Sai Island can serve as a case study for the fruitful combination of archaeological investigations on both the micro- and the macro-level. For example, the new fieldwork allowed confirming the building phases within the New Kingdom town.[124] It is now proven that the phase with the erection of the town wall, the stone temple and administrative buildings clearly mirrors the installation of a permanent Egyptian administration, traceable in ceramics, small finds and architecture. As temple town, the layout of Sai was planned, but the excavations in several town sectors have revealed evidence of dynamic sides and local features regarding both architecture and material culture – aspects which are also well observable in New Kingdom towns in Egypt proper, but have often been overlooked because of a macro-scale approach.[125]

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118 Cf. von Pilgrim 2015; von Pilgrim 2016; von Pilgrim 2017.
119 See Budka 2018c.
120 See Shaw 1998; cf. also Moeller and Marouard 2018.
121 Cf. Budka 2017g, 440–444.
122 Budka forthcoming a.
123 Budka forthcoming b.
124 Budka 2015a; Budka 2017c.
125 Cf. Spencer 2015, 201–202; Budka 2017f; Budka 2017h, 17.

To conclude, the complex whereabouts of New Kingdom sites in Nubia must be further assessed from a micro and also a macro perspective, the latter in particular with considering the corresponding historical and political situation and the relationship and networks of the individual sites with other sites. For Sai, much new information about the town's role in the Egyptian 're-conquest' was gained by a joint analysis of archaeological and textual sources in the last years[126] as well as the combination of evidence from the town and the contemporaneous cemetery.[127] It goes without saying that more work has to be done at this significant site in order to unearth additional data and to address further questions which were still left open.

[126] Budka 2014a; Doyen and Gabolde 2017, 149–150; Budka 2018d.
[127] Budka 2018e.

Chapter 2: Geologic realities for the New Kingdom town of Sai Island

2.1 Landscape and geology

by Julia Budka

Sai Island is a *c.* 32km² large Nile island in northern Sudan (see Chapter 1, Pl. 1 for its location). Geologically, Sai Island is situated between the Second and Third Nile Cataracts, the results of a large scale east-west trending tectonic uplift zone, which forced the Nile to incise into uplifted Neoproterozoic crystalline basement and its sedimentary cover.[128] As one of the largest Nile islands, Sai lies just south of the Batn el-Haggar and the granite outcrops of the Dal Cataract.[129]

Abundant archaeological remains from many periods start on the island as early as the late Early Palaeolithic,[130] covering several millennia until Christian[131] and Ottoman times (see Chapter 1.1).[132] These rich findings underline the prominence of this area for human history in Northeast Africa and especially for the contacts between various Nubian cultures and the Egyptian empire, combining abundant natural resources with the north-south communication path of the Nile.[133]

The geology of Sai comprises several types of metamorphic Precambrian rocks and Nubian sandstone, largely covered by thin layers of comparably much younger Nile sediments.[134] Flat terraced surfaces dominate the entire island and only the Nubian sandstone of Gebel Adou rises as an "Inselberg" in the centre of the island (see Fig. 1).[135] Gebel Adou is mainly comprised of different grades of Nubian sandstone on the outer surface (see Chapter 2.3). Dry *wadis* of various sizes run towards the eastern and western banks of the island.

One has to stress that the present shape and size of Sai Island contrasts with the conditions in ancient times. It is striking that the northernmost tip of the island comprises mostly Christian sites[136] – no Pharaonic remains are known north of SAC4 and SAV2 (see Chapter 1.2). One can conclude that what is presently a small channel/depression was originally a water-bearing palaeochannel which represented the northern shoreline of the island during the New Kingdom (see Chapter 2.2.2). Similar to the neighbouring site of Amara West, this palaeochannel dried out at some point, most likely in Post-Pharaonic times.[137] The part of Sai Island from this dried up palaeochannel up to the modern village Sai Sab only became a portion of the island after the New Kingdom, presumably during the Post-Meroitic period since it is so rich in remains

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128 Thurmond et al. 2004; Anonymous 2005.

129 Vercoutter 1958, 144, fig. 1.

130 See especially new evidence from site B-8-11 which was occupied from the Acheulian to the Middle Palaeolithic: van Peer et al. 2003; van Peer 2004; Garcea 2004, 20–21; van Peer and Herman 2006; cf. also Garcea 2007 for other early evidence.

131 Tsakos 2012; Tsakos and Hafsaas-Tsakos 2014; Tsakos and Hafsaas-Tsakos 2016.

132 Cf. Vercoutter 1986, 15–16; Alexander 1997. See also the summary by Geus 1994a.

133 Sai was also connected to routes towards the desert, especially to Selima Oasis, an important waypoint of the Darb el-Arba'in; see Jesse et al. 2015, 162, pl. 3; for the importance of the hinterland in the general area of Sai and Amara West, see also Stevens and Garnett 2017.

134 See Geus 1996, 1170–1171, fig. 5; Draganits 2014, 20; Budka 2015a, 41.

135 See Geus 1996, 1170; van Peer et al. 2003, 187–193; Draganits 2014, 20–21. See also below, Chapter 2.2.

136 See Tsakos and Hafsaas-Tsakos 2014, 986, fig. 1.

137 For the situation of a 'dynamic riverine environment' at Amara West, see Woodward et al. 2017.

of medieval date.[138] That Sai Island was considerably smaller in antiquity, namely until the 1st Millennium BCE, is also supported by the distribution of the Holocene sites at Sai Island.[139] The line of sites towards the east, to the west and in the north corresponds exactly to the line visible on the flood inundation modelling of the area carried out by Jamie Woodward et al.[140] Taking into account this reconstruction of a much smaller size of Sai Island during the New Kingdom, the prominent position of the Egyptian town becomes especially obvious. This part of the eastern side of the island was never concerned with flooding, was always overlooking the main branch of the Nile in both directions and did not see the risk of a changing shore-line due to climate change or dry seasons (see also below, Chapter 2.6).

It is very likely that the Nile and smaller islands around Sai Island changed quite considerably throughout the ages. This becomes evident from the small sandy island which is presently located just opposite of the New Kingdom town. On the aerial photos from the 1950s this island was not yet visible.[141] All in all, the river and its course around Sai Island were subject to a number of modifications since the Holocene and differing water levels have to be expected throughout the ages.[142]
The earliest description about the situation of the river at Sai Island comes from the 17th century CE – in the travel account by Evilya Çelebi a "lake-like" appearance[143] is mentioned. Early travellers of the 19th century CE (see Chapter 1.2 and Table 1) also commented on the environment of the island. One especially interesting version is given by George Alexander Hoskins for the year 1835, referring to a very low water table during the dry season:[144] "June 9. At Gobetziteen the Island of Sais [sic] commences, and extends for six hours towards the north. At this season of the year no boat is necessary to visit this island, the water which separates it from the main land being only deep enough to reach the knees of the camels."[145] "Main land" refers here most probably not to the eastern bank, but to the western bank of the Nile with sandy dunes. This western bank is also marked on some maps of the 19th century CE with fuzzy boundaries towards the island.[146] Furthermore, Hoskins continues with a description of the island: "It contains no remains of Egyptian antiquities. The peasants spoke of ruins; but they proved to be some grey granite columns belonging to a Christian edifice. They are in the centre of the island, nearly half an hour from the river. Each column consists of one piece of granite, with a Greek cross on their capitals. They are not very unlike the Christian monolithic pillars in the centre of the splendid portico of Medenet Abou. There are a great many wells in this island, with waterwheels, by means of which a considerable part of the interior is irrigated. I had a drawing of these Christian ruins token by Mr. B.; but, not setting much value on it, I have mislaid it. From the number of houses the island appears to be populous."[147] That the interior of the island was irrigated by means of waterwheels and that Sai was densely populated contrasts with the current status, where waterwheels have been replaced by water pumps and the fields are clearly restricted to the shorelines.[148] Also nowadays, the water level within the Nile arm to the west of the island is very low and the floodplain in this part (e.g. around the village Mokrat) is very wide.

The changing water table according to seasons was also mentioned by Ernest A. Wallis Budge who likewise referred to earlier researchers: "Sâî is a difficult place to reach, unless the traveller has his own boat with him. On January 2nd, 1821, Cailliaud crossed the river on a raft made of reeds and pieces of

138 See Tsakos and Hafsaas-Tsakos 2010; Tsakos and Hafsaas-Tsakos 2012; Tsakos and Hafsaas-Tsakos 2016.
139 Garcea 2007, 109, fig. 1.
140 Woodward et al. 2017, 232, fig. 6.
141 Vercoutter 1958, pl. XL. Neither an island in front of the New Kingdom town nor a clear river course along the western shore was noted on the map by John Charles Ardagh from 1886, see Woodward et al. 2017, 229, fig. 1.
142 Woodward et al. 2017. Also today, the sandy islands within the western branch of the Nile around Sai change considerably in size during low/high water levels (personal observation between January and March 2011–2017). For a clear difference between the western and eastern sides of Sai Island already during the Holocene see Florenzano et al. 2019, 30.
143 In the translation by Prokosch 1994, 115: "Der segensbringende Nil breitet sich an dieser Stelle wie ein See aus."
144 That the Nile can be trespassed by camel during low water is also mentioned by Çelebi; Prokosch 1994, 117.
145 Hoskins 1835, 257.
146 Very clear on the map by John Charles Ardagh from 1886, see Woodward et al. 2017, 229, fig. 1.
147 Hoskins 1835, 257. For the mentioned columns of the Christian church/cathedral, see most recently Tsakos and Hafsaas-Tsakos 2016.
148 Water wheels were visible "everywhere" on the island until the 1950s, see Alexander 1997, 19.

palm trunk; Hoskins in June, 1832, needed no raft, for the water in the Western channel only came up to the camel's knees, and he passed over to the island from the mainland without difficulty; Burckhardt, who must have been there in the winter, could obtain the use of neither ferry nor raft, and was therefore obliged to abandon his projected visit."[149]

Until the 1990s Sai was only reachable by boat (preferably sailing boat),[150] providing also certain challenges for the French mission. At present, the island is still not connected with either the west or the east bank, but motorboats and especially the ferry boat crossing from the road to Abri to the eastern shore close to the Christian church have reduced the difficulties of reaching Sai to a minimum.

2.2 Geoarchaeological research on Sai

by Julia Budka

Within the AcrossBorders project, the geoarchaeological approach as a very powerful tool for understanding landscape change and associated human adaptation has been adopted.[151] This method is a well-established means of interpreting environmental and cultural signatures that are more often than not concealed within the landscape itself.[152] Environmental and climatic settings and changes of Sai Island were investigated by the AcrossBorders project applying geoarchaeological methods including surveying, aerial photos, drilling and test pits (see Chapter 1.3). The aim was to estimate the human interaction with the landscape, in particular during the 2nd Millennium BCE. For the town area and its hinterland a diachronic study of the local landscape, with special references to the location of settlement areas and cemeteries, was conducted, starting from the Late Prehistory.[153] Specific geoarchaeological research on Sai was carried out by Erich Draganits in 2014,[154] Sayantani Neogi in 2015[155] and Sayantani Neogi and Sean Taylor in 2016.[156] Their observations are presented here in chronological order.

2.2.1 Geoarchaeological survey in 2014[157]

In the context of the AcrossBorders project the geoarchaeological research on Sai Island, conducted from 4th to 17th January 2014 by Draganits, focused on the following main scientific questions:

A General geological situation and resources

B Rock types occurring in the New Kingdom town

C Provenance of stones from the New Kingdom town and potential quarry locations

D Landscape evolution and environmental change: possible erosion of the eastern part of the Pharaonic town and possible existence of an eastern fortification wall

E Cooperation with the zooarchaeological research concerning environment and landscape

F Cooperation with the archaeometric analysis of ceramics concerning possible clay resources

G Location of a harbour

149 Budge 1907, 463.
150 Alexander 1997, 19.
151 French 2015.
152 French 2003.
153 This can be built upon the work by van Peer 2003; van Peer and Herman 2006 and Garcea 2007.
154 Draganits 2014.
155 Neogi 2015.
156 Neogi and Taylor 2016a.
157 Based on the report by Erich Draganits; see Draganits 2014.

Sample	Sample ID	Date	Easting (UTM 36N)	Northing (UTM 36N)	Altitude (m)	Material	Amount
1	ED14/SAI/1	05.01.2014	222210,454	2295566,552	193,83	Sand	1 bag
2	ED14/SAI/2	05.01.2014	222210,454	2295566,552	193,83	Sand	1 bag
3	ED14/SAI/3	05.01.2014	221430,800	2294935,452	206,087	Caliche	1 piece
4	ED14/SAI/5	06.01.2014	222194,856	2294729,565	216,661	Sandstone	1 piece
5	ED14/SAI/6	06.01.2014	222097,422	2293819,749	220,026	Silicified wood	2 pieces
6	ED14/SAI/7	08.01.2014	222181,386	2295516,588	198,156	Sandstone	1 piece
7	ED14/SAI/8	09.01.2014	219901,735	2295183,418	201,28	Amphibolite	1 piece
8	ED14/SAI/9	09.01.2014	222284,823	2295256,513	204,543	Gravel	1 bag
9	ED14/SAI/10	12.01.2014	222190,018	2295509,193	197,195	Sand	1 bag
10	ED14/SAI/11	12.01.2014	222180,453	2295478,53	197,916	Silty clay	1 bag
11	ED14/SAI/12	12.01.2014	221956,527	2295379,612	207,048	Soil	1 bag
12	ED14/SAI/13	12.01.2014	220723,862	2293206,209	219,305	Marble	1 piece
13	ED14/SAI/14	14.01.2014	220645,99	2293118,303	203,924	Amphibolite	1 piece
14	ED14/SAI/15	14.01.2014	220801,34	2292157,143	208,25	Quartzite	1 piece
15	ED14/SAI/16	15.01.2014	222544,866	2291069,411	204,885	Quartzite	1 piece
16	ED14/SAI/17	16.01.2014	222615,989	2292257,206	193,59	Calcphyllite	1 piece
17	ED14/SAI/18	16.01.2014	221528,352	2290205,072	220,026	Amphibolite	1 piece

Tab. 3 Geoarchaeological samples from Sai 2014

The scarcity of vegetation, the presence of riverfront exposures as well as excellent outcrops provided by already excavated graves offered great geoarchaeological working conditions. The regional focus of the geoarchaeological fieldwork was the area of the New Kingdom town and its hinterland. In total, 1368 GPS waypoints were taken for locating geological samples, lithological boundaries and different kinds of observations. 17 reference samples of rocks and sediments were collected (Tab. 3).

A General geological situation and resources

Sai Island comprises medium-grade metamorphic Precambrian rocks: amphibolite (ED14/SAI/8, ED14/SAI/14, ED14/SAI/18), dolomite, quartzite (ED14/SAI/15–16), biotite gneiss, calcite marble (ED14/SAI/13)] in the west and southeast, dipping around 30° towards the northwest. These rocks are commonly cross-cut by large quartz-veins. In the central and northern part of the island these metavolcano-sedimentary rocks are overlain by subhorizontal Nubian sandstone (ED14/SAI/5, ED14/SAI/7), mainly consisting of medium- to coarse-grained fluvial quartz sandstone, conglomerate, rare siltstone and occasional silicified wood (ED14/SAI/6).

Except for the Nubian sandstone of the "Inselberg" Gebel Adou, almost all of these rocks are covered by thin layers of comparably much younger Nile sediments (in some places with Palaeolithic artefacts).[158] The Pre-Holocene Nile sediments mainly comprise gravely channel deposits and fine-grained floodplain sediments. The sub-rounded to rounded gravel (ED14/SAI/9) of the Pre-Holocene Nile terraces are strongly dominated by quartz clasts, followed by chert and beautiful agate. They are virtually free of carbonate clasts, while the fine-grained floodplain sediments commonly show soil formation processes (ED14/SAI/3, ED14/SAI/12) and related calcrete.[159] Holocene Nile sediments were found around the margin of Sai Island up to *c.* 7m above the Nile level during geoarchaeological fieldwork in the first half

[158] van Peer et al. 2003, Anonymous 2005; van Peer and Herman 2006, especially 42–44, fig. 1; Draganits 2014.
[159] See Lewis et al. 2011.

of January 2014. These sediments comprise of sand (ED14/SAI/1, ED14/SAI/2, ED14/SAI/10), silt and clay sized deposits (ED14/SAI/11).

B Rock types occurring in the New Kingdom town

In general, the rock types occurring at the site of the Egyptian town of Sai reflect the geological reality of the island and most of them are locally available. By far the most common rock types are quartz sandstone and amphibolite (or schist, see Chapter 3.2), while vein quartz, calcrete, biotite gneiss and calcite marble are comparably rare. Rock types which probably have been brought to the island include granite,[160] diorite,[161] gabbro[162] and gypsum.[163]

C Provenance of stones from the New Kingdom town and potential quarry locations

Concerning the provenance of these rocks, quartz sandstone ("Nubian sandstone") is very common in northern and central Sudan[164] as well as on Sai, directly in the area of the New Kingdom town at the eastern side of the island and around Gebel Adou (see Chapter 2.3). The dark amphibolite used for schist pavements within the town area, especially for the large administrative storage magazines, can be found in the western part of the island and in its southeast. No clear quarry sites for amphibolite were, however, noted.

Several quartz sandstone outcrops show traces of working by stonemason tools, for example directly east of the French excavation house and next to the houses south of the Ottoman fortress in the village of Adou.[165] However, these quarries are of very small scale and could presumably provide only minor quantities of dressed stones. Some of the working marks may also be related to grave shafts. Additionally, the coarse grained and friable sandstone in this area is of quite miserable quality for dressed stones. Consequently, the search for the provenance of the quartz sandstone as well as the amphibolite should not neglect areas just across both Nile branches opposite of Sai Island, in particular of the eastern riverside around the large "Inselberg" Gebel Abri.

D Landscape evolution and environmental change: possible erosion of the eastern part of the Pharaonic town and possible existence of an eastern fortification wall

The extent of Nile erosion in the area of the Pharaonic town is related to the question of the possible existence of an eastern fortification wall of the town, which was still in discussion in 2014, based on the reconstruction of a collapsed eastern side of the site by Azim (see Fig. 2).[166] There are indeed several examples of slope failure close to the Nile, probably caused by the undercutting of the slope toe and a raised groundwater table during flood periods.[167] To the east and northeast of the French excavation house some toppling failures of the Nubian sandstone can be observed (Pl. 3).

Despite of these toppling features, severe erosion in this part of the island is unlikely from the geoarchaeological point of view, mainly because of the surveillance of the low incision rate of the Nile.[168] Additional arguments against substantial erosion of the eastern sandstone cliff are the existence of a broad Nile terrace just east of the Pharaonic town and the presence of sandstone without indications for

[160] For various types of granite from the area of Aswan see Klemm and Klemm 2008, 233–267. Cf. also Aston et al. 2000, 35–37.
[161] Also from the area of Aswan, see Klemm and Klemm 2008, 21.
[162] See Klemm and Klemm 2008, 13. See also Aston et al. 2000, 32–34.
[163] See Klemm and Klemm 2008, 14–15. This sedimentary rock was used for producing plaster at Sai, see Chapter 4.6, as it was common within Pharaonic Egypt (Klemm and Klemm 2008, 15).
[164] Anonymous 2005.
[165] See already the comments by Vercoutter 1958, 147, note 24 (see Chapter 2.3).
[166] See Azim 1975, 94, pl. II; Geus 2004a, 115, fig. 89; Budka 2015a, 41; Adenstedt 2018. See also Chapter 3.5 in this volume.
[167] See also the observations by Budge 1907 (quoted in Chapter 1.2).
[168] van Peer et al. 2003; summarized by Budka 2015a, 41.

slope failure below the town.[169] Furthermore, in situ mud bricks documented about southeast of sector SAV1 East are exactly in line with a 67m long, straight linear structure in the geophysical survey visualized by means of a GIS project (Pl. 4).[170] The orientation of the mud bricks, measured with a geological compass, fits the orientation of the general town grid and possibly represent remains of an eastern fortification wall.[171]

E Cooperation with the zooarchaeological research concerning environment and landscape

The zooarchaeological investigation of the animal remains of sector SAV1 North in the Pharaonic town, conducted in 2014 by Konstantina Saliari, contributes substantially to the understanding of the economy, contacts, tradition and diet during this period (see also Chapter 5).[172] For the examination of the zooarchaeological data, the comparison with modern animals as well as the knowledge of the general environmental conditions is crucial. Therefore, three joint short excursions were carried out in the northern and central parts of the island, taking bones for a reference collection and documenting the geomorphological parameters as well as different environments.

F Cooperation with the archaeometric analysis of ceramics concerning possible clay resources

The study of ceramic fabric and composition of local Nile clays of both Nubian and Egyptian style by Giulia D'Ercole provides very important insights into economy, tradition and know-how during the investigated period.[173] Therefore, three short excursions were carried out together to study and sample potential clay sources as well as collecting dung from goat, sheep, donkey and cattle. Additionally, a pottery workshop in Abri[174] was visited to discuss local potter traditions and techniques.[175] Interestingly, the modern potters communicated that they partially differentiate their 'recipe' in terms of choice of clayey raw material and tempers, according to the specific function and the performance required by the vessel they manufacture. Generally, soil was and still is used for most ceramic vessels and mud bricks (cf. Chapter 5.1).

G Location of a harbour

No Pharaonic harbour or its remains have been located on Sai Island so far. This is not surprising, because during the Bronze Age simple landing sites, where ships were pulled onto sandy beaches are much more common than proper harbours or even ports.[176] In the vicinity of the New Kingdom town of Sai steep sandstone cliffs hinder easy landing, with the exception of the sandy areas directly north of the excavation house as well as directly east of the site and the large sandy area southeast of the Ottoman fortress.[177] All three sites offer landing possibilities and due to their position at the eroding bank the water depth is quite deep. The discovery of two stones which resemble Bronze Age stone anchors is quite remarkable.[178] One was found northeast of Temple A (Pl. 5), the other one south of the Ottoman fortress. They may support the assumption that both areas had been used as landing sites during that time (see Chapter 2.5).

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169 Identified as New Kingdom quarry 1 by the Klemms; see Chapter 2.3.

170 Survey conducted by the Archaeological Prospection Services of University of Southampton and the British School at Rome in 2011; see above, Chapter 1.2.

171 For an updated summary of the eastern town enclosure, see Adenstedt 2018.

172 Cf. Saliari and Budka forthcoming.

173 See D'Ercole et al. 2017; D'Ercole and Sterba 2018.

174 See D'Ercole 2014a.

175 The samples collected during these excursions and the knowledge gained from them were all used for experimental archaeology in 2014, see D'Ercole 2014b.

176 It is striking that in Egypt several harbours have been located on the Red Sea and the Mediterranean coasts, but Nile harbours are hardly known; for this situation, see the discussion by Khalil 2015. See also below, Chapter 2.5.

177 The latter was used as landing place by Budge in 1907; see Chapter 1.2.

178 Wachsmann 1998.

2.2.2 Geoarchaeological survey of the hinterland of the New Kingdom town in 2015[179]

A geoarchaeological survey in the vicinity of the New Kingdom town site was undertaken by Sayantani Neogi from 18th January to 19th February 2015, assisted in the field by Miranda Semple, Martin Fera and Hassan Dawd. The objectives were specifically focused on the questions relating to the New Kingdom, especially the 18th Dynasty occupation of the island. These were to place the archaeological site in its environmental context, to understand the nature of any surface preparation prior to the establishment of the settlement, provenance of sandstones found within the New Kingdom town, potential sandstone quarry locations and to shed light on any possible harbour/landing ground on the island during the period concerned. Thus, the questions already investigated by Draganits received a follow-up investigation, partly introducing new lines of research and fresh sampling strategies.

This site margin survey work took the form of judgmentally placed test pits and hand auger profiles as well as opportunistic findings of exposed and available sections and quarry pits. At each profile *loci* the stratigraphy was located, recorded and photographed and old land surfaces sampled as appropriate. Three types of samples were taken: intact soil block samples for micromorphological analysis,[180] small bulk samples for physical characterisation (pH, particle size analysis, organic content using loss-on-ignition, multi-element analysis)[181] and sandstone blocks for petrographic analysis (see Chapter 2.3.3).[182]

A major component of geoarchaeological research in general is soil micromorphology. This technique, developed by the Austrian soil scientist Walter Kubiëna, examines soils and sediments in thin section with an optical microscope.[183] It allows very small components to be identified which otherwise would not be considered. At Sai, soil sampling was done by the removal of soil blocks using a knife. Once extracted, the samples were wrapped with cling-film, taped and sealed for laboratory processing. Following the method described by Chris Murphy,[184] they were manufactured at the McBurney Laboratory for Geoarchaeology, University of Cambridge. Thin sections were analysed under a Leica Wild M40 wide-view microscope.

Profiles and samples

In 2015, six profiles were recorded from the landscape survey and seven sets of soil block and bulk samples were collected. In addition, two soil block samples were collected from Profile 9 in SAV1 North, which represents soil from below the contact zone of the anthropogenic sediments and the natural soil. The descriptions and interpretation of the most relevant of these soil thin sections are given below.[185] Besides these, thirty-nine rock samples were collected for further scientific analysis from different sandstone outcrops of the island and from on-site debris (see Chapter 2.3.3).

Samples from the New Kingdom town, SAV1 North

The two block samples (9/4 and 9/5) from Square 180/2270 in SAV1 North were intended to reveal the Pre-Pharaonic soil type and environmental conditions on the island. They were taken from an archaeological section which had revealed the earliest levels of this sector of the town.[186] At SAV1 North, the walls were often set over an earlier layer of occupation, made of backfill pebble or earlier brick courses. In cases where no earlier remains were documented, the mud brick walls were set directly onto the natural gravel ground.[187] Samples 9/4 and 9/5 were taken to investigate the natural ground on which the

[179] Based on the report by Sayantani Neogi; see Neogi 2015.
[180] After Bullock 1985; Bullock et al. 1985; Murphy 1986; Courty et al. 1989; Stoops 2003; see Chapter 3.7.
[181] After Milek and French 2007; Wilson et al. 2008.
[182] Hutchinson 1974; Pettijohn et al. 1987.
[183] Kubiëna 1970.
[184] Murphy 1986.
[185] Based on a report by Sayantani Neogi and Sean Taylor; Neogi and Taylor 2015.
[186] See Budka and Doyen 2013, 171–172, fig. 1.
[187] For details, see Doyen 2017.

18th Dynasty town was erected. The site SAV1 North is particularly representative to illustrate several aspects of the interrelationship between Pharaonic mud brick architecture and the local topography. The lowest occupation layers demonstrated that some works of levelling were carried out in the area by dumping pebbles as a backfill or by adjusting the irregular slope of the soil with a coating layer mixed with pebbles. However, it proved to be difficult to discern whether the pebble content of the ground is due to the process of intentional backfilling or the naturally gravelly geological environment.[188] Thus, micromorphology was used to provide further clues in this respect.

Sample 9/4 (~40–50cm)

Description

This soil thin section (Pls. 6, 7) has revealed the fabric to be made up of sandy silt loam ($c/f_{50}\mu m$ ratio: 10:90) with high porosity (>60%). A wide range of minerals, especially including angular and sub-angular grains of quartz (100–200µm), mica (150–200µm) feldspar (<200µm), olivine (200µm), pyroxene (300–400µm) and other carbonate minerals were found embedded within the groundmass. These are observed as poorly sorted sand grains and rounded gravels and form the minority of the sediment which is otherwise dominant as very fine-grained sediment.

The organic content is relatively high (15–20%). This is characterised by humified organic punctuations (1–2µm), highly decomposed amorphous organic fine material (10–20µm) and some plant tissue remains. The sample exhibits an overall complex microstructure. Channel microstructure is dominant with spongy microstructure in discrete zones. Voids are channels (200–750µm), vughs (500–700µm) and fine planes. A faint horizontally bedded orientation of the channels is observed throughout.

Bioturbation and faunal activities are quite common as passage features with voids and channels filled with aggregates of groundmass material (50–200µm). Textural pedofeatures are otherwise very common with frequent birefringent clay in the fabric. Some redoximorphic features with moderately to highly impregnated typic orthic to dendritic nodules (250–370µm) are noticeable. Crystalline pedofeatures are few with some embedded nodules of secondary CaCO3 (<500µm) and micritic hypocoatings (130–430µm).

Interpretation

The sample was primarily expected to provide insight into the nature of the topography and existent environmental condition during the time of the Egyptian site establishment in the early New Kingdom. Interestingly, no significant micromorphological feature has been identified that would suggest thoughtful surface preparation before the establishment of the settlement at this particular area, such as truncations.[189] The faint horizontal distribution pattern of the channels with embedded rounded gravels suggests aggradation and can also indicate the weathering and rolling of these due to water action and subsequent deposition from somewhere else.[190] Certainly, the shape of the gravels indicates their fluvial origin.

Climatic conditions are perceived to be somewhat different to today. Humid conditions had favoured intermittent growth of vegetation across the site, and the channel microstructures are indicative of the extent to which the vegetation had established itself.[191] Likewise, the particular benign hydrological and biological conditions are seen to have been favourable for soil fauna to have been extremely active. The thin section shows abundant evidence for biological process associated with soil animals in the form of heavily bioturbated fabrics.[192] These are characterised by excremental fabric and 'bow like' passage features. Passage features with their characteristic crescent-like pattern mark the movement of these

188 For these difficulties, see Azim 1975, 95–99; Budka and Doyen 2013, 178 and Doyen 2017.

189 See already Doyen 2017 that foundation trenches are only attested for the enclosure wall at SAV1 North. Some New Kingdom storage pits were dug directly into the natural ground, see also evidence from SAV1 West and SAV1 East, Chapter 3.

190 Gé et al. 1993.

191 Kooistra and Pulleman 2010; Stoops et al. 2010.

192 Stolt and Lindbo 2010.

animals through the soil.[193] Therefore, the loose continuous and discontinuous infillings of groundmass material which fill many of the channels are indicative of the activities of soil animals.[194] Soil fauna are the prime movers in the breakdown of organic matter[195] and the amorphous, humified organic content of the sediment reflects this. The most likely time for the development of evidence for enhanced biological activity is during the early Holocene, when the climate was significantly moister and the region became a centre for important Neolithic cultures.[196]

The clay-rich birefringent fabric indicates soil formation processes were underway with the movement of clay down profile (illuviation) or the in situ weathering of primary minerals. There is certainly stability in the system.[197] The presence of redoximorphic pedofeatures indicates fluctuations of the ground water table and resultant wetting and drying conditions.[198] Rare crystalline pedofeatures are suggestive of reprecipitation of calcium carbonates,[199] which could have resulted from subsequent dry conditions.

Sample 9/5 (~55–65cm)

This sample derives from the same location at SAV1 North as Sample 9/4, but from a slightly lower position.

Description

Micromorphological analysis of this thin section (Pl. 8) showed again the predominance of very fine material, composed of clay loam (c/f_{50}µm ratio: 5:95) of a high porosity (>50%). Clay sized particles predominate with lesser silt and rarely sand. Embedded mineral grains consistently include angular to subangular quartz (100–250µm), mica (<250µm), feldspar (<150µm) and carbonate minerals. The organic content is moderate (10–15%) including dark organic punctuations (c.1–2µm), highly decomposed, humified, amorphous organic fine material mixed with the clay and humified plant tissues. The thin section exhibits a platy and vesicular microstructure thus creating an overall complex microstructure.

The thin section clearly showed a structure associated with processes of sedimentation. Allochthonous fragments of sedimentary crusts are observed within the groundmass. Otherwise, textural pedofeatures are observed as birefringent orientated clay within the fabric. Recrystallised nodules of calcium carbonate (>700µm) with superimposition of highly impregnated dendritic iron oxide nodules and very few typical orthic nodules of iron oxide (200–500µm) were also observed.

Interpretation

The presence of very few sand-sized particles along with abundant silt and clay-sized material, in sum giving a clay loam texture, is a reflection of the allochthonous mud being deposited on the Nile edge through overbank flooding in a low energy fluvial environment. This feature, to a lesser degree has been developed through pedogenic processes operating in the soil system. Clay had undoubtedly accumulated through in situ weathering; however, there is significant evidence for the illuviation of clay from former upper horizons by the presence of weakly birefringent fabric. This suggests a period of relative stability.[200]

Though there is lots of organic matter embedded in the groundmass, the absence of major bioturbational features suggests very little alteration after their deposition, hence suggesting a very rapid burial

[193] Gerasimova and Lebedeva-Verba 2010.
[194] Blanchart 1992; Kooistra and Pulleman 2010.
[195] Darwin 1881.
[196] See Garcea 2007.
[197] Kühn et al. 2010.
[198] Lindbo et al. 2010; see also Stoops 2003.
[199] Durand et al. 2010.
[200] Kühn et al. 2010.

of those sediments.[201] Alternating wetting and drying conditions through flooding had developed the superimposition of redoximorphic features on crystalline pedofeatures.[202]

Samples from outside the New Kingdom town – southern surrounding

Soil micromorphology from Profile 5

Profile 5 (20°43.564›N, 30°20.044'E) is located towards the south of the village Adou. The surface of the profile was characterised by a pebbly sandy surface (1–2cm) but when cleared, the section revealed calcite rich silt loam soil, much in contrast to the surface. Interpreted in the field as an old terrace of the Nile, two soil blocks for micromorphological analysis were collected from deep down the profile to yield information about the past environment. The descriptions and interpretations of these soil thin sections are given below.

Sample 5/1 (~85–95cm)

Description
Micromorphological observation of the fabric (Pl. 9) showed highly heterogeneous, poorly sorted material, with a texture of sandy silt loam (c/f_{50}µm ratio: 30:70). It has a very high porosity (>70%). The fabric is made up of very loosely packed sand-sized particles, silts, gravels and large rounded to sub-rounded aggregates (>1cm). Some of these aggregates appear to be fragments of fine grained, organic rich sedimentary crusts having vesicular microstructure. Otherwise, there are complex packing voids between mineral grains and aggregates, thereby making the overall microstructure complex. The coarse fraction of this heterogeneous fabric is made of fragments of carbonate gravels. Though the b-fabric is generally undifferentiated, the aggregates are weakly birefringent. Redoximorphic pedofeatures are abundant with highly impregnated, large dendritic nodules of iron oxide. A very high concentration of precipitated calcites was observed as well.

Interpretation
This sample clearly shows the processes of sedimentation of fine aggregates eroded, transported by water and deposited at this location. The aggregates were originally laid down in a low energy fluvial environment due to their small particle size. The weakly birefringent fabric observed in cross-polarised light indicates significant amounts of clay, although this is partly masked by the amorphous organic matter. The thin section is highly porous with sand grains and aggregates loosely packed. There has been very little bioturbation to disrupt the evidence for sedimentation, either because populations of soil fauna were low or sedimentation proceeded rapidly.

Sample 5/2 (~125–132cm)

Description
Microscopic observation has revealed that the whole fabric is apedal, well-sorted very fine silt loam (c/f_{50}µm ratio: 10:90) with moderate porosity (20–25%) and predominantly channel microstructure. Main voids are channels, vughs and some planes. Embedded in the groundmass are sand and silt-sized minerals including mica, feldspar, olivine and pyroxene and carbonate fragments. A few anthropogenic inclusions have also been observed in the form of fragments of bones (500µm–2mm, 1%, Pl. 10). The organic content is quite high in the whole thin section (<20%). Organic punctuations, highly decomposed amorphous organic fine material and humified plant tissues and some root fragments comprise the

[201] Nichols 2009.
[202] Fedoroff et al. 2010.

assemblage. Excremental pedofeatures are abundant in the form of infilled channels with aggregates of groundmass material. Redoximorphic pedofeatures are also noticeable in the form of iron oxide nodules.

Interpretation
Sample 5/2 contrasts strongly to 5/1. This horizon unequivocally represents the lower part of topsoil. The channel microstructure has developed by the rooting of plants growing at the ground surface and the burrowing action of soil fauna.[203] Humified and iron replaced fragments of plant tissues can be seen in channels.[204] The porosity (20–25%) reflects how biological processes have kept the soil profile well-aerated. It has received a lot of organic matter, although it is also full of different kinds of rocks of various lithologies. The fact that it has bones along with abundant rooting and organic matter suggests that it is the bottom of a buried 'A' horizon.

Samples from outside the New Kingdom town – northern part of the island

Sample Profile 1/1

Profile 1 (20°44'13.959495587478"N, 30°19'56.736878240482"E) was observed in the northern part of the island, 600m to the north off the town in a depression on the edge of a palaeochannel (see above, Chapter 2.1). Sample 1/1 was taken from a depth of 30-38cm of Profile 1. This sample was collected to improve the overall understanding of landscape evolution in Sai Island and as an appropriate control for determining whether the samples from the town represent the same geomorphological strata.

Description
Micromorphological analysis of this thin section (Pl. 11) reveals the presence of overwhelmingly fine clay sized sediment (c/f_{50}µm ratio: 5:95). The porous micromass (30–40%) is well-sorted and contains quartz, mica and mudstone. The overall microstructure is crack with angular planes, voids, channel and vesicles, often these voids are in a horizontal orientation. The micromass stained with organic pigments. The b-fabric is crystallitic with often weak birefringence. Pedofeatures comprise of abundant highly impregnated dendritic nodules of iron oxide. Reprecipitated calcium carbonate nodules and coatings have also been observed.

Interpretation
This fine sediment represents a sedimentary accumulation in a very low energy environment. It has a strongly developed subangular blocky microstructure consistent with fine material. The large well-developed peds are separated by interpedal accommodating planes and formed through shrink/swell processes of 2:1 clays. These clays have accumulated through deposition of fine sediment as a result of channel avulsion. To a much lesser extent, illuvial processes and also the in situ weathering of silicate minerals have contributed to the fine sediment. Illuviation of clay occurs when there is an excess of rainfall over evapotranspiration during the winter months or perhaps more relevantly in this case inundation by the river.[205] Organic matter is integral with this clay and also has a fluvial origin. The sample has a calcium carbonate content reflected by the calcitic crystallitic b-fabric observed in thin section. Calcification is the process leading to the accumulation of calcium carbonate in soils.[206] A number of other pedofeatures reflect the calcareous nature of the horizon has formed as calcium carbonate saturated soil water has precipitated calcite during periods of drying and are located in many voids. Superimposed to many of these, are dendritic nodules of Fe-hydroxide, developed because of

[203] Stoops et al. 2010.
[204] Fitzpatrick 1984.
[205] Fedoroff 1997.
[206] Gile et al. 1966; Machette 1985; Schaetzl et al. 1996.

a fluctuating water table. Abundant redoximorphic pedofeatures are evidence for alternating wet and dry conditions.[207]

Samples from outside the New Kingdom town – western part of the island

Sample Profile 2/1

Profile 2 (20°43'56.521174798028"N, 30°20'0.044419536243"E) was located towards the western bank of the island, within the current floodplain of the Nile. It was quite apparent that the Nile sediments here are recent (see above, Chapter 2.1 on the nature of the western shore of Sai Island). In order to understand the difference in soil property between the newer and the older Nilotic sediments, especially for a comparison of the soils/sediments between the eastern bank and the western bank of the island, Sample Profile 2/1 was collected.

Description
Micromorphological analysis (Pl. 12) has revealed extremely well-sorted sand and silt-sized material (c/f50µm ratio: 30:70) with complex packing voids and an enaulic related distribution pattern. The fine micromass is interbedded and cross-bedded with laminations. The organic matter, humified in nature, is also well-sorted and horizontally bedded.

Interpretation
Interbedded and cross bedded laminations suggesting even flow of water over time has deposited this sand. It is the result of an indeterminate number of fluvial events depositing well-sorted sand and fine organic matter. The sands have a parallel orientation which is stacked in multiple lenses. Excellent sorting and referred horizontal orientation are typical of those that have formed as overbank deposits in particular riverine environments.[208] The lack of pedofeatures indicates that there has been little pedogenic development suggesting a relatively recent emplacement of the sediment.[209] On the other hand, the sandy texture facilitates the free flow of water through the system making soil formation processes difficult to initiate unless there is sufficient stability through the influence of vegetation.

Overall interpretative discussion

The micromorphological observations of the soil blocks collected from different depths of the soil profiles have furnished a composite picture of landscape development around the New Kingdom town at Sai Island. At a depth of 85–95cm, at Profile 9/5 at SAV1 North, sedimentary aggradation occurred in a slightly less humid environment. The relative absence of soil fauna combined with low organic content suggests that this is correct.[210] At the depth of 55–65cm, an increase in the content of organic matter and the development of channel microstructure indicate changed hydrological conditions[211] suggesting an increase in moisture to the soil system. This interpretation receives additional weight from the almost absence of CaCO3 in the micromass, indicating that these soil horizons were not formed in an arid condition and the limited presence of CaCO3 represents re-deposition at significant depths in the subsoil.[212] The ubiquitous presence of iron hydroxide features is also closely linked to strong redox cycles due to alternating wetting

[207] Kovda and Mermut 2010.
[208] Mücher et al. 2010.
[209] Bolt et al. 1980.
[210] Phillips et al. 1999; Kooistra and Pulleman 2010; Stolt and Lindbo 2010.
[211] Gerasimova and Lebedeva-Verba 2010; Kooistra and Pulleman 2010; Kovda and Mermut 2010; Stolt and Lindbo 2010.
[212] Sehgal and Stoops 1972; Pal et al. 2000; Durand et al. 2010.

and drying through fluctuations in the water table in periods prior to the New Kingdom.[213] The presence of human occupation directly on this surface shows that such a location obviously had benefits for the New Kingdom occupants.

In the southern surroundings of the New Kingdom town, a buried 'A' horizon was discovered at the depth of 125–132cm in Profile 5, with an increase in the content of organic matter and crumb/aggregate microstructure.[214] The thickness, texture, structure and colour all suggest that this horizon is very well-developed. The crumb microstructure, with distinct peds and the presence of abundant channels are indicative of favourable conditions for the growth of vegetation. Crumb and granular microstructures can develop relatively quickly as part of grassland. These soils, when cultivated, are important to agriculture because they are very fertile, with thick, organic-rich 'A' horizons. Deep and readily tilled, they are important for cereal production.[215] Conditions change further up in the same profile (Sample 5/1) where a slope deposit is recorded with increasingly higher calcium carbonate deposition, marking a later change in the environmental condition due to climatic drying. At present, it remains tentative, but the New Kingdom cereal production was maybe located towards the south of the town (see Chapter 5).

Establishing the general size of the island during the New Kingdom was one of the main aims of AcrossBorders' geoarchaeological fieldwork. In this respect, Profile 1 in the presumed palaeochannel north of the Post-Meroitic cemetery was particularly relevant. Sample 1/1 marks the presence of extensive channel fill deposits which would have largely facilitated human activities from the New Kingdom until when the climate dried up.

Harbour

In order to understand whether there was a harbour or not during the New Kingdom occupation, a thorough coring in transect was undertaken in 2015 in the riverine alluvial platform adjacent to the town. This survey did not reveal the presence of any potential harbour. The nature of the soil and the adjacent cliff, however, suggest that this was perhaps a simple landing ground, sheltered by the steep sandstone cliff. Soil block samples were collected to provide further insight into this suggestion (see below, Chapter 2.5).

Conclusions

Landscape survey and profile observations showed that the underlying drift geology of the island is medium-grade metamorphic rocks (amphibolite, dolomite, quartzite, biotite gneiss, calcite marble), often overlain by medium to coarse-grained fluvial quartz sandstone, conglomerate, rare siltstone and occasional silicified wood.[216] Desert condition weathering often led to the disintegration and decay of these rocky outcrops, often in in situ conditions. The central plateau of the island is either a *serir* or pavement with a high amount of pebbles[217] or a characteristic *hamada* plain covered by angular gravels.[218]

The Pre-Holocene and Holocene Nile sediments on Sai mainly comprise channel deposits and fine-grained floodplain sediments and commonly show soil formation processes, mostly identified near the eastern, western and northern banks of the island. A thin layer of comparably much younger Nile sediments mixed with windblown sand covers almost the whole island. Within the soil profiles, pale yellow calcitic silt and very fine sand with calcitic nodules marks drier environmental conditions. The

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[213] Cf. Lindbo et al. 2010; Vepraskas and Lindbo 2012. "The presence of repeated hydration–dehydration cycles linked to floods" was also observed in pollen samples from Sai Island, here in particular for the Holocene period, see Florenzano et al. 2019, 25.

[214] Cf. Gerasimova and Lebedeva-Verba 2010; Kooistra and Pulleman 2010; Kovda and Mermut 2010; Stolt and Lindbo 2010.

[215] Montgomery 2007.

[216] As noted by Draganits 2014.

[217] Laity 2008.

[218] Fairbridge 1968.

stabilised soil horizons, observed within these soil profiles of the old Nile terraces (for example, Profiles 5 and 9) and identified as soils formed under much wetter and humid environmental conditions, may represent old palaeosol. These palaeosols and the alluviated narrow floodplain areas in the island would have provided a naturally and seasonally replenishing soil and groundwater system available for agricultural use with both nutrient and fine soil additions and a seasonally high groundwater table. This is probably the essence of the sustainability of the agricultural system in this region since at least the Neolithic times.

2.2.3 Geoarchaeological research in 2016[219]

The 2016 season focused on geoarchaeological questions raised from the survey of 2015. Investigations were undertaken by Neogi and Taylor in the environs of the New Kingdom town and offsite from the 30th of January to the 19th of February 2016.[220] According to the aims of the AcrossBorders project, the objectives were specifically focused to questions relating to the 18th Dynasty. These were to sample on-site archaeological contexts to better understand the use of space and site formation processes (see Chapter 3.7); to place the archaeological site in its environmental context (see Chapter 2.6); to provenance the sandstones found within the New Kingdom town and to locate the Pharaonic sandstone quarry (see Chapter 2.3). The 2016 survey took the form of hand auger profiles, as well as opportunistic prospection of exposed and available sections and quarry outcrops.

Six boreholes were dug towards the western side of the New Kingdom town (see Figs. 51 and 53). A test trench to the west of the enclosure wall was opened in 2016, revealing, underneath a layer of pottery of later date and 19th and 18th Dynasty levels, a solid, sloping mud surface that resembles a glacis.[221] The question of the continuation of this slope was then addressed in 2016 by means of the augering. Taking these samples outside of SAV1 West proved to be quite difficult because the coarse sand was very dry and keeping it on the auger head was only possible by soaking the ground with water. For this reason, it was only possible to sample to a depth of 3.4m. In all the profiles the sediment comprised sand. Neither alluvium nor archaeological deposit was encountered but the probability that either of these were present at an unspecified depth is in general likely. For the New Kingdom, one can stress that no trace of an extramural settlement has been identified.

In addition to the work within and at the New Kingdom town, a thorough landscape survey was undertaken in 2016 to understand the nature of the deposits, especially towards the northern part of the island. This resulted in the collection of data to develop a surface map of the vicinity of the New Kingdom town (Pl. 13).[222]

2.3 Sandstones and Quarries of New Kingdom Sai

by Julia Budka

2.3.1 Sandstone variants

Several types of variants of Nubian sandstone, the most common rock identified on Sai Island, were documented during AcrossBorders' geoarchaeological seasons on Sai.[223] Because of its occurrence as bedrock, quartz sandstone was the preferred Pharaonic building stone from Esna in Upper Egypt to Gebel Barkal in modern Sudan.[224] In line with this, sandstone is also the rock type occurring most

[219] Based on Neogi and Taylor 2016a.
[220] Assisted in many respects by Dietrich and Rosemarie Klemm as well as by Martin Fera.
[221] Budka 2017a, 18.
[222] This surface map was created with the much appreciated help by Dietrich Klemm.
[223] General literature on sandstone: Anonymous 2005; Klemm and Klemm 2008.
[224] Harrell 2016, 11. Meroitic sandstone quarries are attested further southwards, towards the city of Meroe and Hamadab.

frequently in the New Kingdom town of Sai, of course especially within the Egyptian stone temple of the 18th Dynasty, Temple A.[225] It was one of the prime aims within AcrossBorders' geoarchaeological research to identify local and possibly non-local variants of the Nubian sandstone on-site.[226]

In the first season of the geological examination of Sai by AcrossBorders, Draganits noted well visible sandstone outcrops with traces of working by stonemason tools just east of the New Kingdom town (Chapter 2.2.1). But since these were according to him of small scale and low quality,[227] the search for the 18th Dynasty quarries continued in 2015. In the 2015 season, thirty-nine rock samples were collected for further scientific analysis from different sandstone outcrops of the island and from on-site debris.[228] These outcrops are mainly at Gebel Adou and the village of Adou, where at least four to five quarry places were marked; the period of quarrying was, however, of unknown date. The rest of the sandstone outcrops on Sai, particularly from the western side of the island, are coarse grained and friable and due to their inferior quality unlikely to have been worked into dressed stones.[229] The aim behind collecting sandstones from on-site debris in 2015 was to provenance their sources by characterising their mechanical and chemical properties. Back in 2015, a particularly high grade, fine-grained whitish sandstone found within the New Kingdom town and associated with Temple A could not be sourced on the island, but a potential source on the opposite bank of the river, near Gebel Abri seemed to be a possibility, as already proposed by Draganits.[230]

The study of the sandstones from Sai received fresh input in 2016 by the involvement of the long-standing experts of rocks in Northeast Africa, Dietrich and Rosemarie Klemm.[231] The primary research objective was to identify the exact provenance for the white temple building stone which is also attested from hieroglyphic texts at Kumma (see Chapter 2.4) and was tested with petrographic analysis of samples in 2016 (see Chapter 2.3.3).

2.3.2 Sandstone quarries of New Kingdom Sai[232]

Location

One of the main foci of AcrossBorders' 2016 fieldwork was locating the source of the building stone for the New Kingdom stone buildings at Sai.[233] Preparatory laboratory research on the basis of high-resolution "Google Earth" and Apple "maps" and lithologically processed Landsat-TM images conducted by Dietrich Klemm initially led to a localization of the clearly recognizable sandstone deposits from the wider area of the New Kingdom town on the east side of the island. These are the two "Inselberge"

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225 For this temple and its building phases, see Azim and Carlotti 2012 (see also Chapter 1.2).

226 For general difficulties to classify different types of sandstone because of its very homogenous formation, see Klemm and Klemm 2008, 21.

227 Draganits 2014.

228 The samples were collected by Neogi, made into thin sections and analysed for the AcrossBorders project in Cambridge. However, a written report of these sandstone samples was never provided. Back in 2015, Neogi assumed over a dozen of variants of sandstone on Sai (for the revised grouping of four main types, see below).

229 Draganits 2014; Neogi 2015.

230 Draganits 2014.

231 Klemm and Klemm 1993; Klemm and Klemm 2008.

232 Based on the on-site observation and a German report of Dietrich and Rosemarie Klemm, who investigated the quarry sites on Sai from February 6 to 14, 2016. The results of the AcrossBorders geoarchaeologists, Neogi and Taylor, are also included in this chapter; see Neogi and Taylor 2016a.

233 Sandstone quarries on Sai were already mentioned as being located north and south of the fortress by Vercoutter 1958, 147, note 24; Vercoutter 1986, 8–10.

Gebel Abri on the eastern mainland, *c.* 4.5km from the Nile,[234] and Gebel Adou on Sai Island, *c.* 2km south of the New Kingdom town.[235]

At Gebel Abri (Pl. 14), slopes which could possibly be due to quarrying were detected with Remote Sensing Methods on the southern flanks. This was investigated by means of a foot survey in February 2016.[236] The detailed survey was carried out on the rock outcrops in the vicinity of Gebel Abri, to investigate if this was indeed the location of the sandstone used on Sai Island for Pharaonic building material. The results of this survey confirmed that although there are abundant sandstone outcrops in these locations, no quarry sites from Pharaonic times were identified and the stone was lithologically dissimilar. The slopes at the southern flanks thought as suspicious for quarry activities are in fact natural assemblages of rock waste.

Having ruled out the possible quarry source from outside the island, work focused again on possible quarry sites on Sai Island. At Gebel Adou with its well-recognizable threefold subdivision, quarrying was expected but no clear traces of it were to be found. Thus, also at the second "Inselberg" of the region, no Pharaonic quarrying activities were recognised.

Finally, in-depth inspections in the immediate vicinity of the New Kingdom town at the eastern shore of the island, between about 40m southeast of the French excavation house up to the abandoned part of the village of Adou, resulted in the localisation of a large number of relics of extensive quarrying activities (Pls. 15, 16 and 18).[237] Many of these relics have already fallen victim to weathering and were hardly visible.[238] Nevertheless, it was possible, though often not very clear, to find unquestionable scrapings for the excavation of cubic blocks of sandstone at various locations. All in all, it was in particular due to the expertise of Dietrich and Rosemarie Klemm that seven sandstone quarries were identified adjacent to the New Kingdom town itself (Pls. 15, 16). As illustrated by Pl. 17, two sandstone quarries are located just east of the town wall – these are the most convenient places for building material used within the town site (quarry sites 1 & 2, marked by numbers 4/5 and 6/7). Two other quarries used in the 18th Dynasty are also close by, being located in the northern part of the village of Adou (quarry sites 3 & 4, marked by numbers 9/10 and 8). Finally, three more quarry sites were mapped in the southern part of this village (quarry sites 5, 6 & 7, marked by numbers 12, 13 and 14). An eighth quarry site was documented by Taylor and Neogi and must remain unclear in its date; it possibly had also been used during the New Kingdom (Pl. 17, marked by number 11).

The sandstones from the exposed sections of the cliff just east of the New Kingdom town (quarry sites 1 & 2) were perceived as soft and not of high quality. With the removal of the overlain debris, however, stone very similar to the building material of the temple was clearly visible (Pl. 18). This is a particular whitish sandstone. Yet, it became obvious that the stone used within Temple A was of variable quality in terms of hardness, colour and other properties which were all in concordance with the lithological variation seen in the adjacent quarries. These were due to the sedimentary environment of deposition for each particular facies. Chisel marks (see below) and a cut-out for a column base provided compelling evidence for Egyptian quarrying very close to the New Kingdom town of Sai (Pl. 19). It is certain that the better quality sandstones were removed during antiquity at all New Kingdom quarries adjacent to the New Kingdom town, in particular in the area to the south of the Ottoman fort and around the village of Adou.

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234 Arkell reported a fallen, decorated sandstone block from the cliff at the south side of Gebel Abri of probable Meroitic date, see Arkell 1950, 32.

235 Cf. Geus 1996, 1170; van Peer et al. 2003, 187–193; Draganits 2014, 20–21. For a possible identification of Gebel Adou with *Nhr?* in Philä I, 277, 5–11 as source of a mineral, see Kockelmann and Rickert 2015, 200. I am grateful to Martina Ullmann for this reference. Vercoutter 1958, 147 also mentions quarries at Gebel Adou.

236 Participants: Dietrich and Rosemarie Klemm, Sayantani Neogi and Sean Taylor, assisted by Hassan Dawd.

237 Cf. already Vercoutter 1958, 147, note 24; Vercoutter 1986, 8–10.

238 This strong degree of weathering explains why both Dragantis in 2014 and Neogi in 2015 failed to recognise these quarry sites as being significant for New Kingdom Sai.

Chisel marks

New Kingdom chisel marks were identified on the sandstone outcrops of the quarries and on the blocks of stones used in the temple in 2016. This, therefore, clearly correlates the quarries with the New Kingdom architecture (in addition to furnishing corroborative evidence for the location of the ancient source of building stone).

Chisel marks appear in both the quarries and the undecorated portions of the in situ temple blocks of Temple A and are characteristic of the early New Kingdom.[239] There are mainly flat chisel traces of about 1 to 1.5cm width (Pl. 20), as they are also found in Egyptian sandstone quarries, for example at Gebel el-Silsileh, datable to the period of Hatshepsut–Thutmose III.[240] The recurring herringbone pattern of chisel traces (Pl. 21), resulting from quite hard bronze chisels, can be seen in Egypt in almost all quarries of the early New Kingdom up to and including the Amarna period.[241]

However, at stone blocks of Temple A two types of chisel marks have been identified, sometimes on the same block of stone. The first of these is the *c.* 1cm wide, systematic and regular linear parallel mark, characteristic of the Thutmoside period.[242] The other is chaotic, slightly haphazard, with *c.* 2–2.5cm wide marks in which the angles can be seen quite easily. It is thus characterised by the use of relatively broad flat chisels, whose lines are less parallel and occasionally completely discordant. These two distinct marks suggest different stages of the *chaine opératoire* for the rendering of stone to building blocks. Another possibility, stressed by Dietrich and Rosemarie Klemm, could be the involvement of different gangs of workmen for rendering the blocks. Whereas the well-attested, typical Thutmoside regular chisel marks clearly mirror the presence of Egyptian stone masons, specialised craftsmen and corresponding working groups, the unusual second type of chisel marks might attest to local workmen trained by the Egyptians, but nevertheless finding their own, specific way of stonework. This remains for now hypothetical and would have to be investigated on a broader scale, taking other Egyptian stone temples of the 18th Dynasty located in New Kingdom Nubia as comparison.

2.3.3 Petrographic analysis of sandstone from Sai[243]

Introduction

After the survey in 2016 and the observations on the chisel marks by the Klemms, it seemed obvious that the white sandstone for Temple A came from a relatively near source. In order to definitively prove this, Neogi and Taylor investigated whether it is possible to petrographically link the temple stone with similar properties in the quarries in question. Therefore, samples of the stone from the debris along the temple itself and from the quarries were taken (Tab. 4). Petrographic thin section manufacturing and examination were carried out in the Geology Department of the Ludwig-Maximilians-Universität in Munich, assisted by Dietrich Klemm.[244] What follows is a description of twenty of the samples taken from the quarries and on-site debris samples of the building stone from the town at Sai following established protocols of sedimentary geology.[245] Since Temple A was outside of AcrossBorders' work permission, the sampling of the relatively well preserved sandstone blocks directly from the still standing remains of the temple was not possible. However, NCAM kindly gave permission to sample some of the sandstone blocks originally deriving from the temple, located in the debris close-by.

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239 On dating by chisel marks in Egyptian quarries, see Klemm and Klemm 2008, 194–201. For general aspects of chisel marks, see also Chudzik 2015, 30–31.

240 Klemm and Klemm 2008, 196. For the vast quarries at Gebel el-Silsileh, see Klemm and Klemm 2008, 180–201; Harrell 2013; Nilsson 2015.

241 See Klemm and Klemm 2008, 196–197.

242 Klemm and Klemm 2008, 196.

243 For general aspects of the geochemical examination of sandstone incl. further literature, see Klemm and Klemm 2008, 212–213. This chapter is based on a written report by Sayantani Neogi and Sean Taylor; Neogi and Taylor 2016c.

244 AcrossBorders received generous support by the chair of the department, Anke Friedrich, and her complete team.

245 See Folk 1951; Folk et al. 1970; Dickinson 1985; Pettijohn et al. 1987; Jerram 2001.

Sample Number	Brief description/reference
2	Cliff with rockslide; just east of the excavation house; 20°44.339´ N, 30°19.930´ E
3	Whitish sandstone?; from the cliff below Temple A; 20°44.245′ N, 30°19.923′ E
4	White sandstone from the cliff; 20°44.244′ N, 30°19.927′ E
5	Quarry Adou (yellow? not used for Temple A? left over?)
6	Source of white sandstone?; from the cliff near Temple A
7	Quarry Adou; temple material? (perhaps)
8	Source of white sandstone?; from the cliff near Temple A
9	Quarry Adou; probably used as building material
10	Sandstone from debris of the town/temple
11	Sandstone from temple debris
12	White sandstone from temple debris block
13	Sandstone from town/temple debris
14	Temple quality sandstone; from temple debris
15	Sandstone from temple debris
16	Sandstone from temple debris
19	Sandstone from temple debris
21	Sandstone from temple debris
25	Sandstone from natural outcrop/cliff; near the excavation house
28	Sandstone from natural outcrop/cliff; near the excavation house
50	Sandstone from temple debris

Tab. 4 Rock samples from Sai for petrographic analyses (thin-sections)

Petrographic thin section descriptions of the selected samples

Sample 2

This sample was collected from a natural sandstone outcrop to the east of the French excavation house (20°44.339´N, 30°19.930´E). Based on the quarry marks visible on the outcrop, this was thought to be the source of some of the sandstones used as building material during the New Kingdom time. This is an area which was in use until Christian times, as a quarry but also as a mooring area for ships (see below, Chapter 2.5).

The petrographic analysis revealed that this is a heterogenous quartz arenite of moderate sorting, fine-grained quartz, which are sub-rounded to round (Pl. 22). The groundmass is quite dense with some clasts of even smaller quartz grains, clays and siltstones. The quartz grains generally do not show much undulose extinction. Some re-crystallisation (overgrowth) structures are, however, visible. Though quartz is easily deformed, there are only few strongly deformed angular shaped quartz grains. Thus, not much deformation can be noticed from this sample, hence suggesting their non-metamorphic origin. It is cemented with maffic micromass and silicate cements to a greater extent followed by haematite cementation (Pl. 23). Though the minerals are dominated by quartz, there are few haematite, microcline and clastic feldspar, as well as biotite and muscovite mica flakes (Pls. 24, 25, 26). There is also an absence of magnetic minerals and plagioclase feldspar. This sandstone is matrix-supported and shows sub-mature development.

Sample 3

This sample was collected from a natural sandstone outcrop forming a cliff on which Temple A is located (20°44. 245′N, 30°19.923′E). A closer look revealed its whitish colour and hence the sample was thought to be the source of the raw material for the building blocks of the temple.

The petrographic analysis showed that the sandstone is a quartz arenite dominated by well-sorted quartz grains which are grain supported (Pl. 27). The sorting, therefore, is much better than Sample 2. The differences also lie in the fact that these fine-grained quartz particles are quite rounded and there is a better exhibition of bedding planes with parallel orientation. The presence of many elongated quartz grains gave it the bedding which is clearly valuable not only from an aesthetic point of view, but also for working, as this rock is easier to split. Subsidiary minerals include indeterminate maffic iron rich minerals, either magnetite or a species of haematite, some chlorite and small-grained micas, the latter being present in a quite high percentage (Pl. 28). This relatively immature sandstone has some deformed clasts resulting from Cretaceous diagenesis. Presence of some clay and haematite in the form of cementation can be noticed.

Sample 4

This sample was collected from the whitish sandstone cliff close to Temple A (20°44.244′N, 30°19.927′E). The petrographic analysis revealed that the sample has quite similar features as Sample 3 which was collected nearby. The structure is again moderately to well-sorted and can be classed as a quartz arenite with sub-rounded clasts (Pl. 29). The groundmass is quite dense with plenty of very fine-grained sediments including some argillaceous sediment such as mudstone. This recycled mudstone from another sedimentary environment is indicative of its fluvial property. That it is not highly rich in feldspar also reflects the igneous environment. Similar to Sample 3, some striations and bedding can be noticed. Subsidiary minerals also include magnetite, a high percentage of mica and rounded microclines (Pl. 30). The matrix is grain supported and the quartz grains are cemented with silica cements with zones having haematite (Pls. 31, 32). The origin of the haematite can be indicated from the oxidation of other minerals. Interestingly, not much plagioclase feldspar was observed to point towards its volcanic origin. This sandstone sample also has deformed quartz clasts of possibly metamorphic rocks and some recrystallised quartz.

Sample 5

This sample was collected from one of the quarries in the modern village of Adou (see Pl. 17). It seemed to be slightly yellowish in colour and was collected from an outcrop with some clear marks of quarrying. Assuming that the sandstones of better quality had already been taken away, the question arose why this sandstone was left.

The petrographic analysis revealed that this grain-supported quartz arenite is highly heterogeneous with poor sorting (Pl. 33). There is a mix of large and small-sized quartz grains, with patches of fine grains, finer than Samples 3 and 4. The quartz mineral grains are moderately sorted; angular and subangular quartz grains indicate a sub-mature textural maturity (Pl. 34). The groundmass is dense and is highly impregnated with haematite (Pl. 35). Subsidiary minerals, which are grain-supported, are abundant with microcline, zircon and mica. Unlike the Samples 3 and 4, this sample has more accessory minerals such as aggregates of zircons and frequent magnetite. The cement is silica-rich along with large zones of haematite and calcites precipitated through groundwater, which could well be due to later-on diagenesis. The abundance of haematite and opaque minerals such as magnetite has given this sandstone a reddish/yellowish colour.

Sample 6

This sample was collected from the whitish sandstone cliff between Temple A and the excavation house. The petrographic analysis, however, showed that the groundmass is that of a quartz arenite consisting of poorly sorted heterogenous angular and subangular quartz grains which are grain supported, indicating their textural maturity. Subsidiary minerals include mica (quite a few), magnetite, micrites, zircons and microcline. The cement is dominantly silica-rich, although there are zones of haematite.

Though expected to reveal similar characteristics as Samples 3 and 4 owing to its ‘whitish’ colour, this sample has properties more similar to Sample 2. While the colour can be explained through the pres-

ence of mica, the absence of bedding unlike that of Samples 3 and 4 can be a reason towards the reduced aesthetic value. Nonetheless, owing to its good cementing properties, it can definitely be regarded as good quality sandstone.

Sample 7

This sample was collected from the quarry of the village Adou with the intention of checking if its properties are similar to any of those of the debris of sandstones. The petrographic analysis revealed that this is a moderately grain-supported quartz arenite. There is a high content of very small sized sub-angular to angular quartz. There are patches of dark brown minerals which form a discrete impregnation in limonite, often superimposed on calcites. Accessory minerals include zonated brown zircon mineral grains, often exhibiting high interference colours. Other accessory minerals include a fair amount of mica. There are also illite coatings on several quartz grains, giving a chitonic-related distribution pattern. No bedding or overgrowth of minerals has been identified.

Sample 8

This sample was collected from the cliff adjacent to Temple A. The petrographic analysis showed that the sample has quite similar features as Sample 6. The micromass is moderately to poorly sorted and can be classed as a grain-supported quartz arenite with sub-angular clasts. Some quartz grains are quite big. Grain-supported microcline with illite coating can be observed. There are many in situ broken quartz rock fragments cemented with siliceous cements, indicating that this particular rock fragment was transported from a metamorphic province. The matrix has siliceous cements with zones of illite and haematite and some clay. No bedding has been observed as in Sample 3; there are some quartz overgrowths. Similarities with Sample 4 are that the quartz and feldspar ratio is the same.

Sample 9

This sample was collected from the quarry of the village Adou with the intention of checking if its properties are similar to any of those of the debris of sandstones. The petrographic analysis assays that this is a poor to moderately sorted quartz arenite. Mineral grains are sub-rounded and sub-angular quartz with subsidiary minerals of illite and microcline. It is grain-supported and the cement is primarily silica. There are dark brown zones of limonite along with concentrations of a fair bit of calcite which forms a component of the cement, the latter is often coloured with the superimposition of haematite. With heterogeneous, coarse grains and some bigger grains of muscovite, this sample is very similar to Samples 5 (see Pls. 33–35) and 7. The groundmass is again fine-grained with smaller quartz grains grading into the clasts.

Sample 10

This sandstone was collected from a pile of debris of sandstones within the New Kingdom town site. The petrographic study revealed that this is again a moderately to poorly sorted, fine-grained quartz arenite with subangular quartz grains which are grain supported. The matrix is heterogenous. Subsidiary minerals include mica, haematite, microcline, illite, and at least one big grain of chlorite. The cement is silica and a high concentration of limonite with a small component of calcite. There are inclusions of rock fragments including rounded mudstone clasts and micaceous schists. Though no bedding has been identified, the higher presence of colourless muscovite and very few overgrowths of quartz can be observed.

Sample 11

This sample was collected from a pile of debris of sandstone from near the temple debris. The petrographic analysis showed this to be quite similar to Sample 10. This is also a moderately to poorly sorted quartz arenite, consisting of silica-cemented quartz and microcline grains, the latter are grain supported.

The mineral grains are angular and subangular. There are dark brown limonite impregnations and illite and calcite rich zones of the cement. Subsidiary minerals again include mica, haematite, microcline and at least a few grains of rutile. The omnipresence of mica gives the impression that the quartz grains are mica-coated, thus having a chitonic appearance.

Sample 12

This sample from the debris of sandstones lying almost adjacent to a temple block of Temple A was collected because of its whitish colour, to see if its characteristics are similar to any of the samples collected from the nearby cliff. Under the microscope it appeared as a moderately to well-sorted, fine-grained sub-rounded to rounded quartz arenite consisting of grain supported quartz grains. Mineral components are dominantly mica, with a few microcline and rock fragments are some mudstone and quartzite. There are zones of dark brown staining of haematite and limonite which forms the part of the cement. Fine beddings, not highly pronounced though, can be observed.

Sample 13

This sandstone was also collected from a pile of debris of sandstones within the site and again looks similar to Sample 10. This quartz arenite has heterogeneous, sub-rounded and subangular mineral grains as well as matrix-supported mineral grains. The cement is again precipitated silica with dense accumulations of haematite and illite concentrations. Some calcitic concentrations can also be identified. Subsidiary minerals include micaceous quartzite, quartz, microcline, some chlorite, zircon and biotite. Similar to Sample 11, some of the quartz grains are mica-coated. Some very dense fine-grained dark fragments of mudstones can also be identified. No overgrowth of quartz and no bedding can be seen.

Samples 14, 15, 16 and 19

These sandstone blocks were all sampled from the debris of Temple A. The petrographic study revealed these to be a nicely sorted grain-supported quartz arenite in which mineral grains are rounded quartz and quartzite. These have a higher ratio of clasts to groundmass with plenty of embedded rock fragments, thus giving a monic-related distribution pattern. There are microclines, some rutiles with cleavages and diagenesis, zircons, tourmaline, schistic rock fragments, microcline, muscovite and quartzites. Sample 16 has some distinct biotites. The microcline twins have characteristic tapering. Similar to Sample 10, there are some coatings of mica/clay around the grains. The cement is lightly coloured; illite and limonite zones form a minor part of the silica rich cement. Sample 19 shows the presence of some quartz overgrowths, a slightly higher percentage of altered mica, few clinozoisite and some chlorite.

Sample 21

This sample was collected from a pile of debris of the sandstones from Temple A. The thin section analysis showed that the groundmass is that of a quartz arenite consisting of poorly sorted, very coarse heterogeneous angular and subangular clasts of quartz grains which are grain-supported. The finer matrix, on the other hand, is very fine-grained. Mineral grains include big chunks of re-crystallised metamorphic quartzites and plenty of microcline feldspars. The latter looks a bit more rounded which is perhaps the result of transportation; in addition, some of these are more weathered than others. There is a mixture of quartz and clay in the groundmass. Cementation is mainly by silica, the latter appears to be re-precipitated and had undergone diagenesis. There are a few grains of quartz with overgrowth, thus giving some environmental signatures by showing precipitation of silica within quartz grains. Distinct patches of small grained calcites with high interference colours can also be seen as part of the cementation with a superimposition of haematite, which could well be re-precipitated. With plenty of feldspars, a heterogeneous nature and an absence of bedding, this sample is different than the others. This specimen clearly falls out of the spectrum of the typical sandstones attested on Sai and it does not appear to be from the immediate vicinity of the site.

Sample 25

This sample was collected from a natural sandstone outcrop near the French excavation house. The petrographic study revealed that this is a matrix-supported heterogeneous quartz arenite cemented by siliceous cements and limonite. The grains are finer with moderate sorting, as in Sample 5. Within these angular to sub-angular shaped mineral grains there is dominance of quartz with some schistic rock fragments and microcline mineral grains. Though mainly silica-cemented, there are dominant patches of dark brown staining of haematite and limonite forming the part of the cement. No overgrowth of quartz was identified. Some fragments of mudstone and some euhedral zonated zircons, as in Sample 5, were identified as accessory minerals. The abundance of haematite has given this sandstone a reddish/yellowish colour.

Sample 28

This sample was also collected from a natural sandstone outcrop near the French excavation house. The petrographic study showed that this is again a well-sorted, fine-grained quartz arenite with subangular quartz grains which are grain-supported. The matrix is heterogeneous. Subsidiary minerals include biotite, haematite, microcline, illite and some greenish brown to brown pleochroic tourmaline. The cement is iron-stained limonite with some calcite. There are inclusions of rock fragments, including rounded mudstone clasts and micaceous schists. No bedding and overgrowth of quartz could be observed.

Sample 50

This sample derives from a pile of debris of the sandstones from Temple A. This grain-supported quartz arenite with very fine siliceous cement has very similar petrographic properties as Sample 21. It is also not very well-sorted with very coarse heterogeneous angular and subangular clasts of quartz grains. In fact, with a bigger range of clasts, patches of this thin section show even more heterogeneity than Sample 21. Some lithic clasts of mudstone rock fragments can be observed. Haematite forms a component of the cement for this sandstone.

Discussion

From the range of block samples collected from different outcrops, the sandstones from Sai can be divided into three main categories:

a) sandstones from the outcrop directly southeast of the French excavation house which forms the northern limit of the quarry area in the vicinity of the town (quarry 1)

b) sandstones from the whitish outcrops adjacent to Temple A (quarry 2)

c) sandstones from the quarries in the village of Adou (especially quarries 3 and 4).

The task was to petrographically characterise samples from these outcrops to establish their similarities/differences. The rest of the ten samples collected on-site was characterised as well and their local or external origin was investigated. After going through the petrographic analysis of the outcrop sandstones, it was possible to grade them into four types on the basis of their mechanical properties. These are presented in Tables 5–8.

Based on these grades, it has now been possible to estimate the source of the ten sandstone block samples collected on-site (Tab. 9). With moderate to poor sorting, sub-angular grains, a heterogeneous grain-supported matrix and a high concentration of limonite in the fabric, the source of Samples 10, 11, 13, 21 and 50 can be ascertained to the quarries from the village Adou (Grade 2). With moderate to well-sorted particles, fine sub-rounded to rounded grains, a grain-supported matrix and largely silicate cementing, Samples 14, 15, 16 and 19 can be determined as deriving from the quarries from the eastern sandstone cliff close to the excavation house (Grade 1). The whitish sandstones outcrops at the base of Temple A (Grade 3) can be proposed as the origin of Sample 12, with moderate to well-sorted, fine sub-

Grade 1 (sourced from the southeastern side of the French excavation house)	
Grain size	Fine grained
Sorting	Moderate to well-sorted
Roundness	Rounded to sub-rounded
Grain types	Clay, siltstones, haematite, microcline, muscovite, clastic feldspar (apart from quartz)
Matrix	Matrix-supported
Cementation	Mainly silicate cement with some haematite

Tab. 5 Petrographic features of sandstones belonging to Grade 1

Grade 2 (sourced from the village Adou)	
Grain size	Heterogenous mixture of large and small grains
Sorting	Moderate to poor
Roundness	Sub-rounded to sub-angular
Grain types	Abundant mica, microcline, frequent zircons, magnetite (apart from quartz)
Matrix	Grain-supported
Cementation	High impregnation of haematite with calcites

Tab. 6 Petrographic features of sandstones belonging to Grade 2

Grade 3 (sourced from the cliff adjacent to Temple A)	
Grain size	Fine grained
Sorting	Well-sorted
Roundness	Rounded
Grain types	Chlorite, abundant small-grained mica, mudstone (apart from quartz)
Matrix	Grain-supported
Cementation	Clay and haematite; bedded

Tab. 7 Petrographic features of sandstones belonging to Grade 3

Grade 4	
Grain size	Not very fine; heterogenous to some extent
Sorting	Poor
Roundness	Angular to sub-angular
Grain types	Mica, magnetite, zircon, microcline
Matrix	Grain-supported
Cementation	Mainly by silica with some haematite; no bedding

Tab. 8 Petrographic features of sandstones belonging to Grade 4

rounded grains and haematite and limonite stained cement with some characteristic bedding. It has not been possible to find any sandstone belonging to Grade 4 from the range of samples from on-site debris. Therefore, sandstones of Grade 4 can be interpreted as external material which was imported to Sai.

Sample no	**Corresponding Grade**
10	Grade 2 (village Adou)
11	Grade 2 (village Adou)
12	Grade 3 (adjacent to the temple)
13	Grade 2 (village Adou)
14	Grade 1 (close to the excavation house)
15	Grade 1 (close to the excavation house)
16	Grade 1 (close to the excavation house)
19	Grade 1 (close to the excavation house)
21	Grade 2 (village Adou)
50	Grade 2 (village Adou)

Tab. 9 On-site samples and their corresponding grades

Sandstones belonging to Grade 1 contain more silica. Such silica in sandstones is precipitated from water flowing through the sands through diagenesis. Extremely fine iron-oxide can often react with such water, thus forming rust, which can lead to normal alteration of sandstones. It can be expected that the current state of the concerned sandstones of Grade 1 were not covered by any protection (i.e. limestone) and hence have undergone diagenesis and deterioration before assuming their current forms. These are, therefore, relatively dense and good quality sandstones.

However, sandstones belonging to Grade 2 are harder and more durable and therefore of better quality owing to their calcite impregnation. If the silica content is not that high, there is lesser chance of wa-

ter containing silica loosening the grains. Furthermore, the abundance of hard minerals such as zircons with very high refractive index makes this variety of sandstones colourful.

Temple A on Sai was, however, built with sandstones belonging to Grade 3, i.e. a group with plenty of silicate cement. The accessory mineral in these is an abundance of mica, giving it the 'white' colour (see Chapter 2.4).[246] In addition, the beddings make it perfect for a pristine polished look. The temple builders of Sai obviously had a clear choice between the aesthetic appeal and the durability of the sandstones available on the island. The aesthetics were noticeably preferred for temple buildings and this might have affected that the sandstone from Sai was also employed for other building projects in Nubia, as will be outlined in the following, taking textual sources into account (Chapter 2.4).

2.4 Textual sources for sandstone from Sai

by Martina Ullmann

2.4.1 References

The toponym *Šꜣꜥ.t*, i.e. Sai Island,[247] is mentioned five times in the inscriptions of the 18th Dynasty temple of Kumma (Semna East) as a source of building material for the temple:

> No.1: Hall C, jamb 37;[248] dedication text of Thutmose III in favour of Khnum-Ra, regarding a *ḥw.t-nṯr m jnr ḥḏ nfr n Šꜣꜥ.t* "temple in fine white stone from Sai".
>
> Nos. 2–5: Room F, jambs 59, 61, 63, 65;[249] dedication texts of Amenhotep II in favour of Khnum-Ra, regarding a *ḥw.t-nṯr m jnr ḥḏ nfr n Šꜣꜥ.t* "temple in fine white stone from Sai".

In all five occurrences *Šꜣꜥ.t* is written with the foreign land determinative (Gardiner sign-list N 25) and text no. 1 has in addition the club sign (Gardiner sign-list T 14).

Another inscription in the temple of Kumma mentions *Tꜣ-Stj* "Land of the bowmen/Nubia" as a source of stone:

> Hall C, hieroglyphic frieze 25;[250] dedication text of Thutmose III in favour of Khnum, regarding a *ḥw.t-nṯr m jnr ḥḏ nfr n Tꜣ-Stj* "temple in fine white stone from Nubia".

All other dedication texts in the temple of Kumma do not mention a source for the building material used.[251]

In the literature several other references for *Šꜣꜥ.t* as a source of stone for the building of temples have been discussed: A much damaged inscription at the façade of the 18th Dynasty temple at Semna (West) opposite of Kumma reports a decree of Thutmose III to Nehy, his viceroy of Nubia, regarding the transportation of stone by ships most probably in connection with the rebuilding of a temple.[252] Kurt Sethe, Urk. IV, 986.6 restored *Šꜣꜥ.t* as the provenience of the shipped stone.[253] But since the crucial part of the text had already been completely effaced at the time of Sethe, this reconstruction is in fact nothing more than a mere possibility. Unfortunately, several authors have adopted the restoration

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246 Cf. Harrell 2016, 21: "When iron oxides are absent, the rock has a light grayish to nearly white color which is the natural hue of the quartz sand grains."

247 For the identification of the toponym *Šꜣꜥ.t* with Sai, see first Vercoutter 1956, 73; Vercoutter 1958, 147; Posener 1958, 57–60. For lists with references, see Zibelius 1972, 154–155 and most recently Devauchelle and Doyen 2009, 33–37. For Sai in Meroitic texts, see Rilly 2007 (see also above, Chapter 1.1, fn 13).

248 Caminos 1998b, 50–51, pl. 41 right.

249 Caminos 1998b, 74, pl. 58 right; 75, pl. 58 left; 76, pl. 60 right; 77, pl. 60 left.

250 Caminos 1998b, 36, pl. 30.

251 See in general the temple inscriptions published by Caminos 1998b and especially the building texts in Grallert 2001, 158–160.

252 Caminos 1998a, 38–40, pl. 22. See also Spencer et al. 2017, 32.

253 Sethe 1909, 986.6.

by Sethe without indicating that it is a conjecture and not a proven fact. Silke Grallert states with reference to the inscription mentioned above "*Nḥi*s Angaben belegen, daß für den Neubau Steine aus Saï herbeigeholt wurden, um einen alten Ziegeltempel zu ersetzen".[254] And Ingeborg Müller writes "Kalkstein (sic!) von der Insel Sai ist lediglich als Baumaterial für die Tempel in Semna, Kumma und Buhen erwähnt".[255]

Like in Kumma, there is an inscription in the temple of Semna which mentions *Tꜣ-Stj* "Land of the bowmen/Nubia" as a source of stone:

> Exterior face of the west wall, scene 22;[256] in the context of a coronation scene with Thutmose III there is a dedication text of this king in favour of Dedwen and king Senwosret III, regarding a *ḥw.t-nṯr m jnr ḥḏ nfr n Tꜣ-Stj* "temple in fine white stone from Nubia".

The other dedication texts in the temple of Semna do not mention a source for the building material used.[257]

Three inscriptions in the south temple of Buhen name *Tꜣ-Stj* "Land of the bowmen/Nubia" as a source of stone used in the temple:

> Courtyard, pilaster 3, north face;[258] only partly preserved dedication text of Thutmose III, mentioning *m jnr ḥḏ nfr n Tꜣ-Stj* "in fine white stone from Nubia".
>
> Entrance to vestibule, west face of south and north jambs 41 and 42;[259] only partly preserved dedication text of Hatshepsut, later altered for Thutmose II, mentioning *m jnr ḥḏ nfr n Tꜣ-Stj* "in fine white stone from Nubia".[260]

No other location in Nubia shows up in the dedication texts of the south temple of Buhen as a source for building material.[261]

Grallert presumes that stone from *Šꜣʿ.t* was mentioned in the inscription of year 25 of Thutmose III on a pillar found at Sai Island (S.1).[262] The only partly preserved text talks about the construction of a temple at Sai under the responsibility of the viceroy Nehy, but the translation of the crucial part by Grallert as "… eine *ḥw.t-nṯr* zu bauen von [Neuem?] [aus Stein der] Festung von Saï"[263] is a mere conjecture and does not fill in adequately the destroyed space indicated by Jean Vercoutter.[264] That is not to say that the temple erected by Thutmose III at Sai (so-called Temple A) was not built from local sandstone (see Chapter 2.3), but just to indicate that no inscriptional evidence for it exists in the text of pillar S.1.

To sum up: The five dedication inscriptions in the temple of Kumma by Thutmose III and Amenhotep II are to date the only proven references for *Šꜣʿ.t* as a source of stone for the building of temples.

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254 Grallert 2001, 156.

255 Müller 2013, 79, 292, 356. For the temple of Buhen, where *Šꜣʿ.t* as a source of stones is in fact not mentioned, and also for the identification of the stone from Sai as sandstone and not limestone, see below.

256 Caminos 1998a, 73–79, esp. 78, pl. 38, text column 22–23.

257 See in general the temple inscriptions published by Caminos 1998a and especially the building texts in Grallert 2001, 155–158.

258 Caminos 1974a, 20, pl. 19 left.

259 Caminos 1974b, 40–42, pl. 42.

260 The text on the north jamb 42 does not preserve the *Tꜣ-Stj* anymore, but since the inscriptions on the south and north jamb run parallel, it can be safely restored.

261 For stone from *ʿnw* (Tura) in the Buhen inscriptions, see below.

262 For the pillar and the text in question, see Vercoutter 1956, 74–75; PM VII, 165; Minault-Gout 2007, 279 (S.1); Davies 2014a, 7–9 (see also this volume, Chapter 6, Doc. 5).

263 Grallert 2001, 154.

264 See also the new translation by Davies 2014a, 8: in the phrase quoted above (lines 2–3) "sandstone" might be reconstructed, but remains speculative; in line 6, only "stone" (*jnr*) is mentioned.

2.4.2 Stone from location NN

Egyptian building inscriptions regularly indicate the type of material used in construction – most often *jnr ḥḏ nfr/jnr ḥḏ nfr n rwḏ.t* "fine white stone/fine white hard stone" – but only rarely mention a special location as source for it.[265] With one exception: *ꜥnw* "Tura" is used more commonly in order to refer to the limestone quarries at Tura-Maꜥasara, a few kilometres south of Cairo, which had been exploited at least since the early Old Kingdom.[266] But *ꜥnw* became such a popular source for fine white stone, i.e. stone of high quality in the perception of the Egyptians, that it was sometimes used as an expression for stone of good quality and not necessarily as its source.[267] An example for this kind of use of *ꜥnw* can be found in the south temple of Buhen:

> Southern room, north wall, jambs 70 and 71;[268] only partly preserved dedication texts of Hatshepsut, later altered for one of the Thutmoside kings, mentioning [*m jnr*] *ḥḏ nfr n ꜥnw* "[in] fine white [stone] from Tura".[269]

Both texts – like all the other building inscriptions in the temple – undoubtedly refer to the south temple at Buhen. The only stone used in the temple building is so-called Nubian sandstone, of which the exact provenance is unknown.[270] It certainly was not brought from the limestone quarries at Tura far away in the northern part of the Nile valley. "Fine white stone from Tura" here simply denotes a very light-coloured local sandstone.[271]

Nevertheless, some confusion does exist in the literature about the identification of the stone used in the temples at the Second Cataract: John Raymond Harris states that "a small limestone temple at Semneh is said to be of *jnr ḥḏ nfr n tꜣ-sty*, which in all probability refers to limestone from the neighbourhood of Aswan".[272] And Müller thought that limestone from *Šꜣꜥ.t* "Sai" and/or from *Tꜣ-Stj* "Nubia" had been used as building material for the temples in Semna, Kumma and Buhen (for the citation, see above) and – in all likelihood influenced by Harris – that the limestone from *Tꜣ-Stj* probably came from the area of Aswan.[273] We have seen above that "fine white stone from Sai" is only proven as a source for building material in the temple of Kumma, whereas "fine white stone from Nubia" is mentioned in Kumma, Semna, and Buhen. As a matter of fact, all three temples in question were not built from limestone but from sandstone.[274] The speculation about limestone quarries near Aswan is neither supported by the archaeological record nor the geology of the First Cataract area.[275]

A comparison between the Egyptian designations for the various stones used in construction or sculpting and the actual material employed shows very clearly that for the Egyptian terminology quite often the visual qualities of the stones were more important than the geological identification. Thus, the expression *jnr ḥḏ nfr* was used by the Egyptians to denote a light-coloured stone of good quality, regardless whether it was limestone or sandstone.

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265 For a convenient overview of Egyptian building inscriptions, see Grallert 2001.

266 Grallert 2001, 706–707 (index). See also Sethe 1933, 868–873; Harris 1961, 69–71; Klemm and Klemm 2008, 51–55. The toponym *Rꜣ-ꜣwy* can be used for the Tura quarries as well; see Sethe 1933, 867–868 and Harris 1961, 69–70.

267 Sethe 1933, 872–873; Harris 1961, 71; Karlshausen and de Putter 2017. The same might be true for other place names as well, like e.g. Hatnub as a source of calcite alabaster, which might sometimes denote calcite alabaster from some other quarry, but of a special high quality like the one from Hatnub, see Sethe 1933, 884 and Klemm and Klemm 2008, 161.

268 Caminos 1974b, 75–76, pl. 63 lower right and left.

269 The text on jamb 71 only preserves *ꜥnw*.

270 Caminos 1974a, 12; for Egyptian sandstones and its quarries, see Klemm and Klemm 2008, 167–213 and lately Harrell 2016.

271 See also Caminos 1974b, 75 fn. 2; Grallert 2001, 162.

272 Harris 1961, 69.

273 Müller 2013, 79, 356.

274 For Buhen, see Caminos 1974a, 12; for Kumma: Caminos 1998b, 3; for Semna: Caminos 1998a, 9, 12.

275 Klemm and Klemm 2008, 23–145.

A dedication text of Taharqa in the Temple of Mut (B 300) at the Gebel Barkal indicates that this temple, which consisted entirely of sandstone, had been built *m jnr ꜥnw ḥḏ nfr rwḏ* "in fine white hard Tura-stone".[276] Here again, *ꜥnw* specifies a good quality local (sand)stone, but not the source of the stone.

Apart from the special case of *ꜥnw,* it seems that the source of the stone was only indicated within building texts when the material in itself was in some way or the other special or when the location where it came from was an unusual one or when we have a combination of both. Thus, the texts regularly mention *Ḥw.t-nbw* "Hatnub" as a source of calcite alabaster[277] and *Ḏw dšr* "Roter Berg = Gebel el-Ahmar" is named twice as a place from where red coloured quartzite comes from.[278] Occasionally *ꜣbw* "Elephantine" is cited as a location for stone, esp. *jnr km* "black stone – black granite/granodiorite" or *mꜣṯ* "(rose) granite", but also just *jnr* "stone".[279] When looking at the ancient Egyptian quarrying area at Aswan, which extends about 20km^2,[280] it is clear that *ꜣbw* in the building inscriptions not just means the island of Elephantine, but the broader area within the First Cataract where the different quarry sites are to be found. The dedication text on one of the obelisks of Hatshepsut at Karnak states that two obelisks were made *m mꜣṯ rwḏ.t n.t ꜥ-rsy* "in hard granite from the southern district".[281] Undoubtedly *ꜥ-rsy* "southern district" is used here as an alternative designation for the quarrying area at Aswan. The dedication text on a door jamb, found at Balat in Dakhla oasis and most probably from the late 6th Dynasty, specifies the material used for it as *jnr ḥḏ nfr n Tꜣ-wḥꜣ.t* "fine white stone from the oasis".[282]

The only Nubian toponyms used to indicate the source of stone within Egyptian building texts are *Šꜣꜥ.t* "Sai" and *Tꜣ-Stj* "Nubia". As seen above, *Šꜣꜥ.t* in this context is only known from inscriptions in the temple of Kumma, which date to the time of Thutmose III and Amenhotep II and *Tꜣ-Stj* is mentioned in building texts in the temples of Kumma, Semna, and Buhen, which come from the reigns of Hatshepsut and Thutmose III. Thus, it seems that the use of *Šꜣꜥ.t* and *Tꜣ-Stj* as a source of building material of temples was very much limited in time and space. The most plausible explanation for this is in my point of view that during the first half of the 18th Dynasty the construction of temples in the area of the Second Cataract using mainly local Nubian sandstone was something new and unusual. Something which had not happened before in this way and that, therefore, was worth to be especially mentioned within the building texts of the temples in question.

2.4.3 Fine white stone from Sai

The textual evidence for stone from Sai used in the construction of the temple at Kumma can be linked to the geoarchaeological results of the AcrossBorders project. Several variants of Nubian sandstone were identified on Sai Island as well as seven sandstone quarries in the vicinity of its New Kingdom town (see Chapter 2.3 and Pl. 20). Back in the 1950s Vercoutter had already observed sandstone quarries at various locations on Sai Island, some of them very close to the river.[283] Somewhat misleading is his statement "that Lepsius when visiting the sandstone temples at Semna associated them with Sai."[284] Carl Richard Lepsius wrote in one of his letters to Christian Gottfried Ehrenberg and August Böckh from the island of Philae in September 1844 about the temples at Semna and Kumma:[285] "In both fortresses the highest and best position is occupied by a temple, built of huge blocks of sandstone, of two kinds,

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276 Robisek 1989, 10–11, 114; Grallert 2001, 147.

277 Grallert 2001, 212–213 (18th Dynasty, private), 249 (Amenhotep I), 270–271 (Thutmose III), 278 (Thutmose III), 284 (Thutmose III), 285 (Thutmose III), 406 (18th Dynasty, private), 498 (12th Dynasty, private), 500 (Hatshepsut), 515 (6th Dynasty, private); Klemm and Klemm 2008, 161–163.

278 Grallert 2001, 255 (Hatshepsut), 271–272 (Thutmose III); Klemm and Klemm 2008, 216–219.

279 Grallert 2001, 215 (Thutmose III), 263 (Thutmose III), 311 (Horemhab), 526–527 (Ramesses III), 559–560 (26th Dynasty, private); Klemm and Klemm 2008, 233–267.

280 Klemm and Klemm 2008, 233–245, esp. fig. 355.

281 Sethe 1906, 362.11; Grallert 2001, 252.

282 Osing et al. 1982, 36–37 (no. 38), pl. 8; Grallert 2001, 560.

283 Vercoutter 1956, 73; Vercoutter 1958, 147–148 with fns. 24–26; Vercoutter 1986, 10.

284 Vercoutter 1958, 148, fn. 24; his abbreviated quotation of Lepsius changes somewhat the meaning of the original text.

285 Lepsius 1853, 508.

which must have been brought from a great distance through the rapids; for, southward no sandstone is found nearer than Gebel Abir, in the neighbourhood of Amara and the island of Sai (between 80 and 90 English miles), and northward, there is none nearer than the great division of the district at Wadi Halfa (30 miles distant)."[286] Thus, Lepsius thought of the Gebel Abir, i.e. Gebel Abri, as a possible source of sandstone, but not of Sai itself.

Gebel Abri is a widely visible "Inselberg" located close to Sai on the eastern mainland, about 4.5km from the Nile with abundant sandstone outcrops that must have caught the attention of the Lepsius expedition (see Chapter 2.1). But since during the investigation of the area by the AcrossBorders team in 2016 no quarry sites from Pharaonic times were identified (see Chapter 2.2), it seems highly unlikely that the Gebel Abri was used as a source of building material in the New Kingdom. Instead, the quarries identified on Sai Island, which show clear evidence of Pharaonic quarrying activities, must be considered as sources of sandstone used on Sai Island itself and possibly also for temples in the region of the Second Cataract.

Georges Posener picked up the observation of Jean Vercoutter when writing about the identity of the toponym *Šꜣꜥ.t* with Sai Island, supposing that the stone extracted from the quarries at Sai had been transported by river northward to Kumma in order to be used in erecting the temple there.[287] Caminos consented to this suggestion in his publication of the temple of Kumma: "the source of the sandstone was the ancient quarries in the island now called Sai, some 112km upstream from Kumma fort".[288] But more recently Didier Devauchelle and Florence Doyen expressed doubts about Sai Island as a source of building material used in Kumma, by referring to the great distance of 112km and the fact that navigating through the Dal Cataract and the region of the Batn el-Haggar was by no means an easy undertaking.[289] Furthermore, they point out that at least in later times (Napatan and Meroitic) and south of the Third Cataract quarries were usually located in the vicinity of the monuments they supplied with stone material.[290] Since one building inscription in Kumma mentions *Tꜣ-Stj* "Nubia" instead of *Šꜣꜥ.t* "Sai" as the source of the stone used (see above), they propose to consider both toponyms – at least in this context – as being comparable and essentially metaphoric, referring to a large, imprecisely defined region.[291]

This conclusion is by no means mandatory: alternatively, *Šꜣꜥ.t* in the Kumma texts may very well denote a much more restricted area, which is part of the larger region *Tꜣ-Stj*. This interpretation definitely conforms better to the overall use of these toponyms during the New Kingdom, which shows that *Tꜣ-Stj* should be understood as "Nubia" in a very broad sense,[292] whereas there is clear evidence that the toponym *Šꜣꜥ.t* in the 18th Dynasty designated the settlement which the Egyptians had established on the island of Sai at the very beginning of the 18th Dynasty.[293] But in comparison with other place names in Nubia, such as Miam, we may assume that at the same time it also referred to the larger surroundings of the town.[294] We know of several governors (*ḥꜣty-ꜥ*) of *Šꜣꜥ.t* in the 18th Dynasty[295] who were most likely responsible for a larger district that encompassed riverine areas on the eastern and western mainland. This at least can be deduced from what we know about the range of duties of governors in the New

[286] Lepsius 1853, 509.

[287] Posener 1958, 57.

[288] Caminos 1998b, 3. Caminos suggested that parallel to Kumma the sandstone used in Semna also came from Sai (Caminos 1998a, 12).

[289] Devauchelle and Doyen 2009, 36.

[290] Devauchelle and Doyen 2009, 36 with fn. 21.

[291] Devauchelle and Doyen 2009, 36.

[292] *Šꜣꜥ.t*: Posener 1958, 57–60; Zibelius 1972, 154–155; *Tꜣ-Stj*: Gauthier 1929, 31–32; Thesaurus Linguae Aegyptiae, Lemma no. 169280 (http://aaew.bbaw.de/tla/index.html). See also the use of *Tꜣ-Stj* in epithets of various Egyptian gods, especially as *nb/nb.t Tꜣ-Stj* or *ḫntj Tꜣ-Stj* during the New Kingdom (Leitz 2003).

[293] For the Egyptian presence on Sai, see Budka 2015a; Budka 2017c and this volume, Chapters 7 and 8.

[294] Müller 2013, 47. See also Steindorff 1935, 21; Posener 1958, 58–59; Simpson 1963, 27; Caminos 1968, 7.

[295] Posener 1958, 58; Devauchelle and Doyen 2009, 34–35; Minault-Gout and Thill 2012, 180–183; Müller 2013, 47, 209; Cressent and Raimon 2016, 28–34. Apart from Sai, we have evidence for *ḥꜣty-ꜥ*s in Nubia in connection with Aniba (Miam), Buhen, Faras, Soleb and Kawa, see Müller 2013, 47. See also Auenmüller 2018b and this volume, Chapter 6.

Kingdom.[296] These duties included the administration of state-owned agricultural land, pasture grounds for cattle and vineyards.[297] The Nauri decree also explicitly forbids the governors in Nubia to let personnel of the temple of Seti I at Abydos work in other districts (*w*).[298] Even though we cannot determine the precise geographical extent of the district *Šꜣʿ.t* in the 18th Dynasty, we may safely assume that it encompassed only a small part of all of *Tꜣ-Stj*.

When we try to identify the source of the sandstone used in Kumma, we certainly also need to look at the geology and landscape of the Second Cataract and the Batn el-Haggar region immediately southwards. This is not a topic that can be dealt with here in any depth, but a few general remarks may nevertheless be helpful. Over a distance of about 160km from Wadi Halfa in the north to the Dal Cataract in the south the Nile flowed through a barren region mainly consisting of granite and gneiss.[299] The Second Cataract was characterised by a labyrinth of granite rocks and hundreds of small islands, which diverted the Nile into numerous small channels and rapids. In the Batn el-Haggar the bed of the Nile was very narrow and its course was broken by several rapids. Navigation, particularly upstream, was difficult and dangerous and impossible during the low water season. No sandstone formation is known in this part of the Nile valley.[300] Therefore, the sandstone used in the first half of the 18th Dynasty in the temples of Kumma and Semna, which are located at the southern end of the Second Cataract, must have been transported over a sizeable distance despite all difficulties, either from the region of Wadi Halfa in the north or from the south, where the nearest sandstone quarries known for being in use during the 18th Dynasty are the ones on Sai Island.[301] Since navigation upstream, that is from the sandstone area at Wadi Halfa through all of the Second Cataract to Kumma and Semna, was much more difficult than transportation northward, i.e. with the current, we should assume that, despite the longer distance, the stones were taken from the quarries at Sai. Alternatively, transportation could have gone overland, but regarding the heavy weight and the sizeable distance (from both directions), this seems highly unlikely. In this respect the inscription at Semna, reporting a decree of Thutmose III to Nehy, his viceroy of Nubia, is of interest, because it mentions – albeit in a much damaged context – the transportation of stone by ships (see above).

We have seen that the Egyptian building texts differentiate between fine white stone from *Šꜣʿ.t* "Sai" and *Tꜣ-Stj* "Nubia". *Šꜣʿ.t* in this context is only known from inscriptions in the temple of Kumma (Thutmose III and Amenhotep II) and *Tꜣ-Stj* is mentioned in building texts in the temples of Kumma, Semna and Buhen (Hatshepsut and Thutmose III). Since *Šꜣʿ.t* is part of *Tꜣ-Stj* (see above), all the references could in principal pertain to stone from Sai. But in the case of the temple at Buhen this is highly unlikely because Buhen was located at the northern end of the Second Cataract, not far away from sandstone formations; therefore, there was no need to transport stone to be used in Buhen from quarries as far away as from Sai Island. In all probability, the toponym *Tꜣ-Stj* in the building texts at Buhen refers to local quarries north of the Second Cataract.[302]

In the case of the temples at Semna and Kumma, where, as we have seen, the sandstone came with all probability from Sai Island, the question arises: Why did the Egyptians use two different toponyms to indicate the same source of the stone material at the same time (Thutmose III/Amenhotep II)? Several solutions are possible: Whereas *Šꜣʿ.t* indicated the precise location of the quarries, the broader term *Tꜣ-Stj* was used just as an imprecise but nevertheless correct variation. Alternatively, other Pharaonic

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296 Müller-Wollermann 1991, 48–54; Müller 2013, 46–49.

297 Müller-Wollermann 1991, 50; Müller 2013, 48.

298 Kitchen 1975, 52.15

299 See the description of the region by travellers in the 19th and early 20th century and in Adams 1977, 26–28. For the geology, the Geological Map of the Sudan, compiled and published in 2004 by the Geological Research Authority of the Sudan, was consulted. I wish to thank Dietrich and Rosemarie Klemm who drew my attention to this source and who generously provided me with a copy.

300 The Geological Map of the Sudan indicates two small sandstone areas to the north of Sai, close to the Dal Cataract, eastwards of the Nile. But we know nothing about any quarrying activity in this area in Pharaonic times.

301 For an – albeit incomplete – overview of ancient Egyptian sandstone quarries, see Harrell 2016, 31–34.

302 For possible sandstone quarries close to Buhen, see Harrell 2016, 33.

sandstone quarries than the ones on Sai Island might have existed not far from the southern end of the Batn el-Haggar, still unknown to us.[303] Those quarries might have been denoted with the more general toponym *Tꜣ-Stj* because there was no settlement of any importance nearby like on Sai.

An observation made by the Lepsius expedition in the temple at Kumma back in the early 1840s gives a hint that two different variants of sandstone were used: "Von gelbem Sandstein sind die Eingangspfosten und Säulen und Pfeiler des Vorhofes, die erste folgende lange Wand, von der nächsten langen die eingebauten Pfeiler und der Architrav darüber, sowie die Tür rechts von der Pfeilerwand; ferner der Architrav über der einzelnen Säule und die Deckplatten darauf, ferner die übrigen großen Deckplatten. Alles übrige ist von grauem Sandstein; jener, der weiße oder gelbe, aus dem auch der alte Teil des Semnetempels gebaut ist, heißt von *Tꜣ-Stj*, der graue von *Šꜣʿ.t*."[304] Thus, Lepsius had combined the archaeological observation of two different variants of sandstone in the temple building with the inscriptions that mention *Šꜣʿ.t* once in hall C (Thutmose III) and four times in room F (Amenhotep II) and *Tꜣ-Stj* once at another wall in hall C (Thutmose III). Since the building history of the early 18th Dynasty temple at Kumma is a very complex one,[305] it might very well be the case that the stones used were extracted from different sites, i.e. from a quarry located in *Tꜣ-Stj* as well as from a quarry on Sai Island.

The petrographic investigation of samples to be taken from various parts of the temple at Kumma and from the one at Semna and their comparative analysis with samples from the quarries on Sai Island (see Chapter 2.3) might help in acquiring more information about the use of the "fine white stone from Sai" in the future.

2.5 Harbour/landing place of the New Kingdom town[306]

by Julia Budka

As was mentioned throughout Chapter 2.2, the question of the harbour/landing place for the New Kingdom town of Sai was one of the foci of AcrossBorders' geoarchaeological research. This aspect is crucial for addressing the strategic position and function of the site during the so-called "re-conquest of Kush".[307] If we consider Sai as one of the most important administrative centres of 18th Dynasty Upper Nubia (see Chapter 7), a landing place and/or harbour seems mandatory to fulfil the respective needs.

The state of research on harbours of New Kingdom temple towns in Nubia is quite limited.[308] Some of the earlier Nubian Middle Kingdom fortresses have direct access to the waterline due to their location on the riverbank and were labelled as "Flusshafenfestung" by Carola Vogel.[309] In these cases, the access is provided by lateral walls of the fortresses that extend into the river, forming a harbour enclosure. These walls are made of quarry stone, can be up to 5m thick, may be equipped with pillars and protrude up to 12m deep into the river.[310] The fort wall facing the river often includes an offshore platform to which the ships could land.[311] Since the New Kingdom towns differ in terms of enclosure and defensive structures quite considerably from the Middle Kingdom fortresses, it comes as no surprise that there are

303 The sandstone quarries of the 18th Dynasty detected nearby Sesebi in recent years (Spence et al. 2009, 44) are located too far southward in my opinion and the same applies to sandstone from the area of Soleb, which was used in the temple there in the reign of Amenhotep III.

304 Lepsius 1913, 217.

305 Caminos 1998b, 1–4; Azim and Carlotti 2012, 44.

306 Based on the reports by Erich Draganits, Sayantani Neogi and Sean Taylor, see also above, Chapter 2.2.

307 Cf. Budka 2015b with further references.

308 See, however, the work on Middle Kingdom Nubian fortresses including the question of the harbour at Kerma by Manzo 2017.

309 Vogel 2004, 151.

310 Best illustrated by the example of Aniba, see Vogel 2004, 220–221 ("Phase III Hafen"). For the fortress of Mirgissa, see Azim and Gratien 2016.

311 Vogel 2004, 220–221.

no comparable massive quay walls or platforms preserved for the town of Sai.[312] However, some kind of landing place must be assumed for this New Kingdom town which is located directly at a cliff above the Nile. In general, natural landing bays are archaeologically hard to grasp, since they usually have no architectural buildings and did not result in manmade modifications of the shore. In the following, the most likely location for such a landing place for Sai will be discussed.

2.5.1 Sandstone cliff at the northeastern corner of the town

The first possibility, in this case also with some manmade modifications in the topography, is the sandstone cliff at the northeastern corner of the town. As was mentioned above (Chapter 1.2), a rock inscription of Thutmose I was documented by James Henry Breasted "on a huge piece of the cliff which had fallen out of the east face of the rocks north of the fortress, and now lies close to the river on the east shore of the island."[313] Such a royal inscription would of course make much sense at the landing place of a royal foundation like Sai. Unfortunately, the Thutmose I inscription has not been re-located since Breasted – but its former location along the cliff which showed some toppling failures (see Chapter 2.2.1) just northeast of the town is very likely.

Although the Pharaonic rock inscription which might have marked a landing bay is, therefore, lost and must remain unclear, there are other arguments for such a function of the steep cliff at the northeastern corner of the New Kingdom town. This place, site 8-B-522 according to the nomenclature by Friedrich Wilhelm Hinkel, clearly functioned as mooring area in Christian times, as is well-attested by medieval graffiti and mooring rings carved out of the rock for tying ships' ropes at a very high level of the cliff.[314] This usage might go back as early as the New Kingdom.[315] A Pharaonic landing place at 8-B-522, presumably at a lower level than the Christian one,[316] is therefore likely, with the eastern perimeter wall of the town located further towards the west (see Chapter 3.5). Details about the precise form of access from this landing place to the town must, however, remain unclear at the present state of research.

2.5.2 Along the east side/northeast of Temple A

The second possibility for a landing place at New Kingdom Sai is the broad Nile terrace east of the Pharaonic site, between the sandstone cliff in the north and the Ottoman fortress in the south. Of particular relevance to investigate whether any traces of a harbour or landing bay had been preserved in the Nile sediments just east of the town was a coring survey in transect undertaken by Neogi in this riverine alluvial platform during the field season of 2015 (Chapter 2.2.2). The survey did not reveal the presence of any potential built harbour but based on the topography it seems likely that a simple landing ground sheltered by the steep sandstone cliff was in operation, similar to those seen along the Nile today. Towards the end point of this coring, directly adjacent to the sandstone cliff in the platform, Profile 15 was observed (20°44'13.959495587478"N, 30°19'56.736878240482"E) and two blocks for soil micromorphology were collected, the descriptions of which are given below.[317]

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[312] For the New Kingdom, a massive quay construction is, for example, known for the temple of Soleb (Arnold 1992, 73–75; Arnold 1994, 240). This example follows the assumption by Schenkel 1977, 927 that harbours and quays are always necessary when sites and temples are not located directly at the river.

[313] Breasted 1908, 100.

[314] Hafsaas-Tsakos and Tsakos 2012, 85–87.

[315] Budka 2017c, 71.

[316] The Christian graffiti are commemorating "exceptional high waters of the Nile" (Hafsaas-Tsakos and Tsakos 2012, 86, with further references).

[317] Based on the report by Sayantani Neogi and Sean Taylor; Neogi and Taylor 2015.

Sample 15 (East Section/1) (~385–395cm)

Description
Micromorphological observation (Pl. 36) has revealed the whole fabric to be very well-sorted. It is composed of homogenous fine material, i.e. sandy loam ($c/f_{50}\mu m$ ratio: 25:75) with low porosity (10–15%). The apedal fabric show very weakly developed channel microstructure. There are some sedimentary crusts towards the top and bottom of the thin section. The crusts are highly organic. Embedded in the groundmass are silt-sized minerals, mainly quartz and mica. The whole fabric has abundant highly humified organic matter, especially towards the top of the thin section, whereas it becomes sandier towards the bottom. Excremental pedofeatures are more common with channels infilled with the aggregates of groundmass material.

Interpretation
This thin section represents a well-sorted fluvial sedimentary deposit. Fragments of sedimentary crust have been eroded, transported and deposited at this location and are perhaps indicative of de-vegetated ground surface. At the top and bottom of the thin section intact sedimentary crusts are observed which indicate episodes of deposition of fine material. Elsewhere well-sorted sand and silts dominate, indicating that at times slightly coarser particles are transported and deposited, probably due to increased seasonal discharge of the river. The relative lack of voids and compact nature of this sediment suggests an unstable environment with very little opportunity for vegetation to become established.

Sample 15 (South Section/1) (~395–400cm)

Description
Microscopic observation (Pl. 37) reveals this sample to be more or less similar to Sample 15 (East Section/1), except it contains unsorted allochthones fragments of sedimentary structures within the groundmass, making things a bit more complicated. The sandy loam fine material is even less porous.

Interpretation
This is clearly sedimentary in nature. The fragments of crusts have themselves been eroded and transported from a sedimentary environment.

All in all, the alluvial platform sheltered by the sandstone cliffs and being located closely to the main stone temple of the New Kingdom town and its large magazine sector could very well have been used as a simple landing place for Pharaonic ships.

2.5.3 South of the Ottoman fortress/New Kingdom town

The third possibility for a landing place of New Kingdom Sai derives from descriptions by early scholars (see Chapter 1.2). Budge describes his arrival at the site as follows: "We found a convenient place on the bank and landed, and then climbed up a steep, rough path to the remains of what is called the "Castle of Sâî."[318] Since this account is not perfectly detailed, it opens up two possibilities: 1) Budge and his consorts landed in the riverine bank east of the town described above; 2) they landed just at the base of the Ottoman fortress, accessing the site from the south. The latter seems more likely when considering the local topography – whereas it is indeed "steep and rough" to climb the site from the south, it is by no means "steep" when arriving from below Temple A, accessing the town and fortress from the eastern side. In addition, one can mention the southern gate of the New Kingdom town in favour of the second possibility.[319] This gate is a simple doorway located to the south of the so-called governors' residence

[318] Budge 1907, 461.
[319] Adenstedt 2016, 25.

and its simplicity compares well to similar doors through enclosure walls in Middle Kingdom fortresses. These gateways in the fortresses are interestingly always connected with stairways towards the river.[320] An analogous setting is imaginable for the southern entrance into the New Kingdom town of Sai, even if no ancient walkway towards the river has so far been discovered and is presumably covered by Ottoman remains.[321] However, a stairway up towards the fortified town seems rather unsuitable to represent the main access from the river and the central landing place of the site.

2.5.4 Conclusive remarks

As was outlined in this chapter, no built harbour architecture could be found on Sai. One should rather consider natural landing places for which three possible candidates were discussed. The sandstone cliffs with mooring rings from presumably Christian times are a very likely possibility, but this also applies to the flat alluvial platform along the town's east side. Parallels from Middle Kingdom fortresses would also support an access from the southern side, which is, however, unlikely to represent the main entrance from the river.

The discovery by Draganits of two stones (Pl. 5) which resemble Bronze Age stone anchors in general[322] and in particular the Middle Kingdom anchors from Mirgissa[323] seems significant in this respect. One of the stones was found northeast of Temple A and thus very close to the broad Nile terrace sheltered by the sandstone cliff. The other stone was documented south of the Ottoman fortress. Thus, these anchor stones[324] may support the concluding assumption that more than one area along the eastern shore had been used as landing bays during the New Kingdom on Sai.

2.6 Placing the New Kingdom Town into the wider landscape of Sai

by Julia Budka

Beyond doubt, the prominent island of Sai lies in a strategic position along the Nile. For several empires, it had been a stronghold and a border region, e.g. the Kerma Kingdom, the Egyptian New Kingdom and the Ottoman Empire.[325] Field surveys in the years 2014, 2015 and 2016 on Sai Island primarily aimed at gathering data with which to understand human-landscape relations.[326] The objectives were specifically focused on questions relating to the New Kingdom occupation. These were to place the archaeological site in its environmental context, to understand the nature of any surface preparation prior to the establishment of the settlement. In order to achieve these objectives, a series of test pits, hand auger profiles as well as a reconnaissance of geological exposures, sections and quarry pits were carried out by the AcrossBorders' geoarchaeologists. As one of the main results, a surface map of the vicinity of the town was created in 2016 (Pl. 13). Besides the lithic specification of the geology of the island, a differentiation in old Nile sediments from the Pleistocene and much younger sediments forming the terraces of Sai was possible (see below).

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320 See Vogel 2004, 125 (citing the examples of Semna-West, Kumma and Quban); Vogel 2010, 428.

321 See Budka 2018a, 264.

322 Wachsmann 1998; see also Wachsmann 2000.

323 See Vila 1970, 188–189, pls. 14a, b; Manzo 2017, 84, fig. 6.7.

324 For anchors in Egypt, see Nibbi 2002; Zazzaro and Abdelmaguid 2016. To the best of my knowledge, the only Egyptian site in Sudan from where anchor stones have been reported is Mirgissa, see Manzo 2017, 84 (the function of the 22 stones found in the northern part of the fortress was still questioned by the excavator, see Vila 1970, 188–189). For some possible anchors/weights as well as large tethering stones from the AcrossBorders excavations on Sai, see Chapter 4.4.2.

325 For its role as most southern fortress of the Ottoman Empire cf. Alexander 1997. See also Elzein 2009.

326 Cf. Goldberg and Macphail 2006.

It became very clear that today's northern part of the island with predominately Christian remains was not part of the island's outlines in New Kingdom times.[327] During the heyday of Egyptian activity on the island, Sai was thus smaller. Its shape can be estimated towards the north by means of the palaeo-channel which is still visible as depression nowadays. Furthermore, the inundation modelling for Amara West and its surroundings illustrates outlines for Sai which correspond to our assumptions.[328]

The fortified Egyptian town was built for several reasons on the eastern bank of the large island of Sai in the New Kingdom. This was probably the perfect place on the island from a strategic perspective, especially for controlling river traffic and to facilitate the landing and loading of ships (Chapter 2.5). The northeastern part of the town steeply drops off towards the Nile, in some areas with a height difference of about 8m. The sandstone cliff here was also used for quarrying purposes. One may, therefore, conclude the following three aspects for the specific location of the New Kingdom town: 1) quarry for building stones; 2) fortification aspect/protection from the Nile and 3) perfect mooring area/landing place for ships. The controlling aspect of river traffic is included in both 2) and 3).

One may stress that the stronger focus on a strategic position and the lesser need for facilities for agricultural purposes of the New Kingdom town is very similar to the Ottoman fortress. It furthermore differs considerably from the situation of the Neolithic and Kerma settlements. Other than these indigenous Nubian cultures, the Egyptians combined their strategic placement of a new fortified town on Sai with the exploitation of sandstone for their religious buildings. In addition, Egyptian tombs of the New Kingdom were typically dug into the bedrock and comprise a subterranean part with several chambers and a large shaft. Within the geology of Sai, such tombs therefore required sandstone outcrops and differ in this respect from Kerma tumuli set in the alluvium. The position of the large elite cemetery SAC5, where the pyramid tombs contemporaneous to the town were erected, is, therefore, another argument that the Egyptians were consciously placing their new sites along the eastern side of the island where both access to the river and suitable building material/building ground were available.

Whereas the advantages for the location of both the town and the Egyptian cemeteries along the sandstone cliffs/outcrops of Sai seemed quite straightforward, one of the other objectives of AcrossBorders' geoarchaeological research has been a deeper understanding of the nature of the land surface before the town was built and possible additional motives behind the placement of the site. In order to answer these questions, geoarchaeological samples were taken (see Chapter 2.3).

The micromorphological observations of the soil blocks collected from different depths of the soil profiles showed that the New Kingdom town at Sai Island was constructed on surficial drift geology. This comprised ancient alluvium and former Nile terraces of several hundred thousand years ago. An important question to address was whether the nature of the land surface had influenced the choice for the location. There certainly is a suite of other factors which are of more significance for the location of the site. These include the proximity to the river, the topographical properties of the site and the significance of the town on the island of Sai for resources.[329] However, it is likely to presume that the local geology had some influence on the choice of the site. The micromorphological investigations of the alluvium on and to the west of the site show that this material has significantly different properties to the modern sediments that are associated with ongoing geomorphological processes of the river Nile. Because they were formed during the Pleistocene, they have been subjected to soil forming processes during the early Holocene.[330] It is known that during this period it was significantly more humid. The increase in the content of organic matter and the development of channel microstructures indicate more moisture to the soil system. Any CaCO3 in the system would have been leached to lower parts of the subsoil. This is precisely what was observed with the re-deposition of CaCO3 at significant depths in the profiles on Sai. In addition, the ubiquitous presence of iron hydroxide features is also closely linked to alternating wetting and drying through fluctuations in the water table. It is in these conditions that

[327] For the Christian sites on the island see Tsakos and Hafsaas-Tsakos 2014, 986, fig. 1.
[328] Woodward et al. 2017, 232, fig. 6.
[329] Budka 2015a, 40–53. See also below, Chapter 7.
[330] Woodward et al. 2016.

secondary clays develop through weathering.[331] During the mid-Holocene Northeast Africa was affected by severe drying.[332] This can be perceived on Sai by the increase in CaCO3 due to the soil water balance tipping in favour of evapotranspiration. The surveys of the AcrossBorders project have revealed that many of the archaeological sections/trenches left open by the French excavators at Kerma, Meroitic and Post-Meroitic sites, located within the alluvium, show soil profiles with calcic properties.[333] These two properties, a relatively enhanced clay content due to the effects of moist conditions during the early Holocene and at the same time a much higher content of CaCO3, differentiates these soils from the more recent silts associated with Nile over-bank flooding.

The augering transect with six boreholes immediately to the west of the town wall, just outside of sector SAV1 West, revealed a sand-filled depression of at least 3.4m in depth (see Chapter 2.2.3). The general survey of Sai Island indicates that the bedrock geology for this depression to the west of the New Kingdom town is the palaeo-alluvium. The first impression for the topographical feature was thought to be a *wadi* but it is now likely to be the source of raw material for the mud bricks used for the architecture of the town. The extraction of this material would have created a ditch which enhanced the strategic capabilities of the wall itself. A ditch in front of the western town wall was already observed by Azim at the main gate.[334] The special properties of the alluvium would have been excellent for the production of mud brick (cf. Chapter 5.1.7.2). The presence of CaCO3 in the mud bricks would have significantly improved their strength. The higher clay content would also have improved the cohesion and working properties during the manufacturing process. However, no contemporaneous parallel for building a ditch in front of an enclosure wall of a New Kingdom temple town to use the extracted material as building material for the bricks are known, and this interpretation must remain tentative for now.[335] It is, however, possible that this palaeo-alluvium plain below the western edge of the New Kingdom town was another aspect which motivated its precise location on Sai Island.

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331 Jenny 1980.

332 Jung et al. 2004.

333 W.R.B. 2014.

334 Azim 1975, 120–122. See also Adenstedt 2018.

335 Adenstedt 2018, 139 presents two ancient literary sources after Fields 2004, 31. According to Herodotus 1.179 the Babylonians fashioned bricks for their city wall ‘out of the earth which was thrown out of the fosse’ and Thucydides 2.78.1 notes that the Peloponnesians built a wall around Plataia, using ditches they dug outside the enclosure as source for the clay for the bricks.

Chapter 3: The New Kingdom town – the excavations and architecture

by Julia Budka

3.1 General remarks

The fortified Egyptian town which was the focus of the archaeological investigations by the AcrossBorders project from 2013–2017 was built on the eastern bank of the large island of Sai in the New Kingdom (Figs. 1–2). This was probably the perfect place on the island from a strategic perspective, especially for controlling river traffic and to facilitate the landing and loading of ships (see below on sector SAV1 Northeast, Chapter 3.5). The eastern part of the town steeply drops off towards the Nile, in some areas with a height difference of about 8m. The sandstone cliff here was also used for quarrying purposes (see Chapters 2.2 and 2.6).

The Egyptian town of Sai has the shape of a fortified settlement with an orthogonal layout in a south-north direction, measuring 238m north-south and *c.* 118–120m east-west, with a total of 27.600m^2 (2.76ha).[336] The main city gate was located on the western side, opening to a main east-west axis leading to the stone temple, Temple A. Prior to AcrossBorders' fieldwork, almost two thirds of the New Kingdom town were unexcavated and a detailed assessment of the entire town's evolution was not possible.[337] Previous work had focused on the southern part of the town, which was overbuilt by the Ottoman fortress (Fig. 2), and a section of the northern part along the enclosure wall (see Chapter 1.2).[338]

With new fieldwork in various sectors, a detailed re-investigation of the southern area and a concise account of finds in all excavated parts (Fig. 3), the AcrossBorders project was able to highlight some of the significant aspects of this Egyptian temple town, which are also relevant on a comparative level for other sites. Before the newly excavated sectors will be presented, the areas documented prior to the AcrossBorders project shall be briefly described. These are the southern and northern sectors of the New Kingdom town.

3.1.1 Southern sector (SAV1)

The southern part with a temple and a residential quarter datable to the mid-18th Dynasty, labelled as SAV1, was investigated by a French Mission in the 1950s and 1970s.[339] Except for Temple A, everything of this sector is located below the Ottoman fortress (Chapter 1.2). Only in some parts the state of preservation of the 18th Dynasty remains was good; very often the remains suffered from the later phases of use, re-use and destruction. As described by Jean Vercoutter: "Stratification is practically impossible to ascertain owing to the extensive removal of earth and the consecutive disturbance of the site, due to the work of the 'marog' diggers."[340]

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336 Adenstedt 2016, 24, fig. 7; Budka 2017c, 71; see also Adenstedt 2018.
337 See Budka and Doyen 2013, 181–182.
338 Budka and Doyen 2013, 170–171.
339 Azim 1975; Adenstedt 2016.
340 Vercoutter 1958, 154.

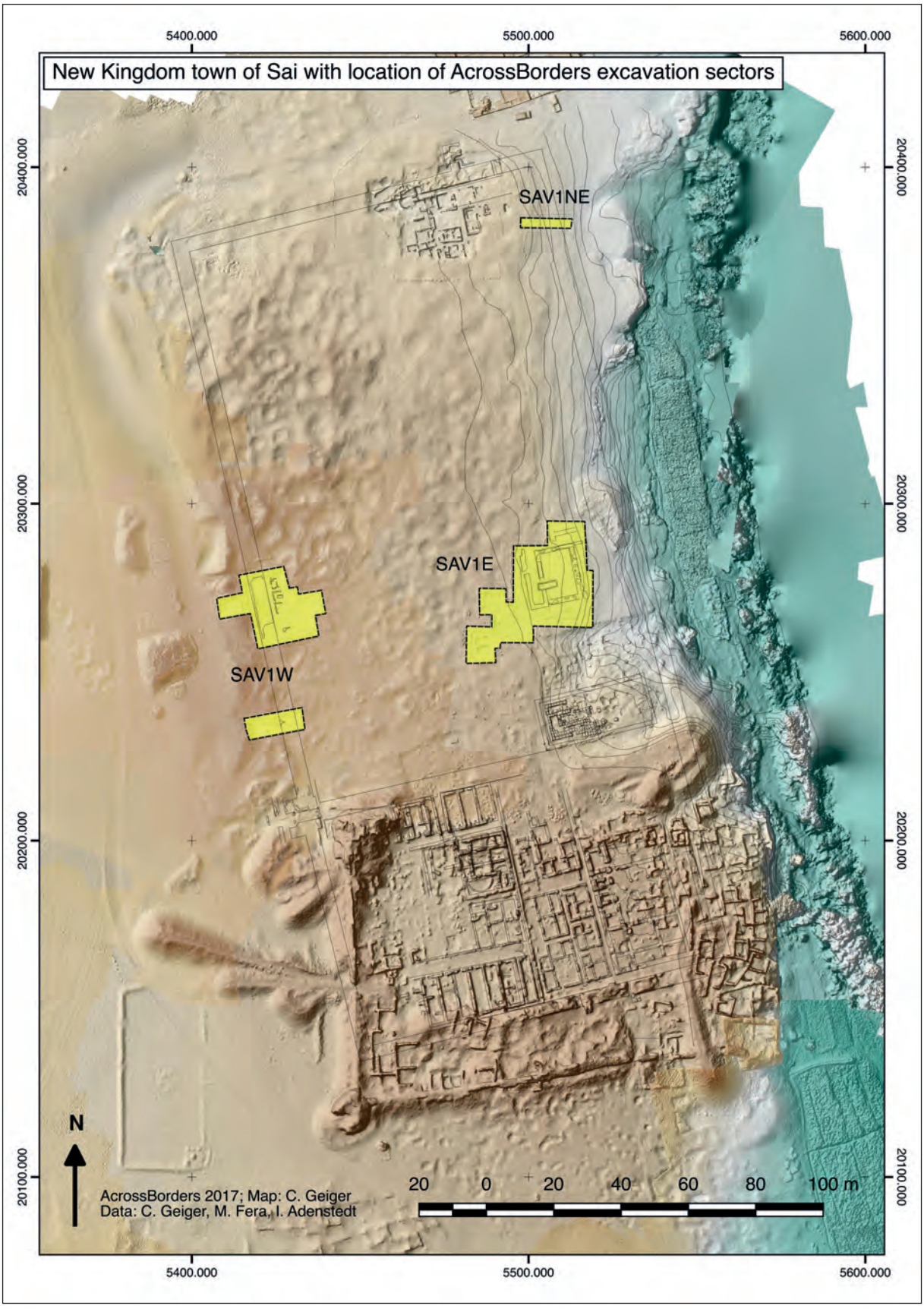

Fig. 3 Map of New Kingdom town of Sai with excavation sectors of the AcrossBorders project

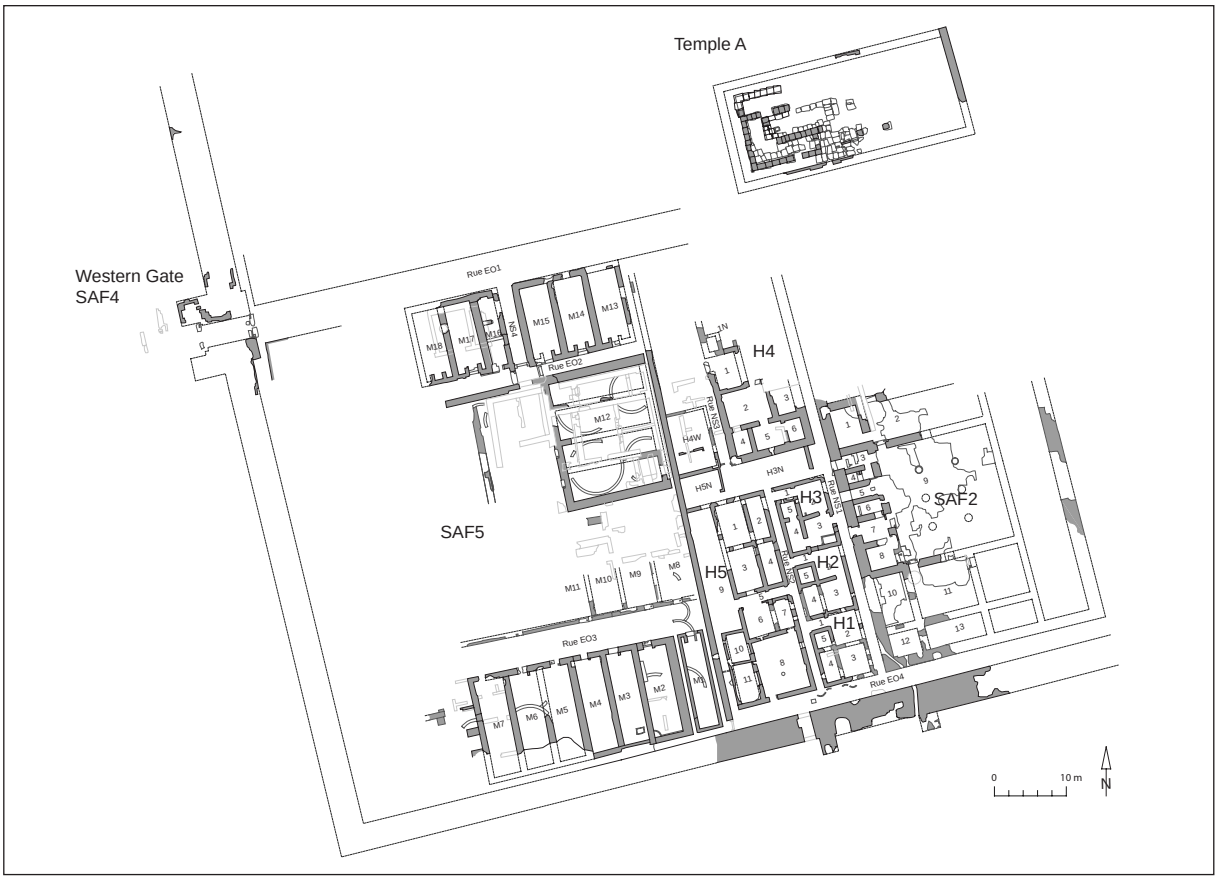

Fig. 4 Mid-18th Dynasty remains in SAV1, southern part of New Kingdom town

The following features were identified as being contemporaneous and from Thutmoside times (Fig. 4): the so-called governor's residence (SAF2) with a large columned hall (15.3 × 16.2m) and mud brick paving in the east;[341] a central domestic quarter H comprising a cluster of five houses (H1–H5); and a western quarter (SAF5), consisting of several rectangular storage rooms and circular silos.[342] Parallels for such a layout can be found at other New Kingdom temple towns, especially at Buhen, Amara West and Sesebi.[343] Domestic space seems to be limited at all of these sites, whereas much room is occupied by storage facilities and magazines. At Sai, about one half of the area, the western side of SAV1, is designated as storage area with several rows of magazines; the residential area is restricted to the eastern part with the smaller houses H1–H5 and the so-called governor's palace SAF2.[344]

Together with these buildings, also remains of the New Kingdom enclosure wall were uncovered in SAV1.[345] The remains in the south could be traced on a length of 41.8m and up to a height of 2.4m. To the west, the Pharaonic enclosure wall was overbuilt by the Ottoman fort, while the eastern part of the southern city wall has completely disappeared. The width of the fortification wall in the south is 4.4m and it consisted of mud bricks of the format 40 × 19 × 9cm.[346]

341 Budka 2018a; see also Azim 1975, 100–109; Adenstedt 2016, 57–63.
342 Azim 1975, 98, pl. 4; for new details, see Adenstedt 2016, 35–44.
343 Kemp 1972, 651–653; Morris 2005, 195–197.
344 Adenstedt 2016; Budka 2017b, 49.
345 Azim 1975, 120–122.
346 See Adenstedt 2018.

An opening in the southern side of the enclosure wall can be regarded as one of the city gates. It is 1.68m wide and was closed off by secondary walls at a later date.[347] Compared to the western gate, which can be addressed as the main city gate (see above), this opening was rather simple in its design and Michel Azim addressed it as a so-called water gate.[348] Although this is a likely interpretation and finds parallels in Middle Kingdom fortresses, no direct walkway to the Nile has so far been discovered (see Chapter 2.5).[349]

Other notable features on the southern enclosure wall are the protrusions on its outer side. In Azim's plan, four of these projections are depicted.[350] However, during the recent re-examination by Ingrid Adenstedt, only two of them could be verified, measuring 2.2 × 2.3m and 2.5 × 2.3m respectively.[351]

The small sandstone temple of Sai, Temple A, with a width of *c.* 10m, was situated north of the Ottoman fortress on the eastern side of the New Kingdom town. It finds close parallels at other Egyptian sites of the 18th Dynasty in Nubia (in particular Kumma).[352] Several building phases under the reign of Thutmose III are attested by foundation deposits[353] and a building inscription (S. 1) by viceroy Nehy (see Chapter 6.4.1.2).[354] Some additions were undertaken by viceroy Usersatet during the reign of Amenhotep II (see Chapter 6.4.1.3).[355] Amenhotep III was responsible for the final construction and decoration phase of Temple A[356] which was primarily dedicated to Amun-Ra, but also to 'Horus the Bull, Lord of Ta-Seti'. The identity of 'Horus the Bull, Lord of Ta-Seti' has been a matter of divergent discussion among scholars. Florence Thill argued that this deity is not a local Horus deity as commonly believed, but rather a manifestation of Thutmose III himself.[357] Following this identification, Temple A illustrates a close connection of the temple cult on Sai to kingship and the living ruler.[358] The general invocation of divine royalty and the cult of royal ancestors are evident at Sai from the very beginning of the New Kingdom since two heb-sed statues of Ahmose Nebpehtyra (Khartoum SNM 3828 & 63/4/4) and Amenhotep I (Khartoum 63/4/5) were found on the island (see above, Chapters 1.1 and 1.2).[359] The architectural context in which these royal statues were originally set up is still debated, but a small mud brick chapel, probably a *ḥw.t-kꜣ* in the general temple area, seems as the most likely.[360]

Thanks to a new architectural study by Adenstedt within the framework of AcrossBorders and based on a 3D laser scanning campaign conducted in 2014, the southern sector of the Egyptian town of Sai was recently published as representative Pharaonic architecture in Nubia (Fig. 4).[361] Adenstedt's reassessment of SAV1 is in some aspects relevant for a better understanding of the town layout. Especially significant are the following new observations:[362] a) the area labelled as SAF3 by Azim is not part of the original Pharaonic architecture but of later date (which is significant for the reconstruction of the position of the eastern town enclosure); b) the plan of the storage area SAF5 was clarified including some newly reconstructed magazines; c) a 3D reconstruction of the houses H1–H5 and the governor's residence SAF2 was proposed. Furthermore, the new 3D reconstruction of the bastioned enclosure wall

347 Adenstedt 2016, 25. See also Adenstedt 2018.
348 Azim 1975, 120.
349 See also Budka 2018a, 264.
350 Azim 1975, 98, pl. IV.
351 Adenstedt 2018.
352 See Azim and Carlotti 2012; this temple and especially its decoration programme is currently being prepared for publication by a team of French colleagues, mainly by Jean-François Carlotti and Luc Gabolde.
353 Azim and Carlotti 2012, 39, 45.
354 Davies 2014a, 7–8 with references.
355 Azim and Carlotti 2012, 46–47; Gabolde 2012, 137; Davies 2017a, 145.
356 Azim and Carlotti 2012, 47, pl. XVI-b.
357 Thill 2016, 263–304.
358 Budka 2017d, 34.
359 See Gabolde 2012, 118–126; Budka and Doyen 2013, 170, with further references.
360 Budka 2015b, 76–80; 2017c.
361 See Adenstedt 2016.
362 Adenstedt 2016, 69–70.

allows fresh thoughts on Sai as a fortified town. This 3D reconstruction is, however, mainly based on comparative studies and still raises some questions.[363]

3.1.2 Northern sector (SAV1 North)

From 2008–2012, fieldwork was conducted by the Sai Island Archaeological Mission (SIAM) of Lille 3 along the northern enclosure wall, at a site named SAV1 North.[364] Several building phases from the early 18th Dynasty to Ramesside times and post-New Kingdom eras were documented.[365] The earliest strata at SAV1 North (Levels 5 and 4), which would be essential for identifying the founder of the town, are only scarce architectural remains and some occupational deposits. The initial sequence of Egyptian occupation on Sai is, therefore, hard to reconstruct in this area and mostly relies on the ceramic evidence which attests to an Egyptian presence already during the reigns of Ahmose Nebpehtyra and Amenhotep I.[366] Most important at SAV1 North was the discovery of remains of the enclosure wall at a length of 39.32m, being 4.26m thick and attributed to Level 3. No gate was discovered in this part of the town wall. Similar to what was documented by Azim at the southern part of the town wall, a protrusion was situated on the outer side of the northern wall, measuring 2.6 × 2.2m. It is a tower-like structure of the same type and proportion as the ones on the south side.[367] Thanks to stratigraphic evidence and the pottery, the northern enclosure at SAV1 North could be dated to the second half of the long reign of Thutmose III.[368]

Interestingly, the architectural remains in sector SAV1 North adjacent to the town wall do not correspond to the general town planning visible in the southern sector.[369] The structures are markedly different, but find close parallels in the new excavation area SAV1 West (see below). The building units at SAV1 North include typical Egyptian tripartite houses, considerably smaller than the houses in SAV1, but similar to houses in Middle Kingdom Nubian fortresses (e.g. at Uronarti and Buhen).[370] Other building units at SAV1 North do not find close parallels within Egyptian orthogonal settlements, distinct in both size and ground plan from the houses in SAV1. Thus, SAV1 North nicely illustrates that within the town of Sai there are several different sectors that contrast regarding their layout and presumably also concerning their function (see also below).[371]

3.1.3 Excavation and documentation techniques

In the frame of the fieldwork of the AcrossBorders project on Sai Island, a new form of documentation system was established and developed.[372] It is based on a geodetical survey by a total station and image-based 3D modelling via the "Structure from Motion" (SfM) principle.[373] Thereby, the stratigraphical excavations of various areas in the Pharaonic settlement as well as their environment were recorded in 3D.

Fieldwork of AcrossBorders on Sai with relevant 3D field documentation was conducted from 2014–2017 during the winter months January to March by an international team of archaeologists with the help of local workmen (see Chapter 3.8).[374] The applied documentation system is a GIS-based system for the documentation of stratigraphical excavations which has been developed at the University of Vi-

363 See Adenstedt 2018.
364 See, most recently, Budka 2017e.
365 Doyen 2009, 17–20; Budka and Doyen 2013, 168–171; Doyen 2014, 367–375; Budka 2017d.
366 Budka 2016a.
367 Budka and Doyen 2013, 178; Doyen 2017, 29–31; see also Adenstedt 2018.
368 Budka and Doyen 2013, 168–171; see also Adenstedt 2018.
369 Budka 2017f, 171–175.
370 Budka 2017a, 22.
371 Budka 2017f, 176–177.
372 Fera and Budka 2016; Fera and Geiger 2018. Note that this documentation technique was not applied in the first season of AcrossBorders in 2013 (see below, Chapter 3.2.1).
373 Cf. Dell'Unto 2014.
374 In 2013, no SfM application was applied during the fieldwork on Sai, but traditional mapping and drawing; see also Plans 1–3.

enna since 2000.[375] The stratigraphical unit (SU) is the fundamental entity of this conceptual model: SUs were constantly differentiated and documented during the excavation.[376] The big advantage of removing SUs in the reversed order of their deposition is that the three-dimensional volume of the complete data set of the excavation site is recorded. The uncovered surfaces and contours of each individual SU are documented in this single surface excavation approach.[377]

The stratigraphical excavations at SAV1 East and SAV1 West were conducted starting at the daily surface through a sequence of digital surface models and orthophotographs. The single stratigraphical units (SU) were documented by their uncovered top surface (TS) as well as their bottom surface (BS) by a bundle of *c*. 70–100 photos. After removing a stratigraphical unit, the whole area of the current excavation was photographed to catch the surfaces of the following SUs in their context.[378]

This work flow opened the possibility to search for the sometimes hardly definable outlines of the next SU by actively looking for transient areas, helping a lot for clarifying complex stratigraphical relations. The geometry of the SU was drawn analogously on the prepared topical paper plan in a 1:50 scale.[379] By doing this, the extent and volume of the deposit could be adapted during removal of the material. In many cases, structures were clearly visible so that it was not necessary to survey them by total station. By digitising the hand drawings and projecting them onto the surface models, a sufficiently accurate 3D documentation was received. In special cases, such as SUs with a very low thickness or surfaces with special functions (feature interfaces), the total station was, however, still used.

For geo-referencing the models, control points were set up on stable structures (walls, floor horizons, etc.) in the trenches. They were installed permanently and used during the whole period of excavation, as far as possible. To guarantee their stability, they were checked by regular control measurement surveys.

In addition to the digital documentation, all architectural remains were also drawn by hand in the field (see Figs. 13–14, 17–18, 21, 23, 32–33, 37). Therefore, the whole excavation area at both sites was recorded and a basic plan was created based on elevation models, slope shade models and orthophotographs in a 1:50 or, for details, 1:20 scale. This basic plan with already correctly located and oriented features in the wanted scale allowed to significantly reduce the measuring-technical expenditure and to focus on the interpretative mapping and illustration of the findings (see, e.g., Fig. 37 compared to Fig. 36).

Within the single surface excavation approach by AcrossBorders, one must once more stress the effects of the destruction by *marog* diggers mentioned by Vercoutter[380] which were present both at SAV1 East and SAV1 West and resulted in a partly 'reversed stratigraphy' because of deep robbers' pits.

Within the framework of the AcrossBorders' excavation on Sai, a group of related contexts was labelled with the term "Feature". Following Tassie and Owens, "a feature can be the product of a number of actions that have occurred over a short or long period of time."[381] The most common multiple contexts on Sai were pits, walls, floors and installations (see Chapters 3.2.4 and 3.3.4).[382] Features were numbered consecutively at SAV1 East (1–91) and started from 100 at SAV1 West (100–103, 110–126, 130–162).

3.2 Sector SAV1 East

Aiming to achieve a more complete understanding of the layout of the 18th Dynasty occupation at Sai, a new excavation area was opened in 2013 at a sector labelled as SAV1 East, being located 30–50m north of Temple A at the eastern edge of the town (Fig. 3). The squares are located where the outline of an

375 Fera and Budka 2016; Fera and Geiger 2018 with references.
376 SUs represent deposits and all sorts of sedimentary accumulations; see Tassie and Owens 2010, 4.
377 See Tassie and Owens 2010, 5–9; Tassie 2015.
378 See Fera and Budka 2016; Fera and Geiger 2018 with references.
379 See Fera and Geiger 2018, 129, fig. 1.
380 Vercoutter 1958, 154.
381 Tassie and Owens 2010, 6.
382 See Budka 2017c; Budka 2018b.

orthogonal building was visible on the geophysical survey map from 2011.[383] This structure seemed to be aligned with Temple A and the main north-south street, following the orientation of the buildings in the southern part of the town (SAV1) and thus suggesting a 18th Dynasty date.[384] Fieldwork in SAV1 East was conducted from 2013 to 2017, opening four different squares with various extensions (Fig. 5). The area provided essential new information on the city map of Sai and in particular regarding the evolution of the New Kingdom town.

3.2.1 Progress of excavation

In the following, an overview of excavations at SAV1 East in AcrossBorders seasons 2013, 2014, 2015, 2016 and 2017 is provided in chronological order.

Season 2013

Based on the results from the geophysical survey conducted in 2011, a new excavation area at the eastern edge of the New Kingdom town was opened. The main aim was to investigate the orthogonal structure visible on the magnetometric survey map by means of excavation. The second objective of fieldwork at SAV1 East was testing whether any conclusions can be drawn from adjoining features to the zone excavated around Temple A. This was of particular interest for the AcrossBorders project because between Temple A and the new site early occupation remains with simple, workshop-like structures and storage facilities had been excavated in the 1970s.[385] Azim was able to show that these occupation remains are pre-Thutmose III in date. It was, however, prior to the investigation at SAV1 East unclear how early the remains really are and whether they actually represent Kerma remains as proposed by Azim.[386]

Preceding the excavation, the surface was covered with pottery sherds, pebbles, stone tools and some slag (Pl. 38). The ground was uneven and in general sloping towards the east. Two squares of 10 × 10m were completely excavated in the 2013 season (Squares 1 and 2) as well as a northern extension (2 × 10m, Square 1A), an eastern extension (2.5 × 6m, Square 2A) and a southern extension (2 × 10m, Square 2B). The excavation work will be presented from north to south, starting with the findings in the northern sector. In Square 1A, Square 1, Square 2 and Square 2A mud brick remains were uncovered which all belong to one structure and confirm the image derived from the magnetometric survey results. This major building at SAV1 East was labelled as "Building A" (see Chapter 3.2.2).[387]

Very soon below the surface in the mentioned squares of SAV1 East, linear outlines filled with sand were found – it quickly became clear that these are the negative outlines of the building visible on the geophysical survey map. The original brickwork was largely completely destroyed and taken out; the material covering these remains was predominantly a sandy mix of debris containing ceramics from the 18th Dynasty, the medieval period and also some Ottoman sherds. The alignment of the former walls was confirmed by the remains of foundation trenches which were documented in some places. The foundation trenches of the walls of Building A were filled with loose gravel material and scattered mud bricks which were thrown into the trench and not laid properly.[388]

The best-preserved parts of Building A are located in the northeastern corner of SAV1 East. The northern wall (Features 13 and 21) runs roughly from east to west and extends beyond the eastern wall (Feature 3) towards the Nile (Feature 30). Unfortunately, the corner between the walls Features 3 and 30 is heavily disturbed by a later pit, probably dug in medieval or Ottoman times. Despite this disturbance, three layers of brick have remained in place (Fig. 6; Plan 1). The bricks all belong to the foundation of the wall and included an undisturbed foundation trench. A painted rim sherd of a pottery vessel found

383 See Crabb and Hay 2011.
384 Budka 2013a, 80–81.
385 Azim and Carlotti 2012.
386 Azim and Carlotti 2012, 34–36.
387 See Budka 2013a; Budka 2015a; Budka 2015d, 62–63; Budka 2017b.
388 Budka 2015d, 62.

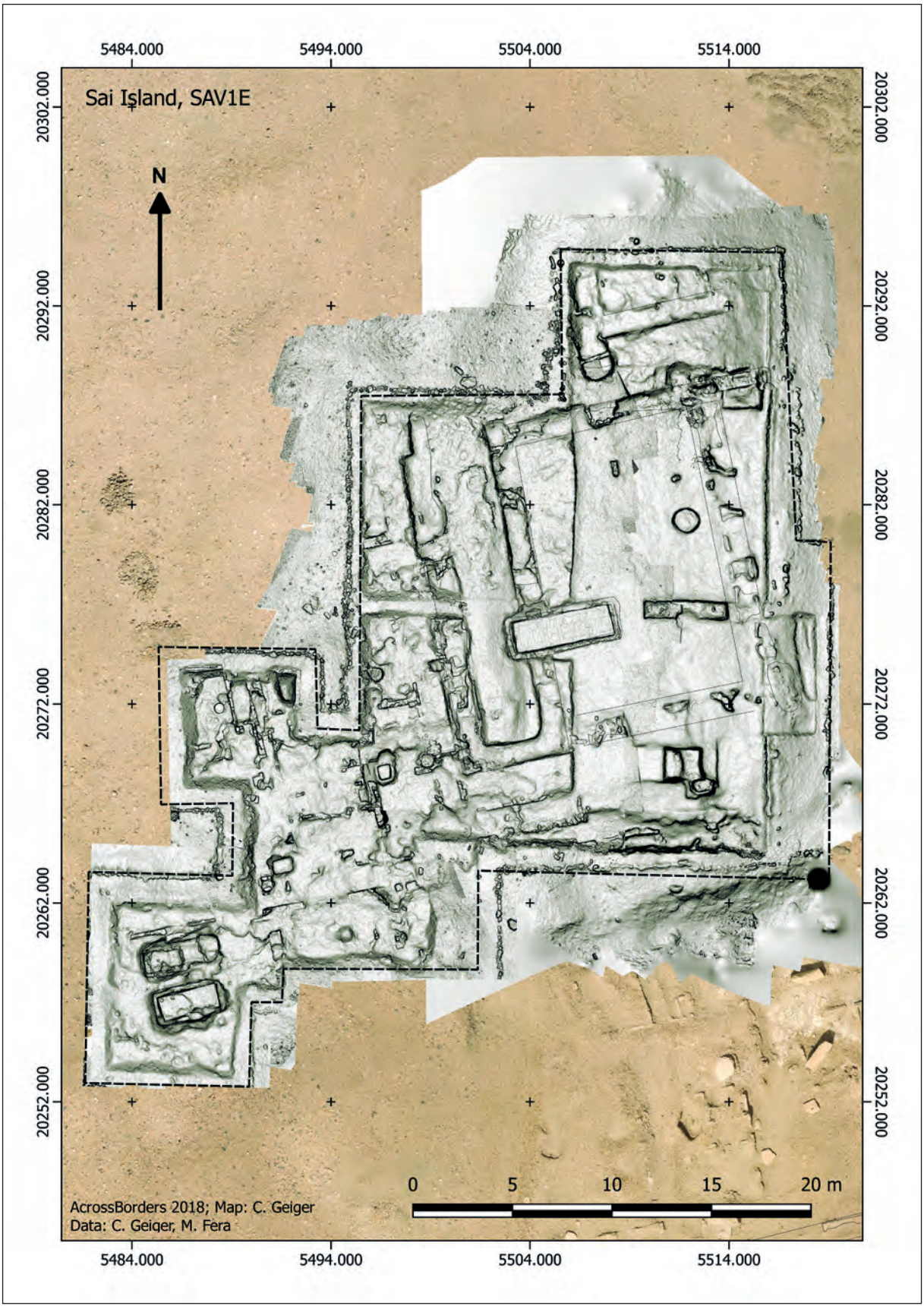

Fig. 5 Excavation squares at sector SAV1 East, all seasons

Fig. 6 Sector SAV1 East, excavated sectors and features, Season 2013

in this foundation trench of Feature 30 (Pl. 39) provided an important dating indication for the building: mid-18th Dynasty, not earlier than Thutmose III (see below).[389]

The northern wall of the main area exposed of Building A in 2013 is only 75cm wide (Features 13 and 21), whereas the eastern wall (Feature 3) is more solid with a thickness of 106cm, thus fitting nicely to a measurement of two Egyptian cubits. The southern wall (Feature 16) is very badly damaged and has almost disappeared – its foundation trench was exposed in some parts, adjacent to the negative outline of the wall (Fig. 6). Close to the southeastern corner, a layer of bricks was still in place and confirmed the same width as the northern wall – 75cm, representing a two bricks thick wall (built with two stretchers or with two headers and one stretcher in between respectively).

North of the northern wall of Building A, Features 13 and 21, the remains of a coated floor surface were discovered immediately underneath the modern surface in Square 1A (Feature 22). This floor clearly belongs to Building A, attesting a roofed area towards the north of Wall Feature 13 and of the presumed courtyard encompassed by Wall Features 13/30, 3 and 16. Unfortunately, Feature 22 is partly cut by a later pit (Feature 29) and is destroyed in most areas. Feature 29 disappeared into the northern baulk/end of Square 1A and was not fully excavated in 2013 (see below, 2014).

Circular features within the proposed court formed by the outer walls of Building A (Features 13/30, 3 and 16) were visible on the geophysical map. They also showed up in reality: three circular pits were discovered along Wall Feature 3, filled with sandy material and with differing measurements (Features 5, 6 and 17, Pl. 40). They are more or less in line with each other but have irregular intervals between them and are of diverse sizes. The largest one is the storage pit Feature 6 (1.25 × 1.35m, with a depth of 0.45m cut into the gravel). It was found filled with mixed material, including Thutmoside ceramics, but also Ottoman pottery and possibly even more recent material, suggesting a sub-recent disturbance. Feature 17 was discovered within the baulk between Square 1 and Square 2. The baulk was consequently removed, exposing a roughly circular feature (1.45 × 1.25m) cut into the surrounding pebble layer (Feature 4, see Chapter 3.2.4). This pit is thus very similar to Feature 6. Slightly different was Feature 5, located a bit to the north of Feature 6 in Square 1. This feature appeared as an egg-shaped form in Planum 1, measuring 1.10 × 0.85m. It was filled with material from the surface layer Feature 1 and some broken mud bricks were visible on the surface in its southern edge. These bricks of fragmented preservation included burnt mud brick pieces. Like the other pits, Feature 5 was cut into the gravel deposit, but this depression disappeared in Planum 2, leaving only the pile of mud bricks as evidence (see Plan 1).

Opposite of Feature 17, and thus on the other side of the courtyard of Building A, a peculiar structure turned up in the northwestern corner of Square 2, extending into the baulk of the square (Fig. 6). It was recorded as rectangular, only partially exposed Feature 15 which exhibited red bricks as building material. Because of the debris material covering the structure, its cutting into the gravel and especially the presumed red bricks, Feature 15 was thought to be of Post-New Kingdom origin (see below, 2014).

In Square 2, the area south of Feature 16, the southern wall encompassing the courtyard of Building A, was dominated by a large gravel deposit. It was decided to cut through this deposit in order to verify its natural or anthropogenic origin (see Plan 1). Making a trench through the presumed natural gravel deposit in the southeastern corner of Square 2, a small plaster coated installation set directly against the gravel was discovered (Feature 14; Fig. 7 and Pl. 41). Feature 14 still held two complete pottery vessels in situ (Fig. 8), allowing a dating to the early 18th Dynasty rather than the Second Intermediate Period.[390] This storage installation is comparable to the silos and installations excavated by Azim around Temple A. Thus, it was already confirmed in the first season of AcrossBorders that the southernmost part of SAV1 East can be interpreted as the continuation of the early 18th Dynasty occupation around Temple A. Within Feature 14 and its surroundings several fragments of Kerma vessels in the local Nubian tradition were found, but the associated Egyptian material allows a close dating of these Kerma sherds to the early 18th Dynasty up to Thutmose III. Consequently, it must be stressed that there is no evidence for a pre-18th Dynasty occupation at SAV1 East: there is no Kerma level predating the Egyptian occupation

[389] See Budka 2017g, 434, fig. 7.

[390] Budka 2013a, 82; Budka 2017g, 433, figs. 4–5.

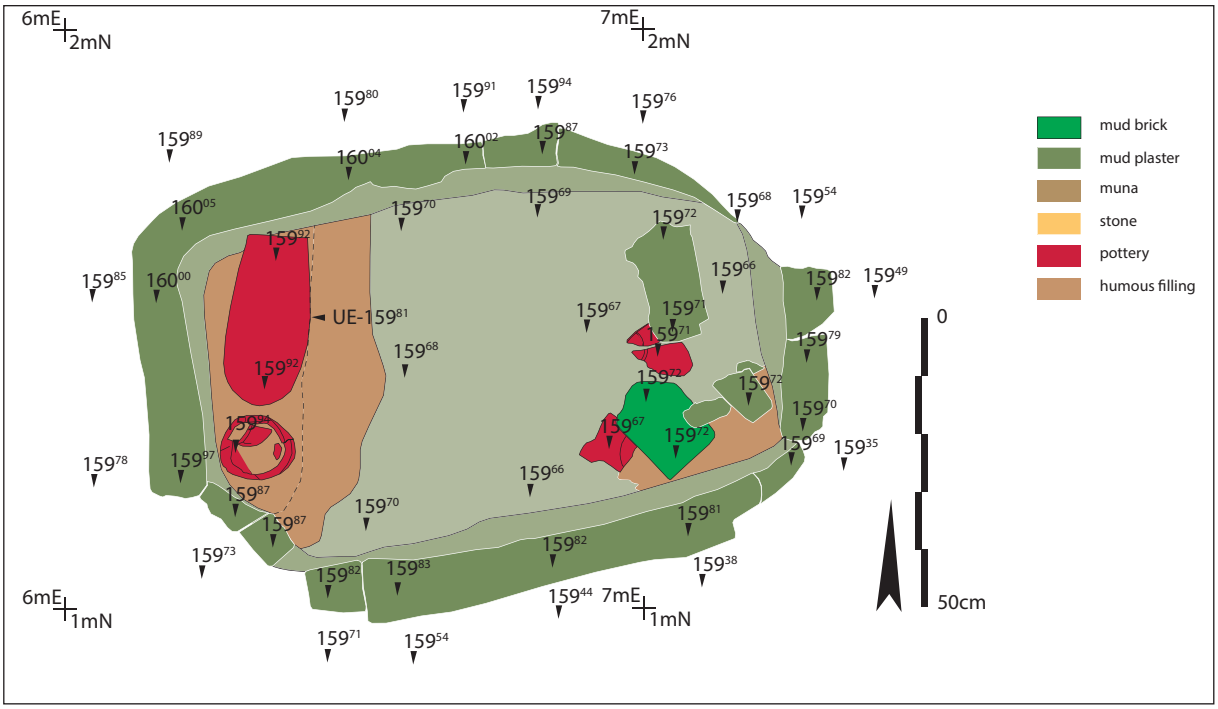

Fig. 7 Plan of Feature 14 with in situ vessels

in this area of the Pharaonic town. As at sector SAV1 North, the earliest remains in the exposed parts of the town date back to the time span of Ahmose II up to Thutmose I (see Chapter 3.2.3).[391]

The material to the south of Feature 14 in Square 2B was characterised by mud brick debris and mixed pottery, also comprising a lot of material of the 18th Dynasty. Between fallen and collapsed mud bricks (see Plan 1), a small basket was found in Feature 27 (Fig. 9, Pl. 42). This basket, with a diameter of *c.* 30cm, can be well dated to Post-New Kingdom times as its sewn-plaits technique is unknown for Pharaonic basketry, but is especially common in Nubia until nowadays.[392] A medieval to sub-recent date for the basket from SAV1 East seems, therefore, likely, and an Ottoman date (16th century AD) would fit well, especially considering the substantial amounts of pottery from this period associated with Feature 27.[393]

In the remaining eastern part of Square 2B, which is marked by a sharp sloping of the ground towards the south, several circular, sandy pits were observed between the dense settlement debris with numerous mud bricks, containing mixed material (Features 24, 25 and 26). Feature 26 (Plan 1) showed a lot of ashy remains and some charcoal at its base – it is possible that this feature attests the use of ovens at SAV1 East. Feature 28 is the foundation for a structure set against the sloping gravel at SAV1 East, using both stones and mud bricks for its foundation. Its date was still unclear in 2013 (see below, 2016).

A total of 33 features were exposed and described at SAV1 East in 2013 of which 18 can be dated to the 18th Dynasty (see Chapter 3.2.4). All in all, the area was strongly affected by activities in the medieval, Ottoman and sub-recent times. Pharaonic building material was hacked away and stratigraphical information is mostly lost due to the disturbance and Post-New Kingdom pits and holes. This becomes especially obvious in the section drawings of the site (Plans 1 and 2). Furthermore, the east-west section, in this case the south section drawing of Square 2A, nicely illustrates the sloping character of SAV1 East. The scarce remains were obviously affected by the topography and were built in terraces. For these terraces artificial gravel deposits were used, very comparable to the findings within the foundation parts

391 See Budka 2016a.

392 See Wendrich 2000, 261.

393 It is also possible that this basket is more recent; maybe it belonged to the workmen of the French excavations under Azim just next to the southern border of SAV1 East (see Chapter 1.2).

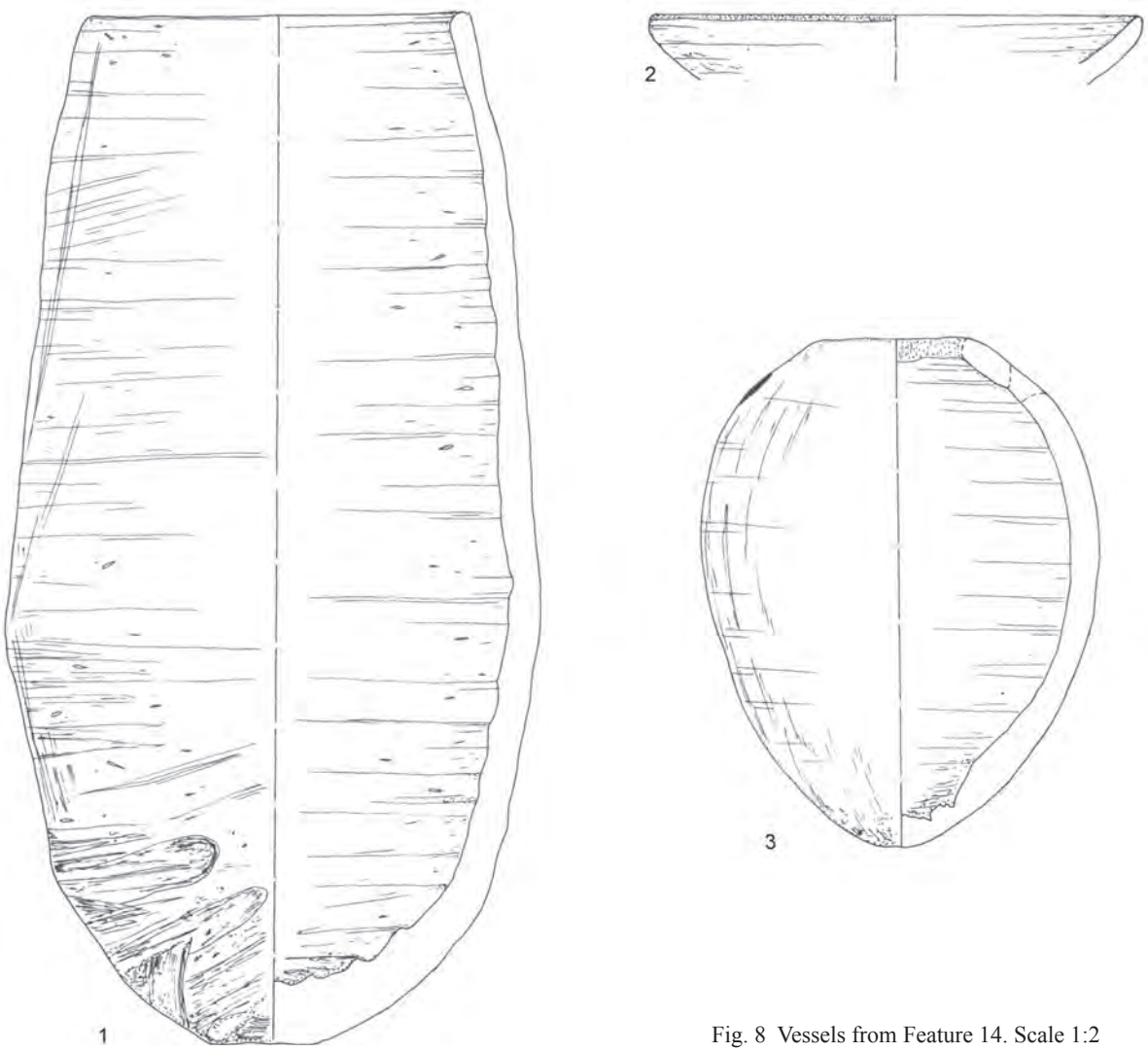

Fig. 8 Vessels from Feature 14. Scale 1:2

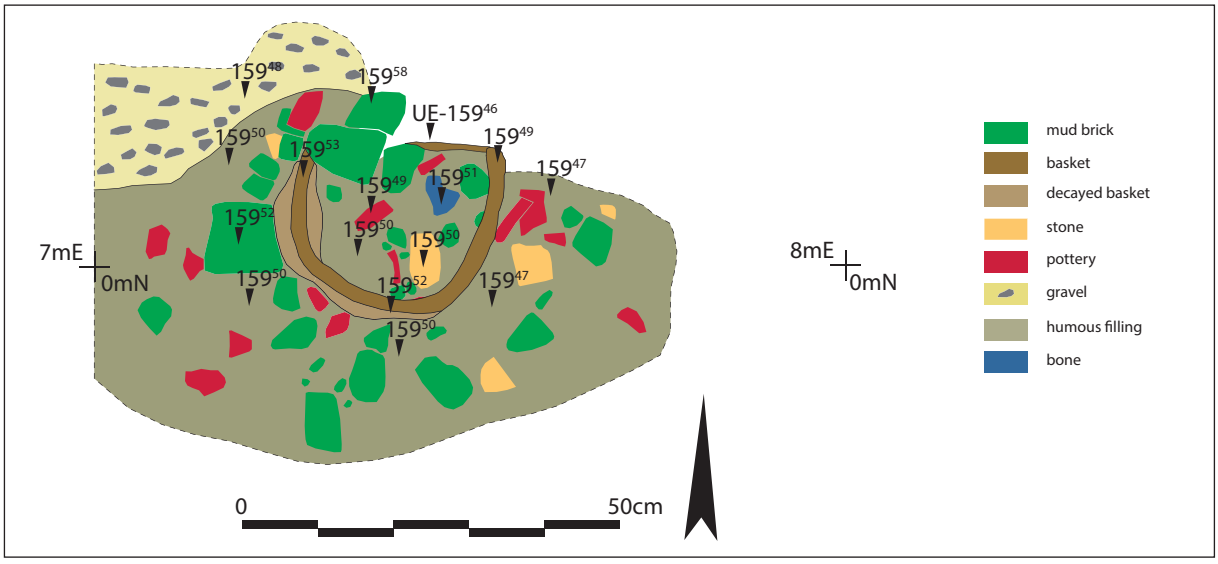

Fig. 9 Basket in Feature 27

of Temple A and thus suggestive of a 18th Dynasty date.[394] In 2013, only the upper part of Feature 15 was exposed and thought to be of Post-New Kingdom date (see below). The most important discovery in 2013 was the tracing of Building A, attested generally as negative walls and only partially exposed, specifying clear priorities for excavations in the next season.

Season 2014

Based on the results from the 2013 season, a northern extension (5 × 10m = Square 1B) and two 10 × 10m (Squares 3 and 4) plus one 2 × 10m (Square 4A) western extensions were added to the first two squares at SAV1 East, aiming at understanding Building A better by exposing more of this 18th Dynasty building and its fragmented walls. The documentation technique was modified compared to 2013 and as at SAV1 West the Structure from Motion documentation was introduced (Figs. 10–11).

Similar to Squares 1 and 2, prior to excavation, the surface of the new excavation units was covered with pottery sherds, pebbles, stone tools and some slag. Because of the sloping ground towards the east, the western squares are situated on a higher level than the eastern area excavated in 2013. Immediately

Fig. 10 Sector SAV1 East, excavated sectors, Season 2014

394 Cf. Azim and Carlotti 2012, pl. VII.

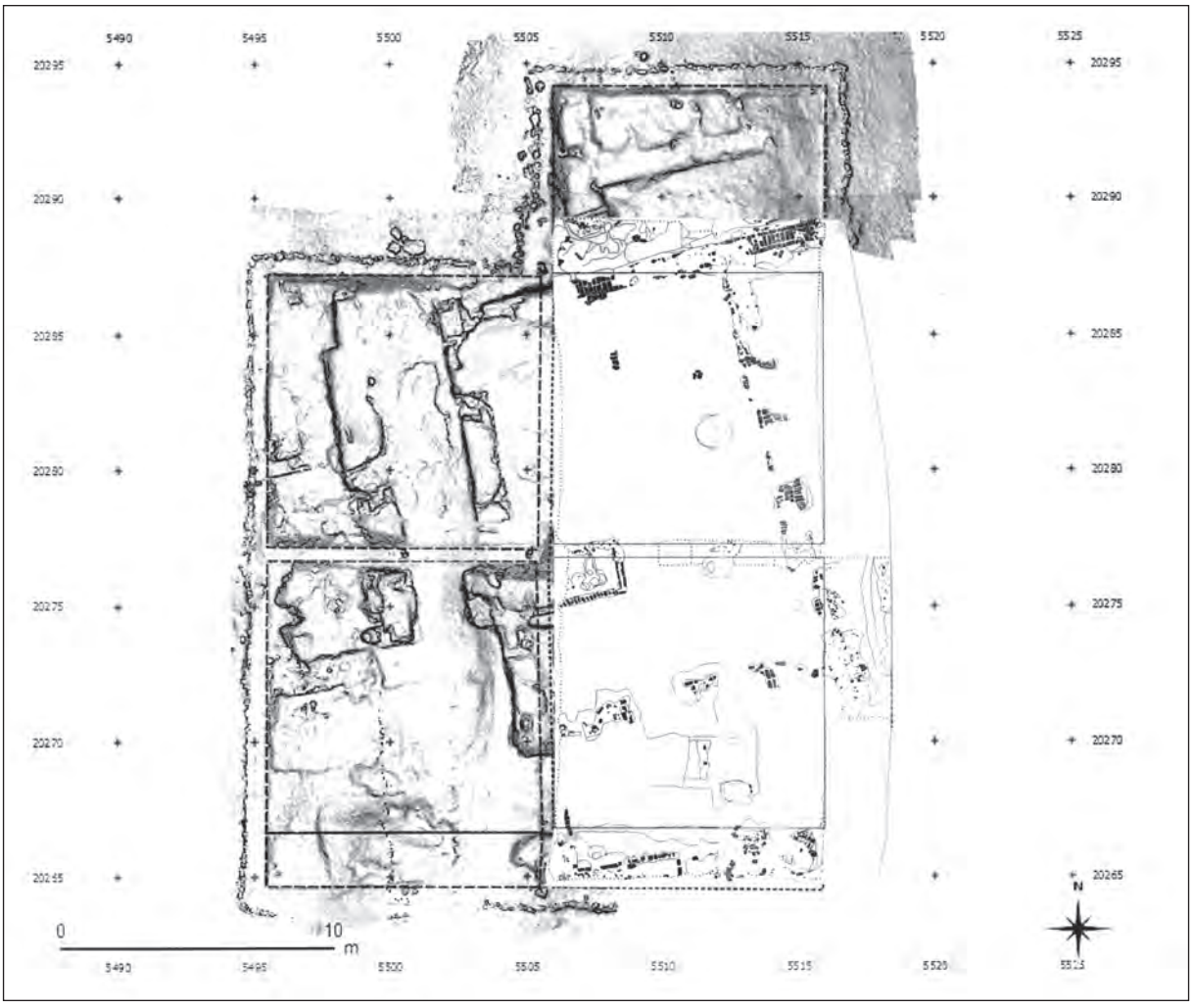

Fig. 11 Plans of excavated sectors at SAV1 East, Seasons 2013 and 2014 combined

below the surface a destruction layer with mud brick fragments, charcoal, pottery and worked stones was detected. This layer varied in its thickness; along the western edge of Square 3 it was only between 5–10cm thick, while in other places more than 20cm of the same material was found.

The progress of the excavation work is again presented from north to south. Square 1B (5 × 10m), a direct northern extension of Square 1A, was partly excavated in order to check the northern area of Building A. Despite of the Post-Pharaonic pitting, substantial remains datable to the 18th Dynasty were exposed. In Square 1B a small, half-brick thick wall (Feature 47) was uncovered at the bottom of a pit dug into the natural gravel (Feature 29 of which the southern part was already exposed in 2013, see above). It seems to be some kind of dividing wall for a storage installation (Fig. 12). Its New Kingdom date remained unclear, however, since it cuts Feature 22 (see Chapter 3.2).

In the centre of Square 1B a negative wall was located (Feature 38) – only the remains of a completely plundered foundation bed have survived. The alignment follows the "northern wall" of Building A in Square 1 (Feature 13/30), suggesting a new part/room of the building, of which Feature 22 exposed in Square 1A could be the pavement. At the western edge of Square 1B some more remaining mud bricks of 18th Dynasty date were found – they once formed a north-south aligned wall (Feature 39), indicating a possible corner of the new room located in this northernmost excavation area of SAV1 East.

Along the northern edge of Square 1B the deposit was very shallow and the surface material very sandy. This part of the site is almost completely destroyed and there are only very limited chances that anything from New Kingdom times has survived in this area. As visible on the plan of the site

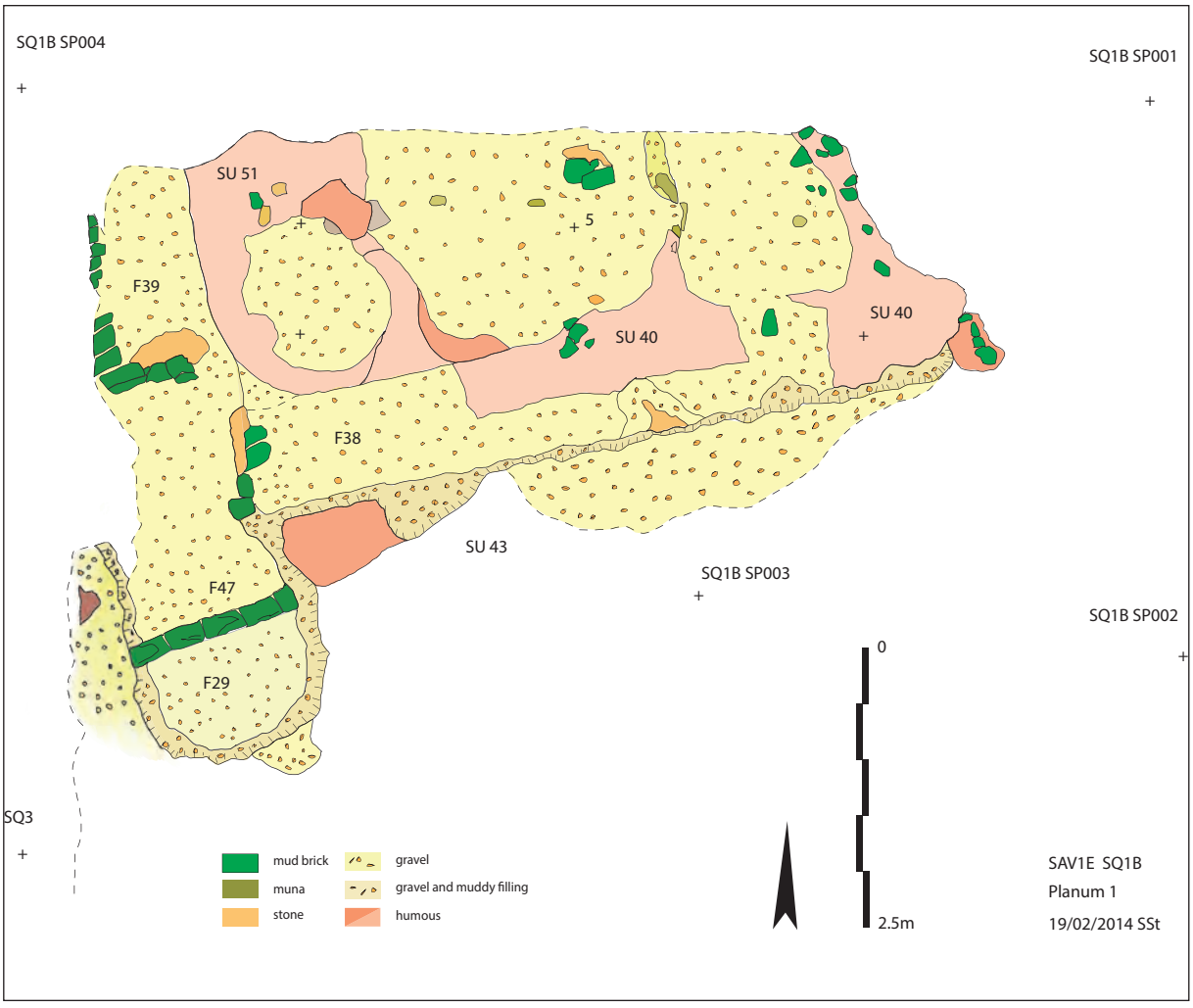

Fig. 12 Square 1B at SAV1 East, Season 2014

(Figs. 10, 12), despite of some small pits and sandy depressions, the remains are actually amorphous and it was decided to focus on areas with more substantial deposits.

The next trench investigated was Square 3 which is parallel to Square 1, located to its west (Fig. 13, Pl. 43). In Square 3, the continuation of Wall 13 was located in the northeastern corner. After approx. 3m this wall joins a north-south aligned one (labelled as Feature 44). This new wall extends towards the north and disappears into the baulk of the square. Towards the south, it was traced as a negative outline and with parts of its foundation trench (Feature 43), running all the way through Square 4 until meeting Wall 16, the southern wall of Building A already exposed in Square 2 in 2013. Wall 16 continued towards the west, into Square 4, and joined a newly exposed north-south wall (Feature 34) in a well-defined corner. The filling of the foundation trenches was not excavated in the southern part of Square 4 in 2014.

Feature 34 and its foundation bed, Feature 33, were partly exposed further towards the west of Squares 3 and 4. They run approximately north-south from Square 3 to Square 4 and are parallel to Feature 44 with its foundation bed, Feature 43 (Fig. 13). Part of a mud floor pavement was still preserved between these walls, connecting these features as once belonging to a single structure, presumably Building A.

Along the western edge of Square 3 several traces of small east-west orientated interior walls were found (e.g. Feature 40, see Fig. 13). The area was also very rich in fragmented schist plates, many of them still covered with plaster/gypsum. It can be proposed that this part of the Building A, probably once the western entrance area, was covered with a schist pavement. This finds good parallels in the southern part of the Pharaonic town where such pavements are attested in large magazines (see below, Chapter 3.2.2).

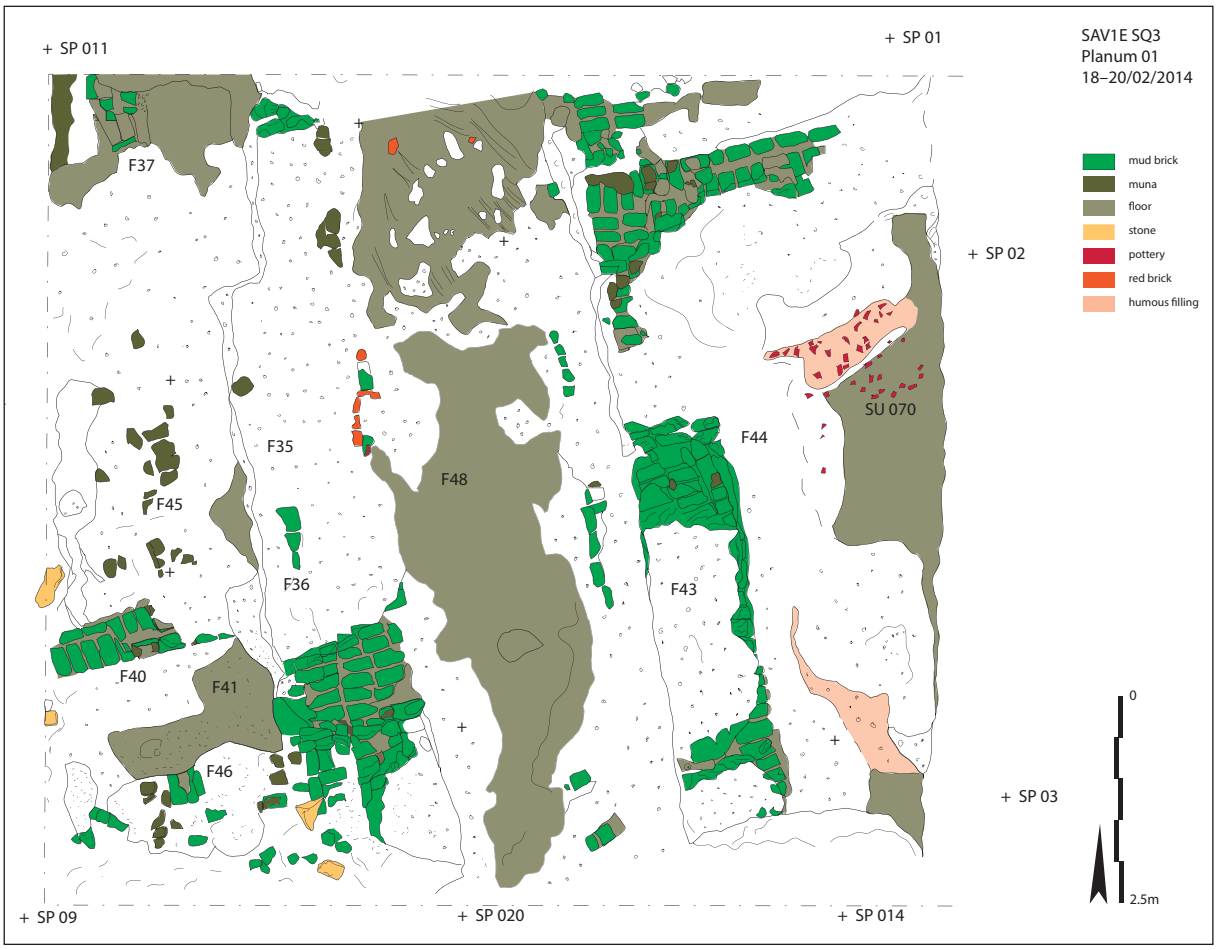

Fig. 13 Square 3 at SAV1 East, Season 2014

Square 4 was not excavated in all its extensions in 2014 (Fig. 14). Its southern part was only cleaned from the uppermost destruction layer. The most interesting find in Square 4 is the western part of Feature 15, originally located in Square 2. Excavated in 2013, the eastern part of this feature was described as an intrusive structure of Post-Pharaonic date and of unclear function (Fig. 11). It is half-brick thick with the inner side lined with red bricks and a plaster coating. The new findings in 2014 changed the picture – Feature 15 has a minimum extension of 5.6m east-west and 2.2m north-south. Its western wall is set against the natural gravel pebble in Square 4 (Fig. 14). In this area a small hole was found directly 20cm above the mud bricks, dug into the gravel. Its diameter is roughly 18cm and it seems to have once held a wooden beam. The southern wall of Feature 15 is preserved to a height of 55cm and the bottom edge has not yet been reached. The complete western part of the structure is still covered with very loose backfill of gravel, mud bricks and ceramics. Interestingly, the ceramics deriving from the newly exposed sections of the walls of Feature 15 are all consistently mid-18th Dynasty in date. All in all, the working hypothesis developed in 2014 was that Feature 15 represents a New Kingdom storage installation of a rectangular shape, with a vaulted roof located below the floor level of Building A (thanks to the findings in Squares 3 and 4). It can be labelled as a cellar and excavation continued in the next season in 2015 (see below). Due to a number of ashy deposits, charcoal and a large number of conical bread moulds, Feature 15 might have been used as bakery or kitchen.[395]

[395] Budka 2014b; see also Budka 2015a, 44–45.

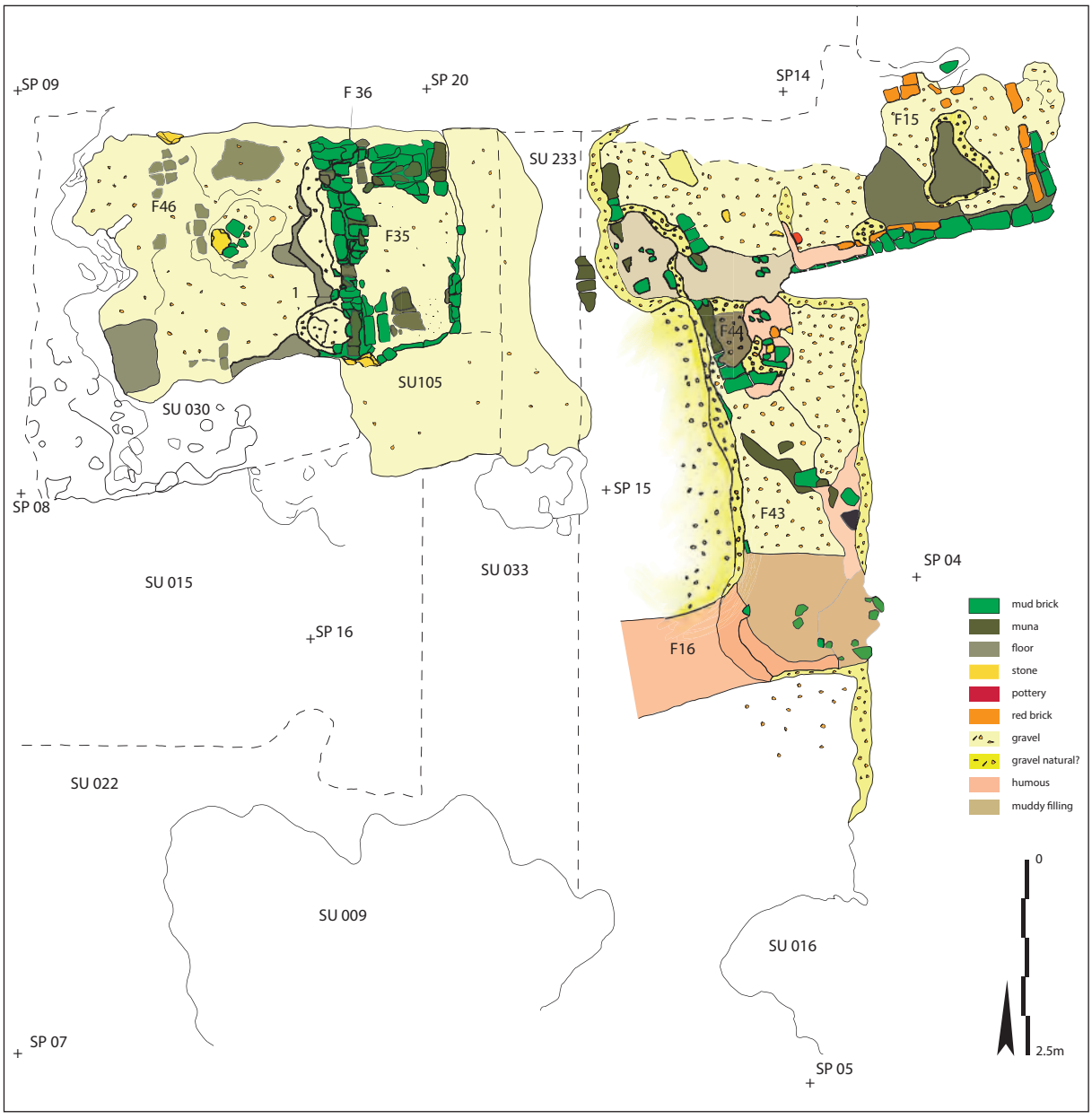

Fig. 14 Square 4 at SAV1 East, Season 2014

As already observed in 2013, there are many Post-Pharaonic pits dug into the area of SAV1 East. Their filling is usually composed of sand, some mud brick debris and mixed ceramics. The filling material suggests a date in Late Christian/medieval times, but also some Ottoman pieces were present. All in all, the destruction layer seems to originate from medieval times; the backfilling of the pits probably happened a bit later.

Season 2015

In 2015 work focused on the western side and the southwestern corner of Building A (Squares 3 and 4) as well as to adjacent southern remains (Square 4 and 4A), which were clearly visible on the geophysical survey map (Fig. 15). The newly excavated upper levels of Squares 4 and 4A were again dominated by a destruction layer with mud brick fragments, charcoal, pottery and worked stones. This layer was up to 40–50cm thick and yielded abundant stone tools, lots of ceramics and other materials. The material is

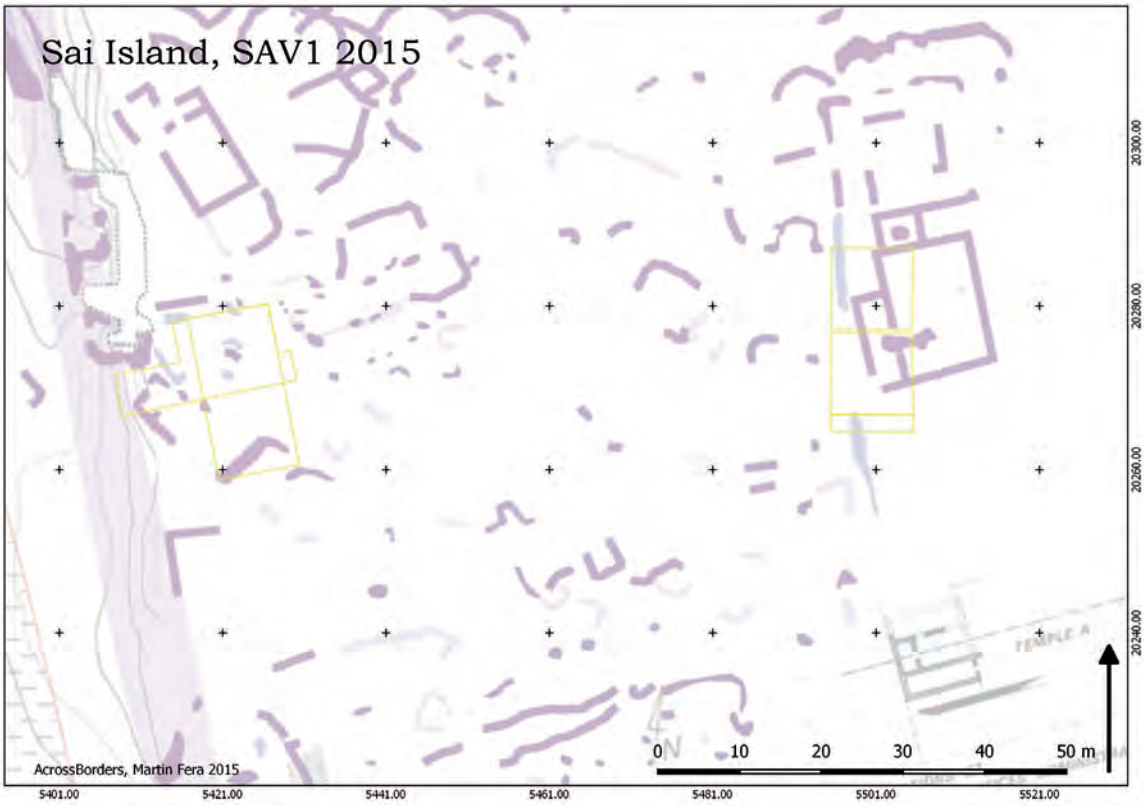

Fig. 15 New Kingdom town of Sai, 2015 excavation areas overlaying the geophysical survey map [with anomalies highlighted in pink]

of a mixed character and the latest finds date to the Ottoman Period (e.g. the wooden furniture fragment or kohl pot stopper SAV1E 1913).[396] A large percentage of 18th Dynasty ceramics indicates that the later destruction sits directly on the Pharaonic remains.

Back in 2014, a north-south wall of Building A was traced in Square 3 as a negative outline: Feature 34 and its foundation bed, Feature 33 run approximately north-south from Square 3 to Square 4, meeting Feature 16, the southern wall of Building A. The not-yet cleaned fillings of the foundation trenches Features 33 and 16 were excavated in 2015. Extensions towards the west were also exposed (Fig. 16).

A total of 13 new features were documented in 2015 in SAV1 East – these comprise sections of walls and pavements of Building A (Features 45–49), remains of an earlier occupation (Features 50–56) and a dry-stone terracing wall (Feature 57). Although the state of preservation is rather poor, a sequence of the walls and floors could be established.

Feature 57 is a dry-stone terracing wall, measuring 5.40 × 0.60m, located in Square 4A and Square 2A (Fig. 16, Pl. 44). Unfortunately, it disappears into the southern baulk of SAV1 East (Square 4A). It runs almost east-west and was set against the natural pebble which is sloping towards the south in this part of the site. Feature 57 is comprised of irregular stones, whereby mainly sandstone fragments were used (various sizes from 20 × 24 × 15cm to 50 × 25 × 20cm). On top of the stones some mud bricks were laid in a row of headers. Only in the western part of Feature 57 two layers are preserved, suggesting the size of the bricks (33 × 15 × 10cm). Because some mud pavements are preserved and connected to the dry-stone wall, the

396 See Griffin and Gundlach 2015a.

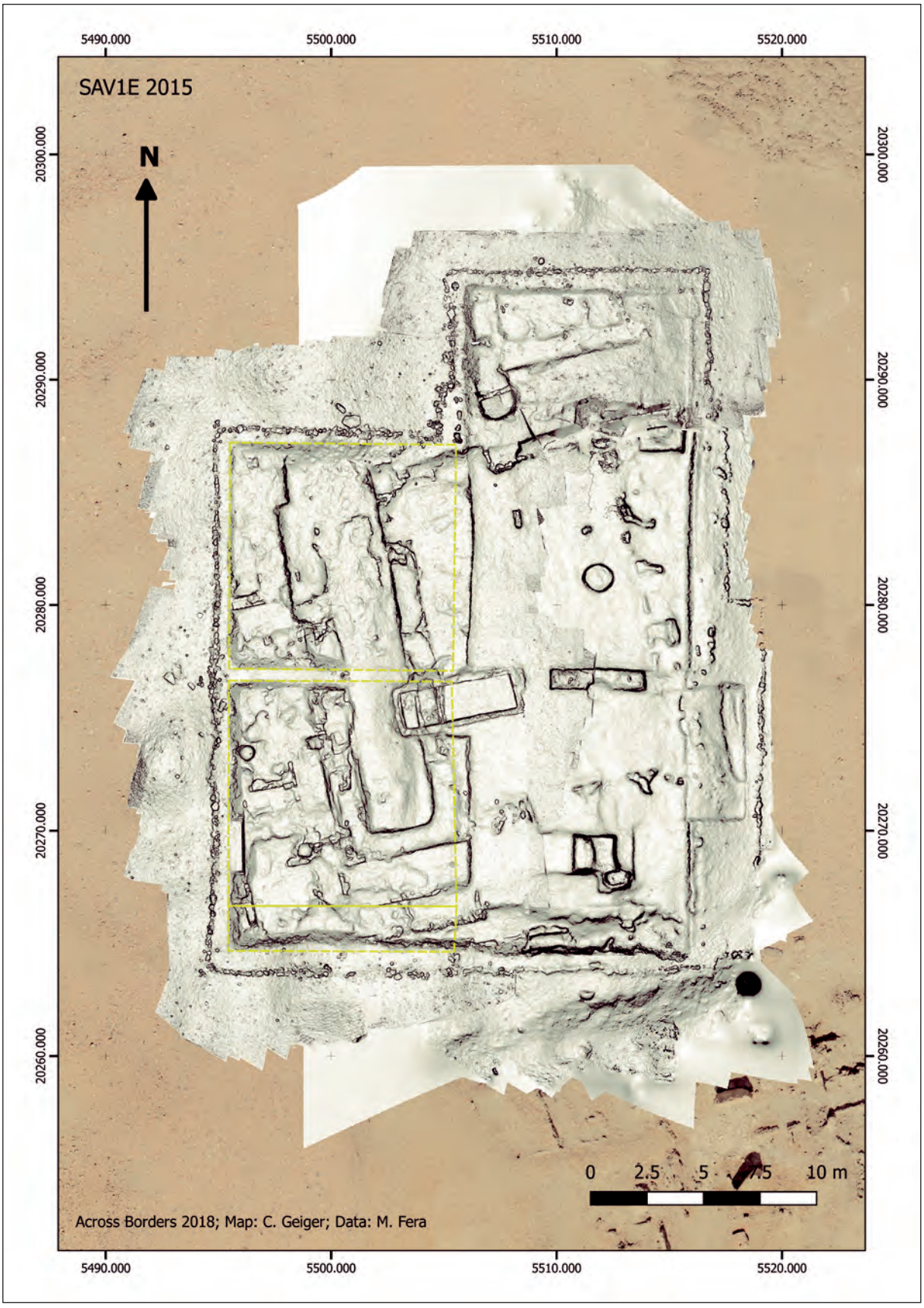

Fig. 16 Sector SAV1 East, excavated sectors, Season 2015

Fig. 17 Squares 4 and 4A at SAV1 East, Season 2015

relative dating of Feature 57 is secure: it is earlier than Building A (see below and Chapter 3.2.3) and thus most probably dates to the early phase of SAV1 East, Ahmose Nebpehtyra up to Thutmose I.[397]

As suspected in 2014, the southern wall of Building A was traced as going further to the west: Feature 49 is definitely set against Feature 34 (excavated in 2014 and joining Feature 16). Interestingly, earlier remains were discovered below this part of the mud brick wall. These early occupation remains, consisting of mud floors and half-brick thick walls (Fig. 17), extend towards the south – they follow the natural slope and are set against the gravel deposit. Thanks to (1) the relation with the well-dated walls of Building A, (2) the pottery and (3) the comparison with both our excavation in 2013 in the eastern part of SAV1 East and Azim's excavation around Temple A, a dating for this occupation phase to the early 18th Dynasty can be proposed (see Chapter 3.2.3).

The most interesting structure in SAV1 East was, however, still the subterranean room, Feature 15. Already partly excavated in 2013 and 2014, it was continued to be exposed in 2015 (5.6m × 2.2m × 1.2m). Dug into the natural gravel deposit, Feature 15 represents a large storage installation of rectangular shape, with a vaulted roof now missing. Its inner part is lined with red bricks and red bricks also form the pavement of the structure. Mud plaster was documented on some of the pavement bricks (Fig. 18). Wall 44 which was originally identified south of Feature 15 in Square 2, was found to have been set into the cellar in its western half (Fig. 17, see also below, Season 2016).

397 Budka 2015d, 61–62.

Fig. 18 Feature 15, status 2015

Due to a number of ashy deposits, large amounts of charcoal, hundreds of doum-palm fruits and abundant animal bones with traces of burning, Feature 15 might have been used as a kitchen or a room for food preparation respectively. More than 80 almost intact vessels (with an approximate minimum number of 150 more vessels) were found in the cellar during the 2015 season – the main pottery types are plates and dishes, beakers, storage jars, *zir* vessels and pot stands, thus supporting a connection with food serving. The most important find in Feature 15 was, however, a large set of seal impressions: more than 200 remains of scarab seals on clay sealings were documented.[398]

Season 2016

Fieldwork in sector SAV1 East continued based on the results from previous seasons.[399] The remains pre-dating Building A in the southern part of the site (Squares 4 and 4A) were investigated in detail, especially to establish an absolute date for them. For this, the excavation trenches were extended towards the south and especially towards the west (Squares 4B, 4B1 and 4C). Square 4B measures 6 × 6m and is located to the west of Squares 4 and 4A. Square 4C stretches 12m east-west along the southern border of Squares 4B and 4A and 6m north-south (Fig. 19). Based on the findings in Square 4B, it was decided at a later stage in the season to extend the excavation area with Square 4B1 (Fig. 20). This square measures 3 × 3m and is the northwestern extension of Square 4B.

In general, the western part of Building A was one of the targets for the 2016 season; furthermore, the excavations of Feature 15 were completed. In 2016 work focused in particular on remains unearthed in the new squares 4B, 4B1 and 4C (Fig. 20). The upper levels of these squares were again dominated by a destruction layer of mud brick fragments, charcoal, slag, pottery and worked stones. This layer was up to 40–50cm thick and yielded abundant stone tools, lots of ceramics and other materials. The material is of a mixed character and the latest finds date to the Ottoman period. The large percentage of 18th Dynasty ceramics indicates that the later destruction sits directly on the Pharaonic remains.

A large sandstone block was found dumped between mud brick debris in the southwestern corner of Square 4C. Adjacent to the east of this block the last remains of a large mud brick wall were unearthed,

398 Feature 15 will be published elsewhere in detail, Budka forthcoming b.
399 See Budka 2015a, 40–53.

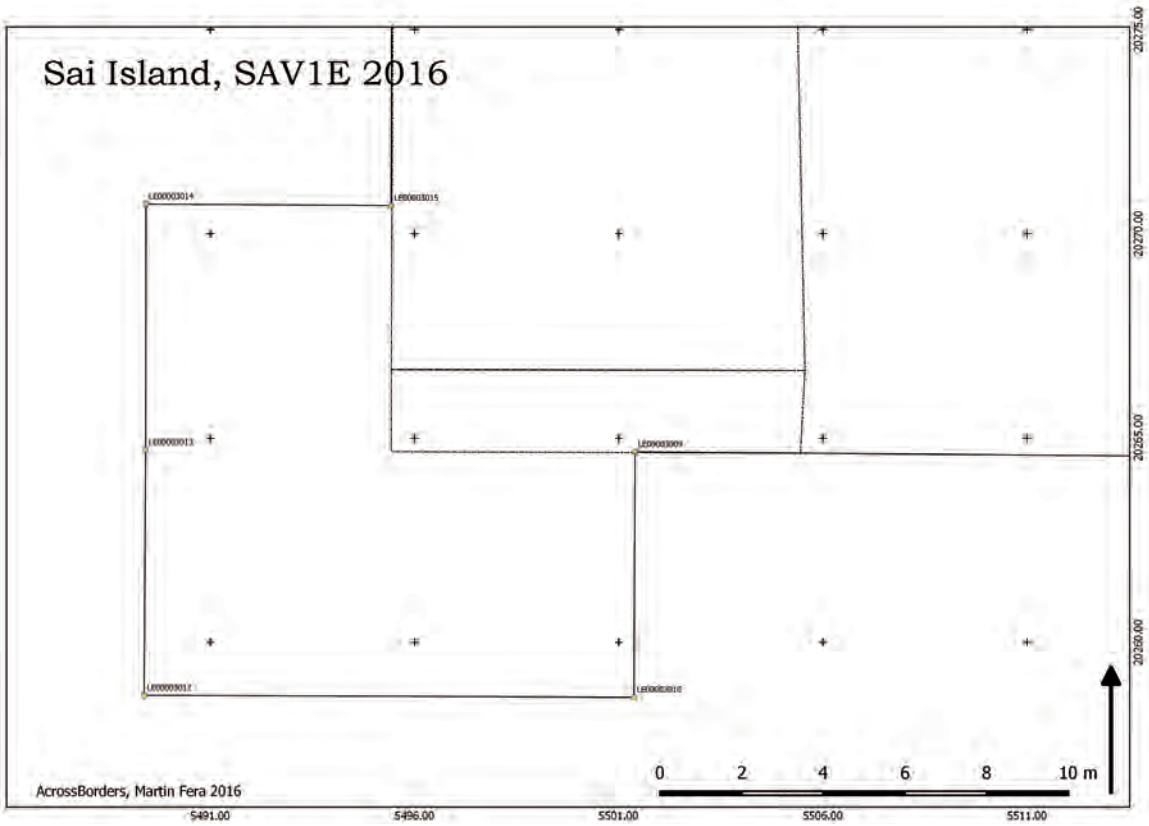

Fig. 19 Location of 2016 trenches at sector SAV1 East 2016 (Squares 4B and 4C)

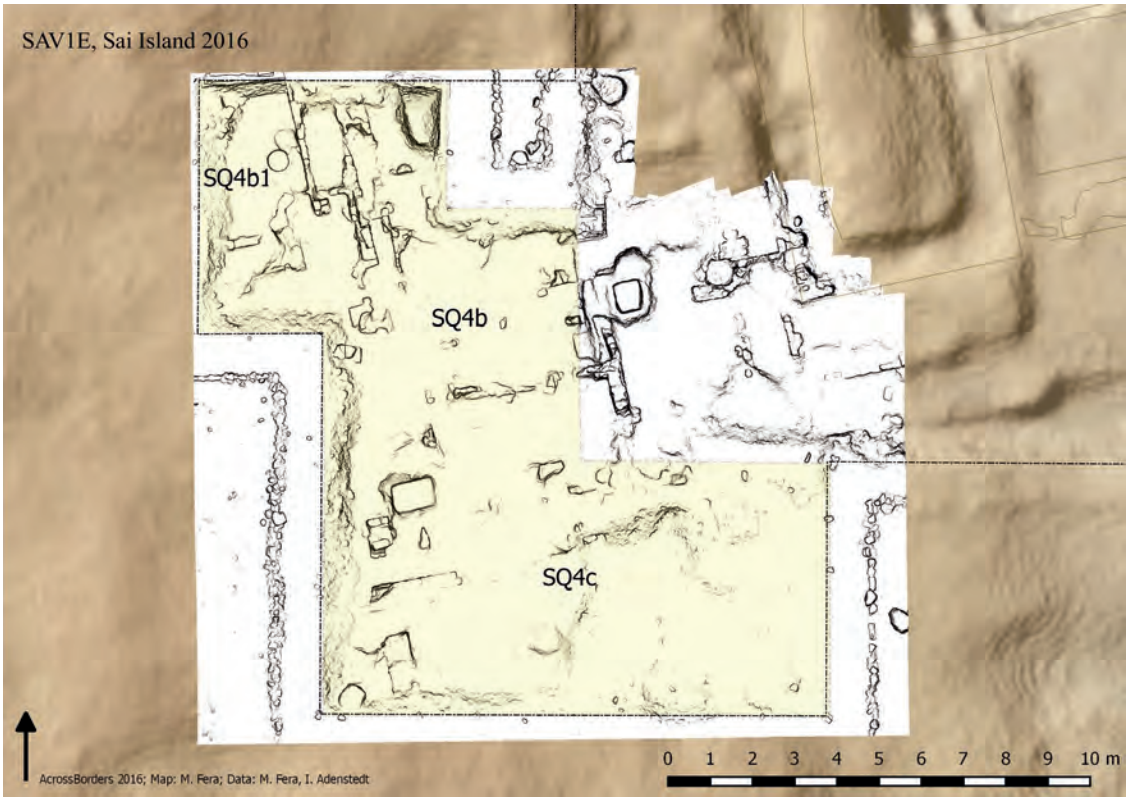

Fig. 20 Sector SAV1 East, excavated remains in Squares 4B, 4B1 and 4C, Season 2016

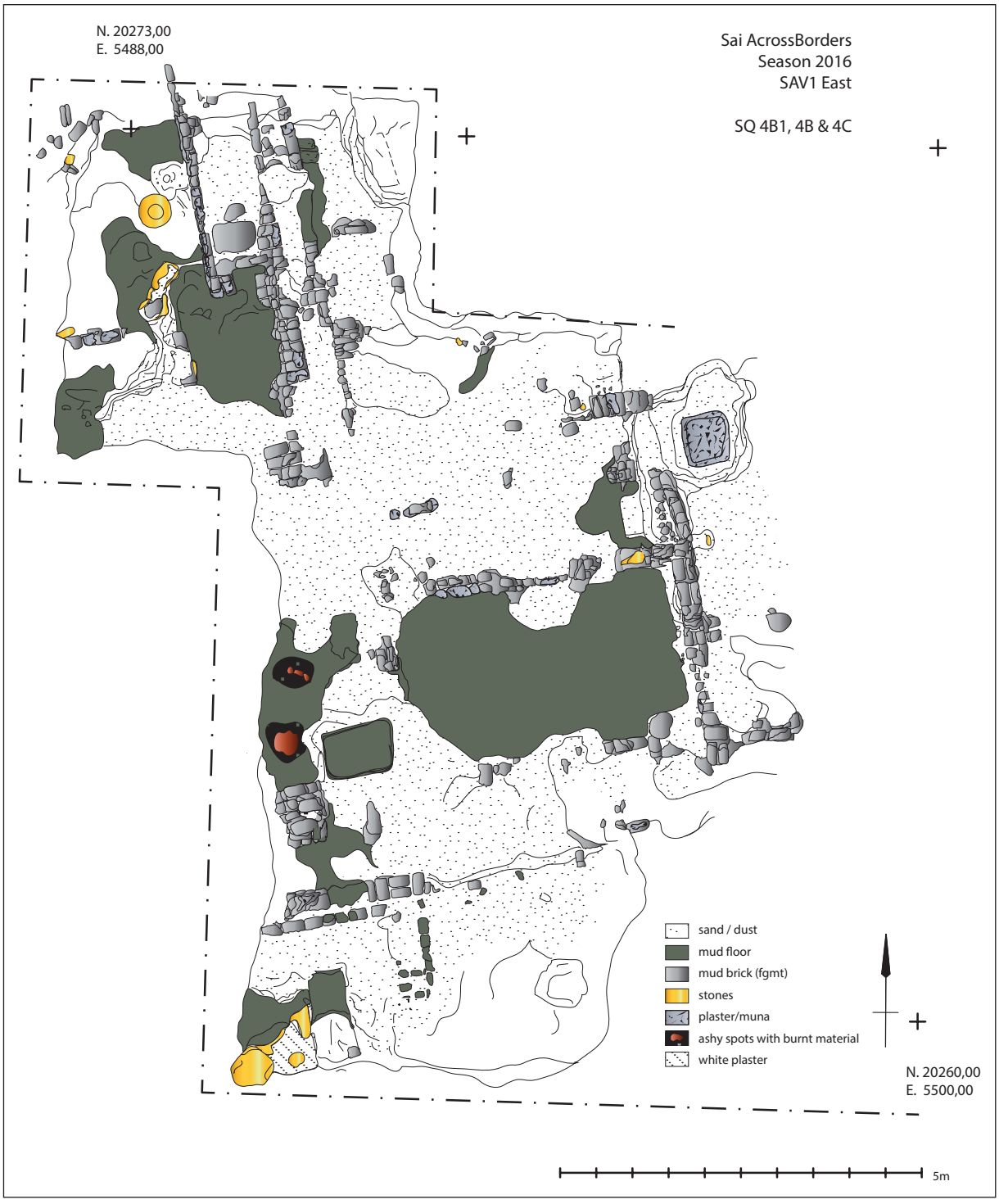

Fig. 21 Plan of sector SAV1 East, excavated remains, Season 2016

running almost north-south and thus with a similar alignment as Building A located further east. Still attached to the small section of this wall was a plate of schist and large quantities of plaster – in situ remains of a large room with a schist pavement (see below, 2017).

This assemblage finds a correspondence in Square 4B1 (Fig. 21): in an area of dense mud brick debris, the still standing remains of a schist floor were unearthed. The schist plate forms an "island" within the square as all four sides were hacked off during later pitting of the area (Pl. 45). The formerly adjoining 18th Dynasty mud brick wall runs again almost north-south. A re-used sandstone column drum

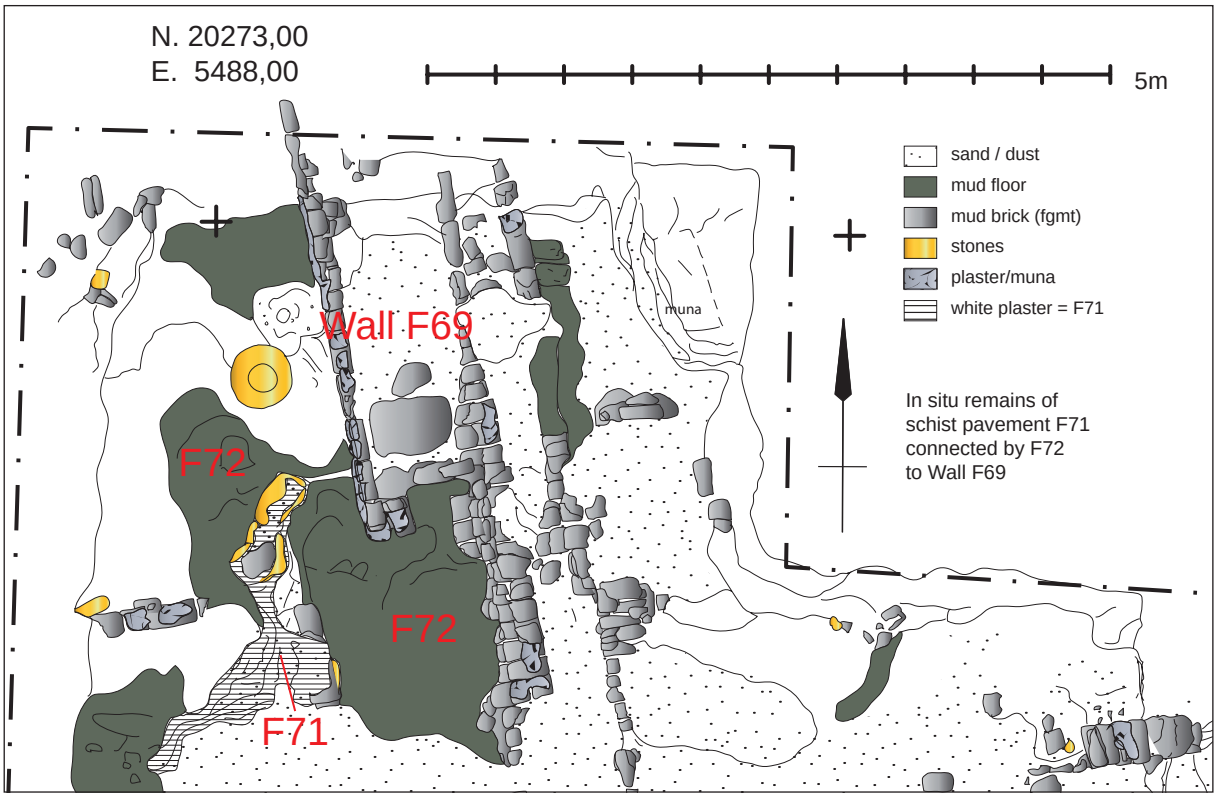

Fig. 22 Detail of schist pavement in Square 4B1 and the column drum

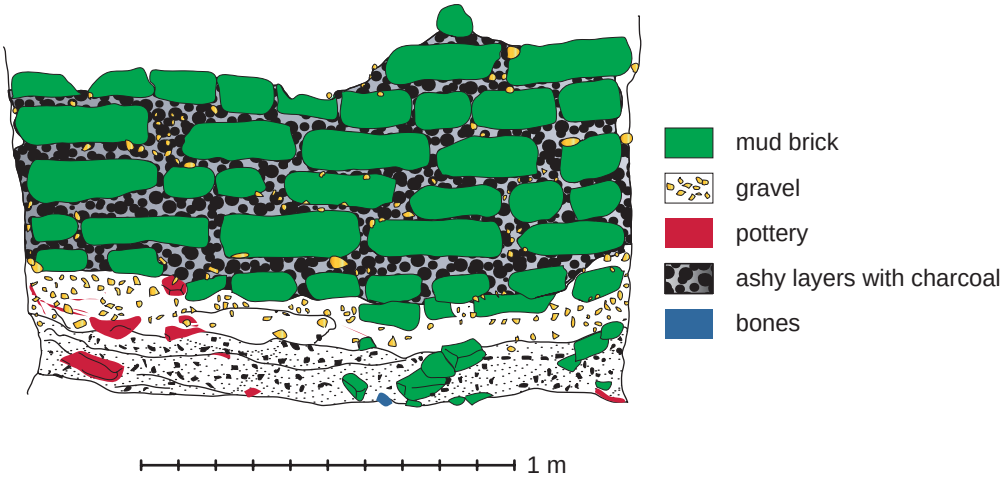

Fig. 23 Section of Wall Feature 44 in Feature 15

was found to the west of this wall (Fig. 22). The deposits below the schist plates were sampled for thin section micromorphology (see Chapter 3.7.5).

The most interesting structure in SAV1 East continued to be the subterranean room, Feature 15, which was completely exposed in 2016 (cf. Fig. 18). A section of Wall Feature 44 was set into Feature 15 in a building phase during the mid-18th Dynasty. This wall was sitting on top of the lowermost deposit of Feature 15 and was left standing in 2015. In the 2016 season, the wall and the deposit below it were removed (Fig. 23). Pottery and seal impressions found below Wall Feature 44 of Building A provided firm proof of the dating of the corresponding building phase to the later reign of Thutmose III – this was

an essential confirmation of the previous assumption based on the eastern part of Feature 15 and other walls of Building A (see Chapter 3.2.3).[400]

The pavement of Feature 15 was documented in detail by SfM, orthophoto (Pl. 46) and a drawing in 1:20. Several of the red bricks show finger marks, which find parallels in the mud bricks used in the northern and southern part of the town of Sai Island.[401]

Season 2017

Fieldwork in sector SAV1 East continued based on the results from 2013–2016.[402] In 2017 work focused on remains to be unearthed in the new Square 4D, aiming to test anomalies visible on the map of the geophysical survey conducted in 2011 and to contextualise in situ remains of a schist pavement unearthed in 2016 in Square 4C (Fig. 21). Some cleaning work was also conducted in the southern part of Square 4C (Pl. 47).[403]

Square 4D is located in the southwestern corner of Square 4C and measures 6.5 × 9m (see Fig. 5). The upper levels of this new square were dominated by a substantial amount of collapsed mud bricks, schist fragments and plaster fragments. Obviously, these are the remains of a large area which was originally covered by a schist pavement and was heavily disturbed during later times. The material is of mixed character and although most of the ceramics date to the 18th Dynasty, medieval material is also present. The large percentage of 18th Dynasty ceramics indicates that the later destruction sits directly on the Pharaonic remains, as is well-attested in other parts of SAV1 East.

A sandy depression was soon noticed in the southern part of the new square (Fig. 24). During excavation it was identified as a large rectangular cellar with an east-west alignment (Fig. 25). The structure measures 3.3 × 1.8 × 2.00m and was cut out of the natural ground, which consists of pebble terraces. The rectangular pit was lined with bricks and once had a vault. Most of the material of the sidewalls and the vault had collapsed and were found as in situ debris within the structure. This collapse had also smashed and buried some pottery vessels on the floor of Feature 83. Based on these findings from the last phase of use, the structure can be dated to the mid-18th Dynasty. All in all, Feature 83 is comparable to Feature 15 in Squares 2 and 4 of SAV1 East.[404]

North of Feature 83 plenty of mud brick remains were found as well as a section of a wall running east-west (Feature 84, Fig. 25). Below the mud brick debris the outline of another rectangular cellar became visible (Fig. 26). This Feature 85 is situated in the northern part of Square 4D. It is much better preserved than Feature 83, but with the same east-west alignment and of similar dimensions (3.7 × 1.5 × 2.05m). Feature 85 is clearly situated below the schist pavement unearthed in Square 4C, continuing into Square 4D – a large amount of collapsed schist plates was recovered in its eastern part (Fig. 27). The vault of Feature 85 is partly still intact, but its sidewalls have mostly collapsed and the corresponding mud bricks filled the western part. Feature 85 is, according to the preliminary assessment of the pottery from its undisturbed lower fillings, contemporaneous to Feature 83.

In the southwestern corner of Square 4C, a large sandstone block was found in 2016, sitting within mud brick debris on top of the in situ remains of the schist pavement (Feature 66). During the 2017 season this stone was removed, turning out to be a re-used block of a sandstone column base with a very fragmented hieroglyphic inscription (SAV1E 2904). It is very likely that this column was originally used in Temple A, located nearby.

Further to the east in Square 4C the substantial destruction layer of mud brick fragments, charcoal, slag, pottery and worked stones was removed. Remains of another mud brick wall in line with Feature 51 (further to the north) were uncovered (Fig. 28). All in all, the earliest remains unearthed in 2017 in

400 See Budka 2015a, 43–45.
401 See Doyen 2017, 26–28.
402 Budka 2015a, 40–53; 2017h, 14–21.
403 See Budka 2017c, 71–75.
404 Budka 2015a, 44–45.

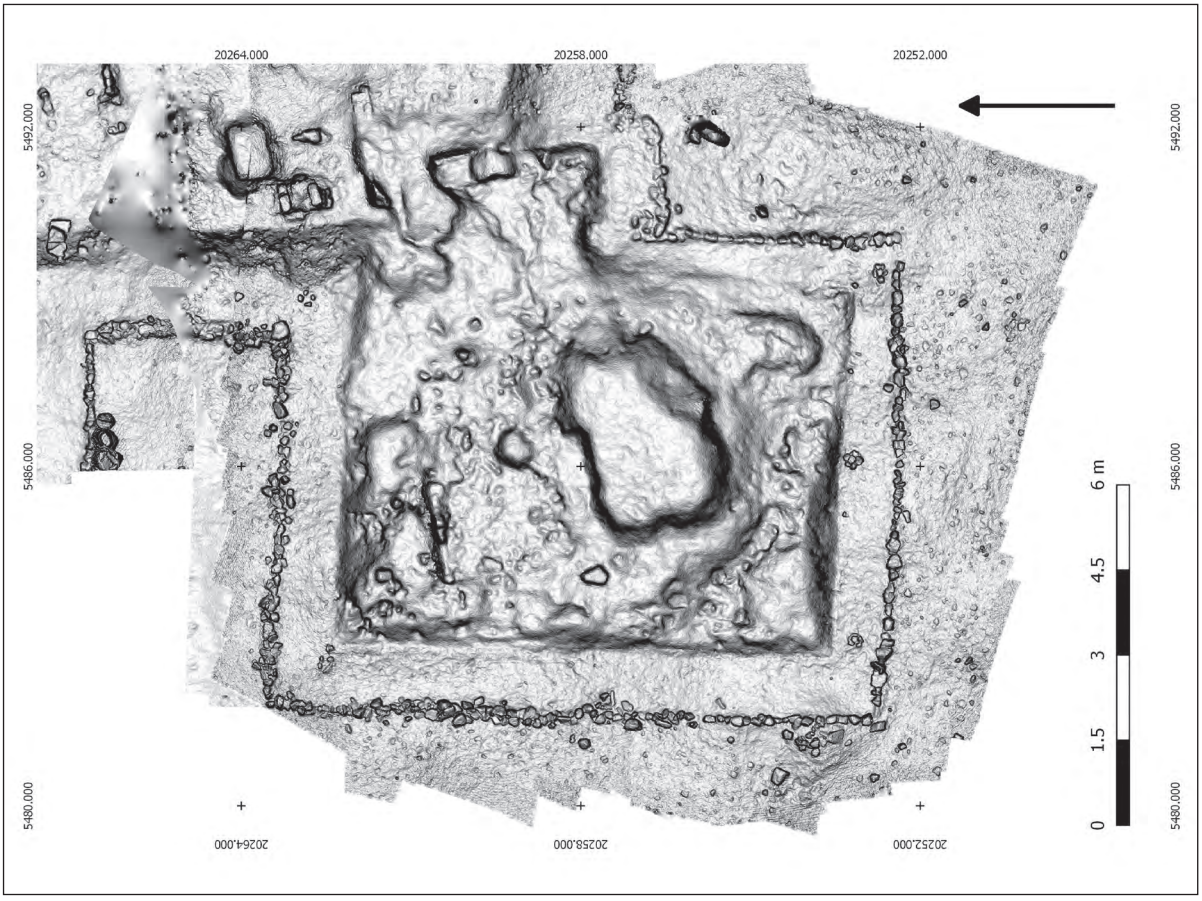

Fig. 25 Square 4D during the process of excavation (26/02/2017)

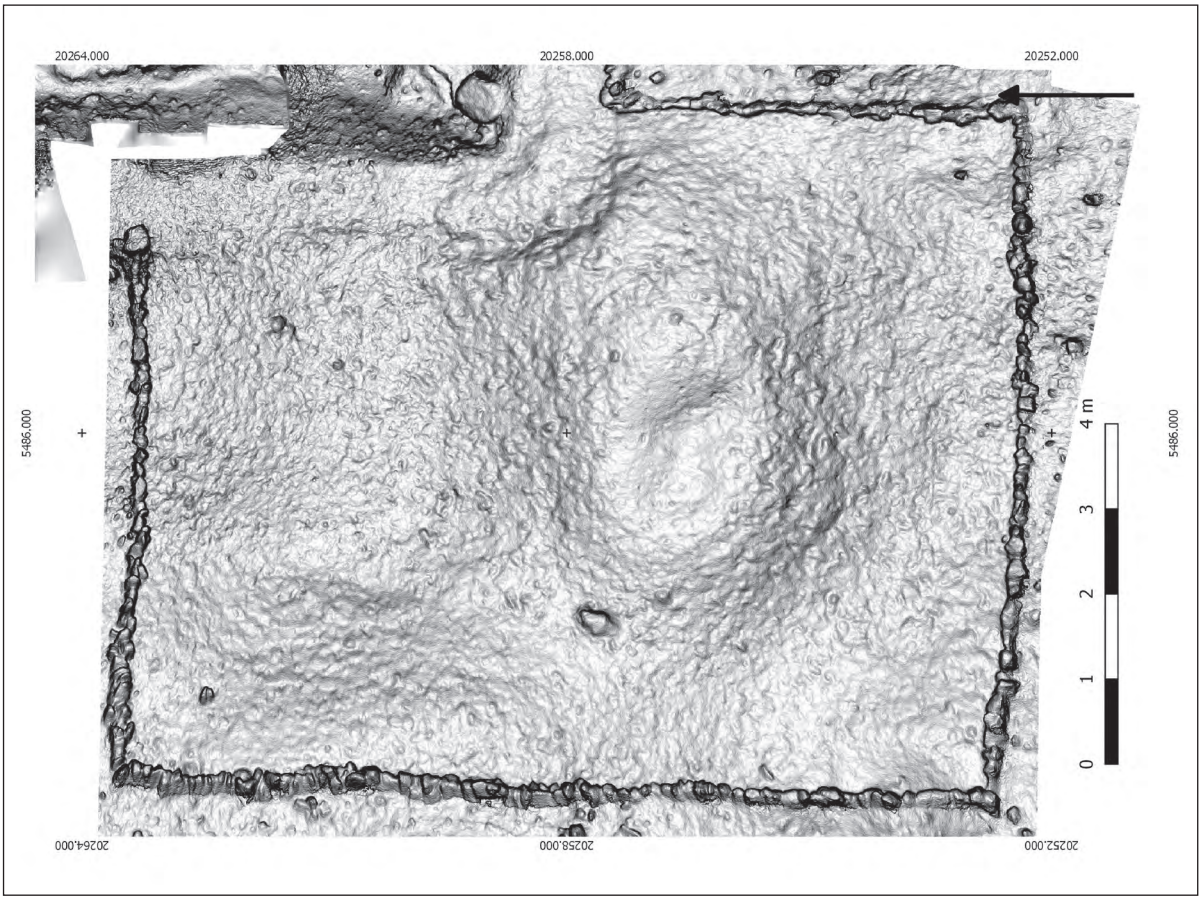

Fig. 24 Square 4D at the beginning of the excavation in 2017 (18/02/2017)

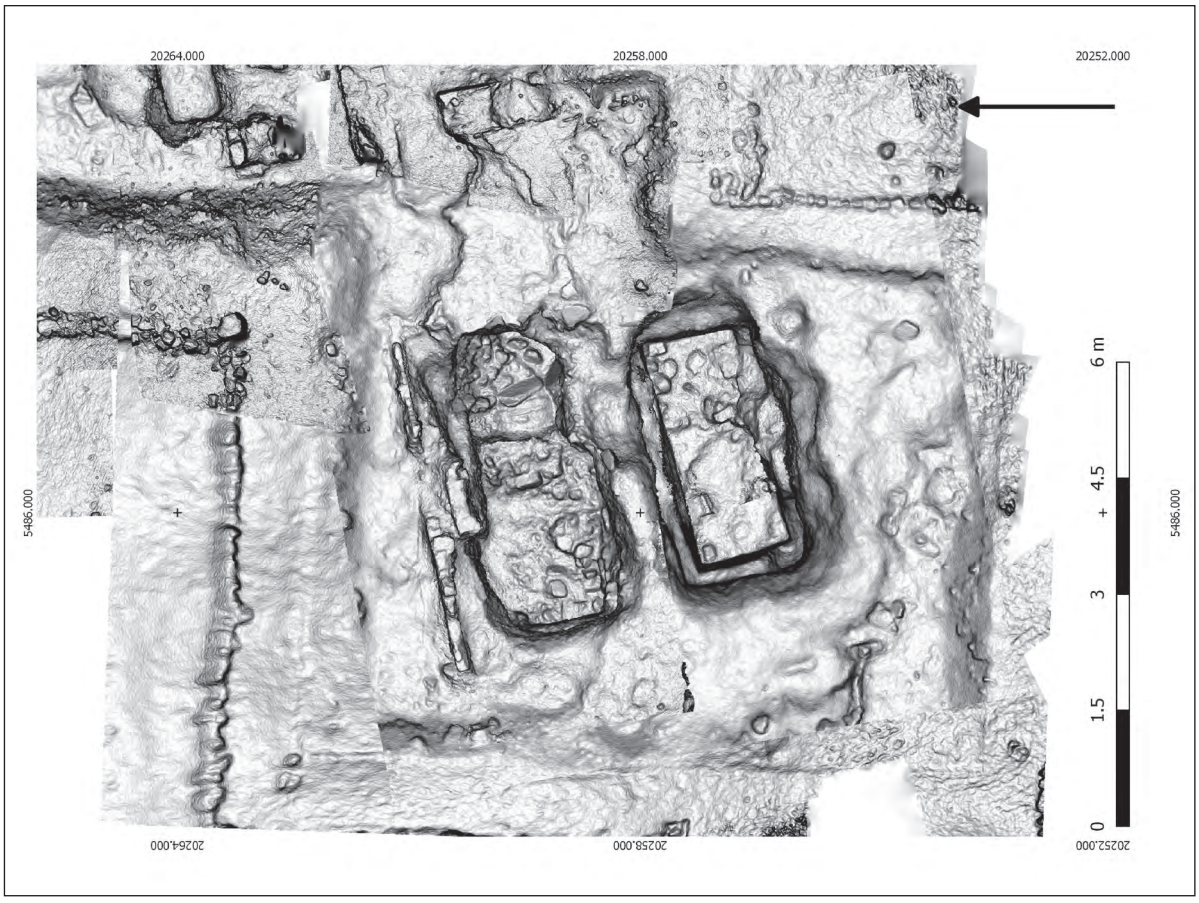

Fig. 27 Square 4D with the collapse of schist plates on top of the vault of Feature 83 (06/03/2017)

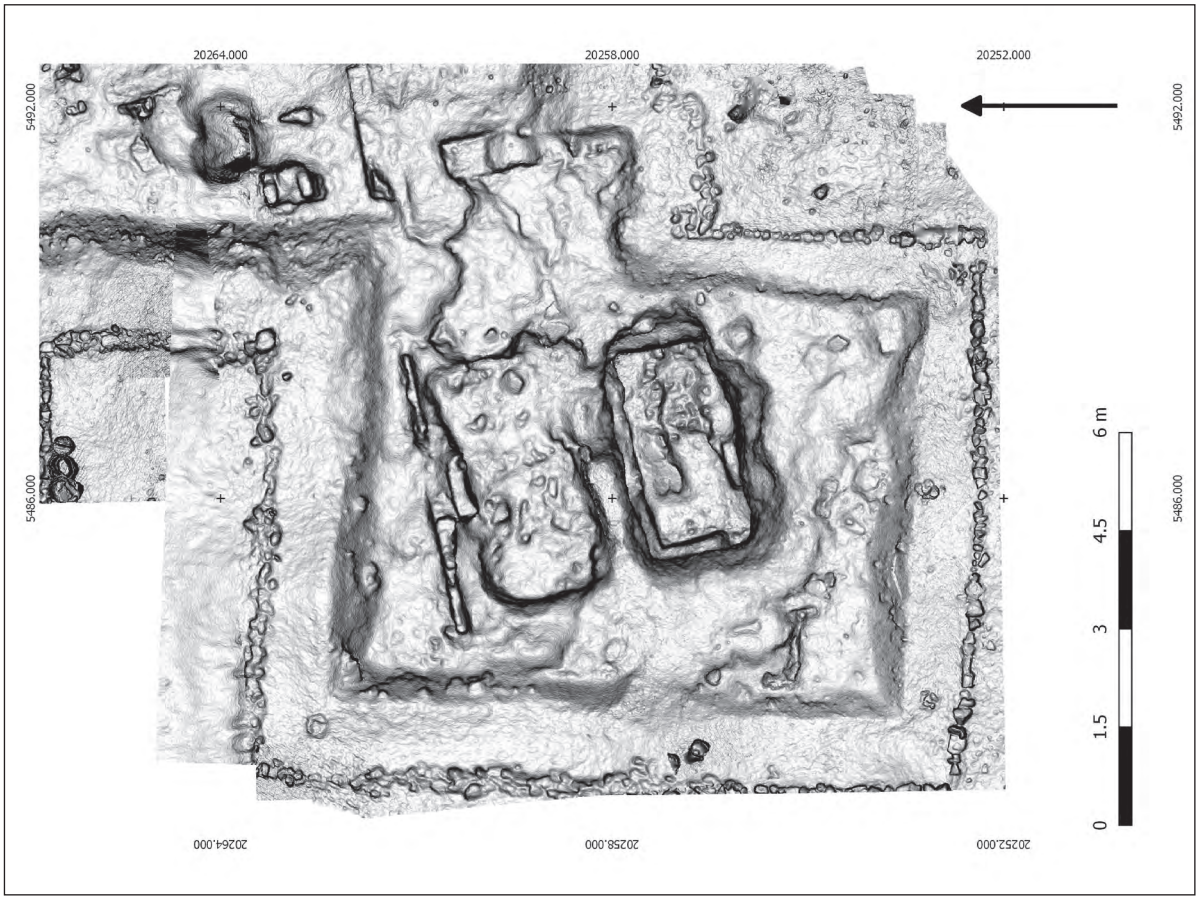

Fig. 26 Square 4D with the outline of Feature 85 visible north of Feature 83 (02/03/2017)

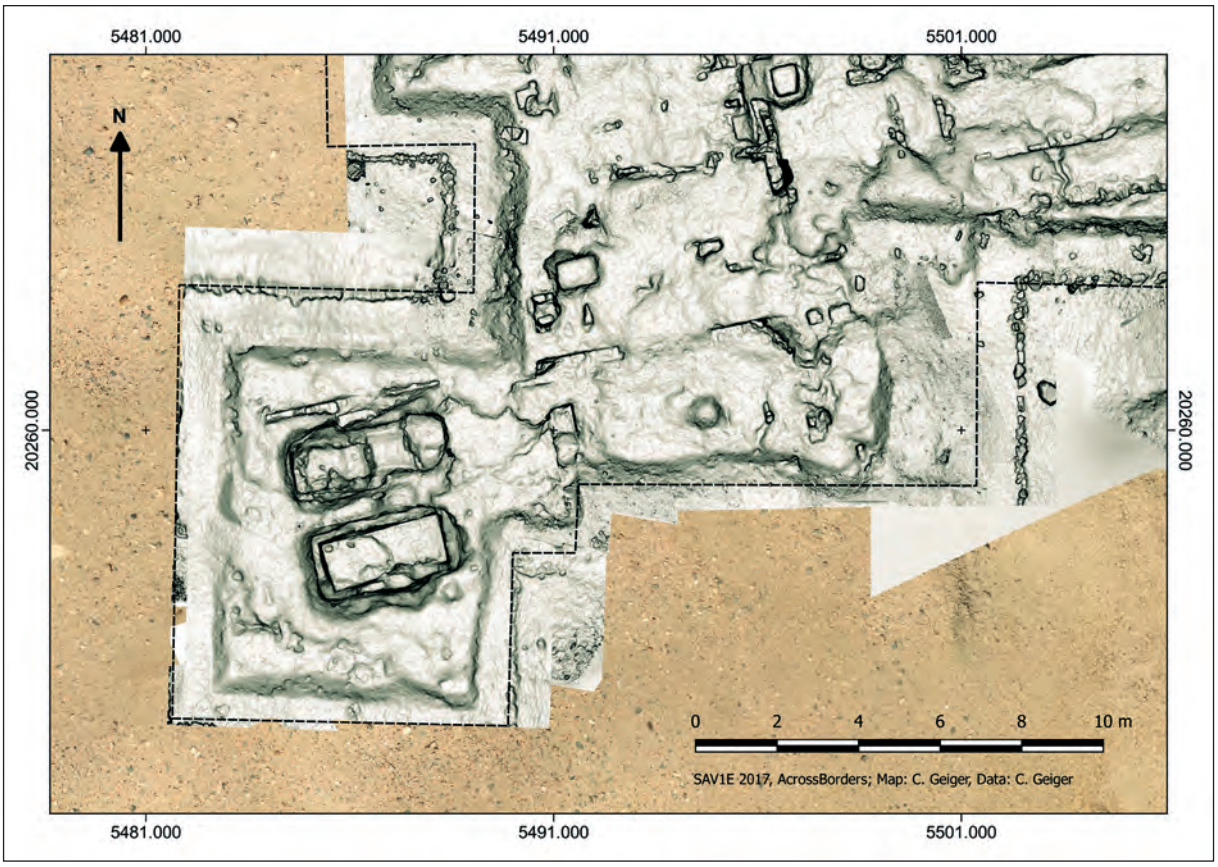

Fig. 28 End status of excavation areas, Season 2017 at SAV1 East

Square 4C all correspond to floors, deposits and wall fragments found in the western and northern parts of the same square in 2016 (see Figs. 21 and 28). They seem to date to the mid-18th Dynasty according to the stratigraphy and preliminary data from the pottery analysis.

3.2.2 Architecture

As outlined in the progress of excavation, several different zones of architectural remains were found in SAV1 East (Fig. 5) which can be differentiated according to building phases. The earliest remains are characterised by silos and storage installations and may be regarded as workshop-like structures. They are located in the southern and western parts of SAV1 East. More substantial mud brick walls are part of Building A, which was probably associated with various magazines and cellars. These architectural remains were predominantly found in the northern, eastern and southwestern parts of SAV1 East. All in all, the dominant features excavated in the eastern sector within the New Kingdom town are of typical Egyptian architecture and compare well to SAV1, the southern part of the town, mainly comprising mud brick walls and mud floors as well as schist pavements and large vaulted magazines and cellars.[405]

The mud brick walls at SAV1 East compare well to the ones excavated in SAV1 North and SAV1 regarding their building technique.[406] Plaster facing was found at several wall faces (cf. Chapter 5.1) and the bricks are set in mortar (cf. Chapter 5.1). For the latter, the term "muna" was used in the field as well

[405] These schist pavements in large administrative storage magazines find parallels at the neighbouring site of Amara West, see Spencer 1997, 27–51; Dalton 2017, 360.

[406] Adenstedt 2016, 23–24; Doyen 2017.

as here in the catalogue of features (Chapter 3.2.4). The horizontal joints filled with *muna* between the bricks are quite regularly 2–4cm thick; the vertical joints differ in sizes.[407] Due to the generally low state of preservation of brick walls in sector SAV1 East, sometimes bricks were only traceable by means of impressions on *muna* remains. Mud plaster was documented mainly on the more solid walls at SAV1 East, which consisted of rows of stretchers and headers. Like in the other sectors of the New Kingdom town, no wall painting or whitewashing was attested.[408] The mud floors in sector SAV1 East differ in quality and are in general very similar to those in sector SAV1 North[409] and also find parallels in SAV1.[410]

Small huts and storage facilities

Remains of some mud brick walls, storage installations and silos at SAV1 East closely resemble the small huts, workshop-like structures and storage facilities which were documented by Azim in the zone between Temple A and SAV1 East.[411] Since these remains are much better preserved than the newly exposed features at SAV1 East, they may serve as parallels and means to reconstruct the architecture.

Up to six rectangular blocks of mud brick buildings, which predate Temple A (G1–G6), were identified by Azim (Fig. 29).[412] They follow a grid plan and Azim compared them to the Kerma rural settlement of Gism el-Arba.[413] Unit G1 comprises three contiguous dwelling units covering a total surface of nearly 200m^2 (11.58 × 17.04m).[414] The individual abutting houses are similar in size to Houses H1–3 of SAV1 (G1a: 63m^2; G1b: 50m^2 and G1c: 84m^2).

The planning pattern visible in the zone around Temple A can be compared to what Michael E. Smith called "semiorthogonal urban blocks,"[415] where individual houses abut one or more neighbouring houses, forming dense sectors. Interestingly, almost each house/building excavated by Azim is equipped with a sub-rectangular silo. This high concentration of storage installations seems to find parallels at SAV1 East and might be connected to the function of Sai during this early phase as "bridge head" with a substantial need to equip Egyptian troops with food going southwards.[416]

Taking the buildings around Temple A as parallels, a "block"-arrangement also seems very likely for the structures at SAV1 East, but must remain open based on the very limited remains. Features 74 and 75, the sub-rectangular silos, find very close comparisons in G1 (Sil3) and G3 (Sil6).[417] The small egg-shaped plaster-coated storage bin at SAV1 East, Feature 14, compares well to a silo in G3b. At SAV1 East the architecture which once surrounded this installation is completely lost, but can be estimated as half-brick thick walls forming a domestic building.

The state of preservation at SAV1 East makes more general assessments very difficult, but a minimum of four building units – one around Feature 76, one around Feature 75, one including Feature 57 and finally one encompassing Feature 14 – in the southern part of this sector is likely. It is also possible that Feature 57 and Feature 14 are elements of the northern part of G3 (Fig. 30).[418] The east-west orientation of this early phase of domestic buildings around Temple A and at SAV1 East is strikingly similar to the later phase representing Building A, and is also comparable to the Thutmoside structures in SAV1.

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407 See Adenstedt 2016, 23.

408 Adenstedt 2016, 23. White mineral plaster in mud brick buildings of New Kingdom Nubia are generally rare; at the well-preserved site of Amara West only one example in a reception room of a villa was noted, see Dalton 2017, 360.

409 Doyen 2017, 52–57 and passim.

410 Adenstedt 2016, 24.

411 Azim and Carlotti 2012, fig. 6a.

412 Azim and Carlotti 2012, 28–31.

413 See Azim and Carlotti 2012, 35, note 59. See also Budka 2015d, 61. Further parallels may also be found in Kerma city, see Bonnet 2014, 20–214.

414 Azim and Carlotti 2012, 30 (fig. 6a).

415 Smith 2007, 13.

416 Cf. Budka 2015a, 51.

417 Azim and Carlotti 2012, fig. 6a.

418 See Azim and Carlotti 2012, fig. 6a.

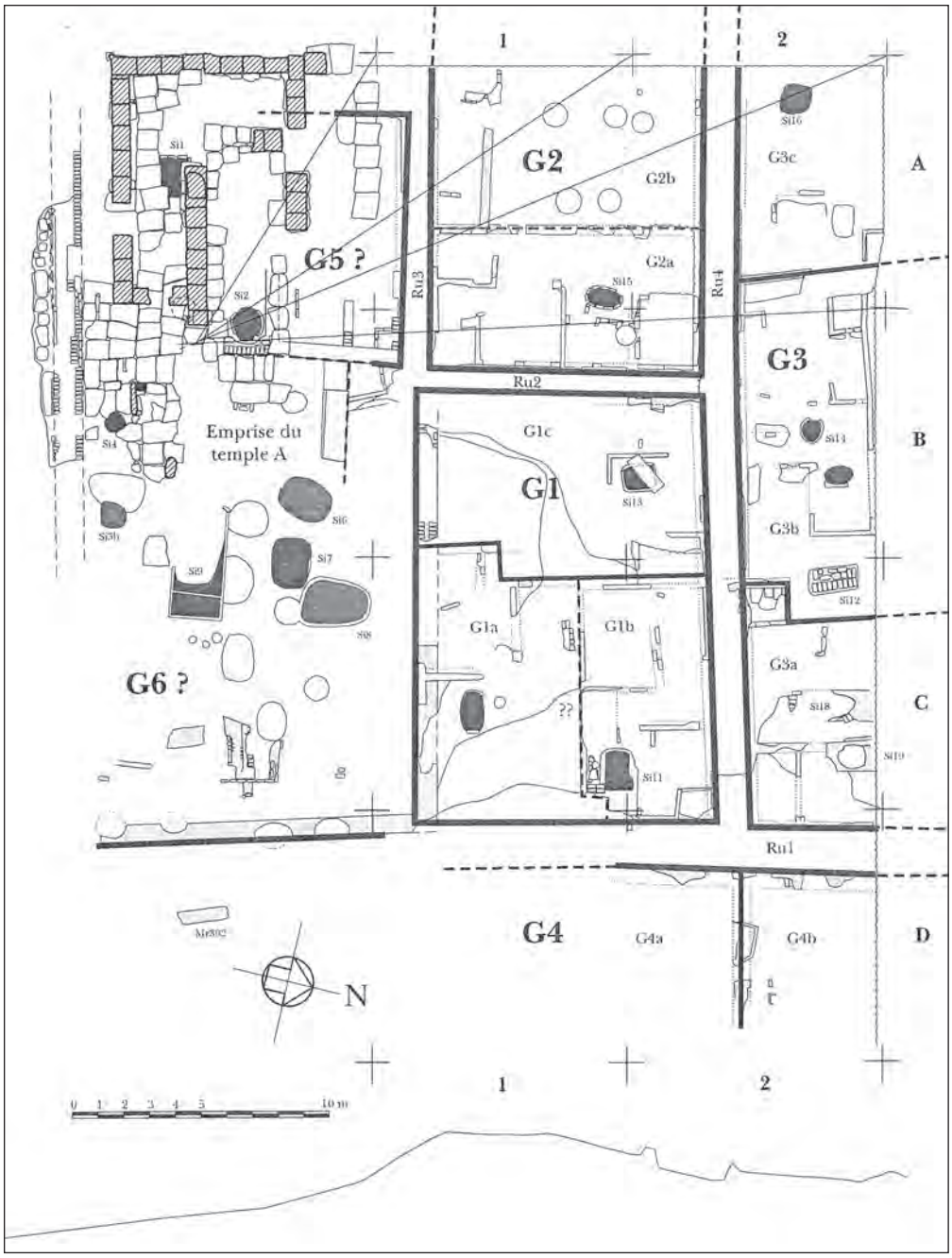

Fig. 29 Architectural remains around Temple A labelled as 'Kerma' by Azim

Feature 57 is securely dated as prior to Building A and most probably dates to the early phase of SAV1 East (see Chapter 3.2.3).[419] This feature, which might belong to G3 partly excavated by Azim, is also interesting in terms of architecture. It is a dry-stone wall which includes mud as building material. The mud bricks on top of the stones of Feature 57 are badly preserved (Pl. 44), but their appearance is very different from the regular freestanding bricks at SAV1 East. A relation to the *galoos* technique of the Kerma culture seems quite likely.[420] In no other parts of the New Kingdom town of Sai any dry-stone

419 Budka 2015d, 61–62.
420 Budka 2018b. For the *galoos* construction technique at Kerma, see Bonnet 2014, 8.

Fig. 30 Overview of SAV1 East with directly adjacent remains unearthed by Azim

walls in combination with mud were found.[421] This building technique is, however, very well-attested at Kerma itself and might represent the material evidence for cultural entanglement in the early 18th Dynasty on Sai.[422]

Especially in this context it is again noteworthy that the general pattern of the earliest architectural phase attested at SAV1 East (e.g. Feature 57, Features 75 and 76, but also Feature 15 in its early stage, see below) already mirrors the east-west orientation of the walls of later buildings of purely Egyptian style comparable to those of SAV1.

Building A

In the northern area of SAV1 East regular outlines filled with sand were revealed just below the surface. These are the negative outlines visible as anomalies on the magnetometer survey map.[423] The Pharaonic building material, once forming the walls, had been removed almost completely (see above). The excavations in 2013 and 2014 confirmed the orthogonal outline, alignment and date of a large structure labelled Building A of the mid-18th Dynasty.[424]

Building A is built on terraces with the lowest part in the east and much higher levels in the west. The entrance rooms, of which only scarce traces have survived in the western parts of the squares at SAV1 East, were situated in the west, maybe giving access from the main north-south street NS 1 or its respective northern continuation.[425] The key element of Building A is a large central courtyard (12.4 × 16.2m) flanked by a lateral room or corridor towards the east and north. The most interesting find was a subterranean room, Feature 15, located in this courtyard (see below). Although the state of preservation is in general very fragmentary, the outline of Building A could be reconstructed and is similar to SAF2, the governor's residence.[426]

Not only the layout with a central courtyard/hall, small entrance rooms with access from the west and room units to the north and south of the courtyard/hall are comparable between Building A and SAF2, but also the building technique. As recently pointed out by Adenstedt, only two different brick formats were used in the southern sector of the New Kingdom town of Sai, smaller ones at 33 × 15 × 10cm and larger ones at 40 × 19 × 9cm.[427] This contrasts, for example, with sector SAV1 North, which exhibits various phases of mud brick buildings and a quite large range of diverse brick formats.[428] Similar ranges of brick formats were observed during AcrossBorders' excavations at SAV1 East and SAV1 West (see lists of features for the details). However, the only exception is Building A at SAV1 East – although its brickwork is badly damaged, the bricks used for the main walls of the structure show not only variations of the small format, but also of the large format known from SAV1, the southern sector (see e.g. Feature 16 with small bricks at 34 × 15 × 9cm and 35 × 17 × 7cm and large bricks at 40 × 19/18 × 9cm).[429] This is exceptional, because in the southern part of the town the large bricks with a length of 40cm were only used in the governor's palace, SAF2, and the town enclosure.[430] The usage of this large brick format in Building A is, therefore, another indication that the structure is contemporaneous to the major buildings in SAV1, including the town wall.

The northern wall of Building A is only 75cm wide (Features 13/21), whereas the eastern wall (Feature 3) is more solid with a thickness of 106cm, thus fitting nicely to a measurement of two Egyptian

421 Note, however, that this is a common building technique in Ottoman times; several examples can be found in the southern part of the town/the fortress Qalat Sai.
422 On cultural entanglement, see Chapter 8. For 'Nubian' features in Egyptian towns in Nubia, see Spencer 2010.
423 Budka 2017e, 429, fig. 1.
424 Budka 2013a, 78–87; Budka 2015d, 62–63.
425 On this street, see most lately Adenstedt 2016, 31–33.
426 Budka 2013a, 85, fig. 12; Budka 2017e, 435; Budka 2018a, 264–266.
427 Adenstedt 2016, 23.
428 Doyen 2017, 24–28.
429 In Budka 2018a, 264 only the two small brick formats were mentioned for Building A as these are the most common ones.
430 Adenstedt 2016, 23.

cubits. The southern wall (Feature 16) is very badly damaged and has almost disappeared. With one layer of bricks still in place, the same width as the northern wall can be confirmed with 75cm, built with two stretchers or with two headers and one stretcher in between, including the large brick format mentioned above.

In terms of dating, not only the orientation, layout and building techniques of Building A were significant, but also finds associated with the walls. Ceramics from the foundation trench of one of the walls of Building A allow a dating for the building to the 18th Dynasty, probably not earlier than Thutmose III, including several building phases.[431] Various phases within the mid-18th Dynasty are, for example, attested by Feature 15 and also by Feature 29 in the northern part of Building A. This storage pit cuts Floor Feature 22, which seems to be connected with the earliest phase of the building.

All in all, Building A at SAV1 East belongs to the major remodelling of Sai during the reign of Thutmose III. It is contemporaneous with Temple A and the structures in the southern part of the town including SAF2 as well as the town wall. Building A can be regarded as significant for reconstructing the internal structure of the New Kingdom town of Sai, since it shows that the orthogonal layout known from the southern part of the town extended further to the north.[432] A more detailed architectural assessment of Building A and its reconstruction will be presented in connection with the publication of Feature 15.[433]

Cellars and magazines[434]

Dug into the natural gravel deposit, several large New Kingdom storage installations of rectangular shape with a vaulted roof were discovered in SAV1 East.[435] One, situated in Building A, was completely excavated in 2016: Feature 15 (5.6 × 2.2 × 1.2m) yielded a large quantity of seal impressions, complete pottery vessels and other finds.[436] Ashy deposits, large amounts of charcoal, hundreds of doum-palm fruits, abundant animal bones with traces of burning, more than 80 almost intact vessels and *c*. 200 remains of scarab seals on clay sealings make Feature 15 a context rich in information. The sealings are of special importance, being the first corpus of sealings ever found within the New Kingdom town of Sai and comprising a large number of royal names (Amenhotep I, Hatshepsut and Thutmose III) as well as various floral decorations in a style typical for the Second Intermediate Period.[437]

In the westernmost area of SAV1 East in situ remains of rooms covered with schist pavements were found in 2016 and 2017.[438] These pavements seem to be connected with large vaulted cellars similar to Feature 15. In Square 4D two large rectangular cellars were found in 2017, Features 83 and 85.

Feature 83 measures 3.3 × 1.8m and has a preserved height of 2m. It was cut into the natural ground consisting of pebble terraces. Its rectangular outline was lined with mud bricks, the roof was formed by a vault. Of the latter, the lower part and the negative of the eastern narrow side have survived. A substantial amount of collapsed bricks was found in large piles on top of the floor. Interestingly, most of the bricks show marks (parallel longitudinal grooves), known from other contexts in the New Kingdom town.[439] It is remarkable that these contexts with such brick marks (the northern enclosure wall, building units of Level 3 at SAV1 North and structures from the southern sector[440]) can all be dated to Thutmoside times. Such a dating for Feature 83 is further supported by smashed pottery vessels which were found below the collapsed bricks on the floor. They clearly belong to the latest phase of use of the structure and

431 Budka 2013a, 84
432 Budka 2015a, 51.
433 Budka forthcoming b.
434 These structures will be published in detail elsewhere: Budka forthcoming b.
435 Budka forthcoming b.
436 Budka 2015a.
437 Budka 2015a, 45.
438 Budka 2017c, 73.
439 Budka 2017c, 73.
440 See Azim 1975, 102, pl. 6; Budka 2017d, 24–26.

can be dated to the mid-18th Dynasty.[441] Therefore, Feature 83 is comparable to the considerably larger Feature 15, also regarding its phases of use.[442]

Feature 85 is situated in the northern part of Square 4D, next to Feature 83 (see Fig. 28). It is much better preserved than the southern cellar, and has the same east-west alignment; it is of similar dimensions (3.7 × 1.5 × 2.05m) and has the same building technique. Feature 85 seems to be associated with Wall Feature 84 as well as with the recovered schist pavement further eastwards, Feature 66. Whereas the upper part of Feature 83 was extensively disturbed, Feature 85 is clearly situated below the schist pavement unearthed in Square 4C – a large amount of collapsed schist slabs was recovered in its eastern part, complementing the slabs still in situ within the pavement above. Its central part is still intact including the vault, but the eastern and western ends have collapsed, including the sidewalls. The corresponding mud bricks in particular filled the western part, again featuring the parallel longitudinal grooves. Feature 85 is, according to the preliminary assessment of the pottery from its undisturbed lower fillings, contemporary with Feature 83 (and Feature 15), with material from the abandonment phase datable to the mid-18th Dynasty.

The large cellars and magazines at sector SAV1 East illustrate that, as is a common feature of the so-called temple towns, domestic space is quite limited, but much room is occupied by storage facilities, magazines and cellars.[443] Located close to Temple A, the two cellars (Feature 83 and 85) discovered below the schist floors of large rectangular magazines further support the functional interpretation of SAV1 East.[444] This part of the fortified town of Sai was clearly related to the storage and distribution of products, thus possibly in close connection with the temple. SAV1 East, therefore, nicely ties in with the southern sector SAV1 and exemplifies the main characteristics of Sai as a planned Egyptian temple town. Parallels, presumably of a later date, can be found in the temple town of Sesebi[445] and at Quban.[446] The best preserved cellar at SAV1 East, Feature 15, illustrates furthermore the strong links between these storage installations and the local temple – the main phases of use of Feature 15 mirror the building phases of Temple A and its surroundings (see below, Tab. 10).[447] All in all, in terms of architectural remains it can be concluded that sector SAV1 East has much in common and shows many parallels to the southern area of the town, SAV1, excavated by Azim in the 1970s.[448]

3.2.3 The main building levels of SAV1 East

Thanks to stratigraphic sequences, especially from Feature 15 but also from associations between various features, several phases of use can be reconstructed for Building A and SAV1 East.[449] On a broad scale, three main phases can be differentiated at the eastern sector of the New Kingdom town (Tab. 10):

Building phase	Description	Date
Phase 1	Construction of cellar	Early 18th Dynasty to Hatshepsut
Phase 2	Use as storage place/magazine	Hatshepsut, early-mid Thutmose III
Phase 3	Integration into Building A (Wall Feature 44 inserted)	Late Thutmose III/Amenhotep II
Phase 4	Re-filling/abandonment	Amenhotep II to Amenhotep III

Tab. 10 Building phases of Feature 15 at SAV1 East. Adapted after Budka 2015a, 45, tab. 1

441 Budka 2017c, 73.
442 See Budka 2015a, 43–45.
443 See Adenstedt 2016, 54, fig. 16; Budka 2017c, 75.
444 Budka 2017a, 73–75.
445 Blackman 1937, 149–150; Fairman 1938, 152.
446 Emery and Kirwan 1935, 36–37, fig. 12.
447 Azim and Carlotti 2012, 39–46; see Budka 2015a and Budka 2017b, 54–55.
448 See Azim 1975; Adenstedt 2016.
449 Budka 2015a, 45.

Phase A: early remains with workshop-like structures and silos, the continuation of the building units documented by Azim around Temple A (early 18th Dynasty)

Phase B: more substantial mud brick walls with storage installations, magazines and Building A (Hatshepsut – Thutmose III); comparable to SAV1, the southern sector

Phase C: continuous use of the area and additions/modifications (post-Thutmose III; see phases of Temple A)

Phase A

The earliest remains at SAV1 East were unearthed in the southern part of Square 2 and 2A as well as in Squares 4, 4B and 4C. This phase and its architecture can be connected to the early occupation remains with a number of small huts, workshop-like structures and storage facilities unearthed by Azim in the zone between Temple A and SAV1 East. In his publication of the structures, Azim could show that the remains are earlier than the stone temple, thus pre-dating Thutmose III.[450] Azim proposed a dating prior to the New Kingdom, based on Kerma ceramics found associated with the structures and through comparison with similar structures at the Kerma village of Gism el-Arba.[451]

The new evidence from SAV1 East allows linking the earliest levels there with this horizon around Temple A, thought to be of Kerma origin (Fig. 30). As mentioned above, ceramics from various contexts at SAV1 East allow a more precise dating of this early level, Phase A. For example, the storage bin Feature 14 and its pottery as well as other findings can be dated to the early 18th Dynasty. No evidence for pre-18th Dynasty occupation at SAV1 East was unearthed and this also applies to the zone around Temple A. In this part of the New Kingdom town, there clearly are no Kerma levels predating the Egyptian occupation.[452] The earliest remains in the as yet exposed parts of the town, comprising primarily workshop-like structures and storage facilities, date back to the time span of Ahmose Nebpehtyra up to Thutmose I. The structures around Temple A seem to be contemporaneous with Level 5/4 at SAV1 North.[453]

Phase B

Several phases of use can be reconstructed for Feature 15: most importantly, a section of wall 44 is set into Feature 15, definitely later in date and sitting on top of the lowermost deposit of feature 15. Feature 15 must, therefore, have already been in place before the main north-south wall of the courtyard of Building A, Wall Feature 44, was built. Based on the seal impressions and the ceramics, Feature 15 was originally set up not later than in the reign of Hatshepsut, remaining in use as a subterranean room/magazine/kitchen until Thutmose III. Changes happened in the later phase of Thutmose III and maybe even Amenhotep II: Building A was extended and Wall Feature 44 was set into Feature 15. A collapse of the section of Wall Feature 44 into Feature 15 must have occurred a bit later, presumably before or during the time of Amenhotep III. These phases of use of Feature 15/Building A correspond well with the building phases of Temple A.[454]

It is particularly significant that Feature 15 was integrated into Building A in a later phase (Phase 3 or a transition phase 2/3) – the cellar obviously already existed in an earlier phase and was well in use during the time of Hatshepsut (Phase 2). It is tempting to associate its construction with the early strata in SAV1 East and around Temple A comprising storage facilities from the beginning of the 18th Dynasty – however, it was probably slightly later in date as the earliest findings for its real use seems to date to

450 Azim and Carlotti 2012, 34–36.
451 See Gratien 1995, 5–65; Gratien et al. 2003, 29–43; Gratien et al. 2008, 21–35; Azim and Carlotti 2012, 35, note 59; see also Budka 2017e, 431–432.
452 Budka 2017e, 432.
453 See Budka 2015d; Budka 2017a, 19–21.
454 Cf. Azim and Carlotti 2012, 39–46.

Hatshepsut. Thus, at the beginning of the 18th Dynasty a number of rather short-term building phases and complex modifications of the area along the eastern side of the New Kingdom site seem likely.

Phase C

The building processes of Feature 15 and especially the debris from Wall Feature 44 in the cellar as well as its filling material clearly attest to building phases in the second half of the 18th Dynasty and the late 18th Dynasty. Within Feature 15, Phase 4 was dated to Amenhotep II to Amenhotep III (Tab. 10). Other architectural remains from Phase C are difficult to find at SAV1 East. In addition, few Ramesside sherds indicate some activities at the site in the late New Kingdom, but no clear architecture has survived from this period. This lack of substantial remains post-dating the mid-18th Dynasty is also mirrored in the sectors SAV1 North and SAV1 West (see below).

All in all, at SAV1 East the rather simple domestic buildings with silos of Phase A might be directly related to the assumed landing place below the eastern side of the town (see Chapter 2.5) and are relevant for understanding the nature of the Egyptian presence in Upper Nubia in the first half of the 18th Dynasty. The later phases of use at SAV1 East, Phases B and C, mainly comprise the mid and late 18th Dynasty – corresponding to the periods of building activity at Temple A and in the southern sector.[455] Building A and the integration of Feature 15 into its courtyard as well as the large magazines and cellars Features 83 and 85 can be associated with the later reign of Thutmose III and possibly the reign of Amenhotep II which mark the heyday of Sai as administrative centre (see Chapter 8).

3.2.4 List of features of SAV1 East[456]

The following is a catalogue of all recorded features at SAV1 East, 91 features in total. The location, stratigraphic information, description and possible interpretation are given. The catalogue follows the original form sheets filled out during excavation and therefore also lists observations in chronological order, including additions which were made later in the individual season or in the next season. This catalogue aims to support the presented phasing of the sector as well as to provide raw data to the reader. It illustrates the planum drawings and section drawings of SAV1 East (Plans 1–3). All measurements of altitude recorded relate to the temporary benchmark set up by the SIAM mission[457] situated at the southwest corner of the excavation house. Levelled at 160.306m, this benchmark has been designated as 0m. Each altitude mentioned in the figures and plans keeps to this local system.[458]

One has to stress that a more concise description and interpretation for all features connected with the large cellars (Features 15, 83 and 85) will be published elsewhere, including phasing plans of Building A. Since Building A and the cellars are also essential for the stratigraphical sequence and the Harris Matrix of SAV1 East, this will also be published in detail in the forthcoming volume. The results of the Harris Matrix are, however, also incorporated in the following catalogue of features.

Abbreviations used in this catalogue are the following:

E east
E-W east-west
H Height
F Feature
L Length
N north
N-S north-south
NW northwestern
S south
SE southeastern
SM sample micromorphology
SQ Square
SP Square point (measurement points in the four corners of a square)
SU Stratigraphical unit
W West/width
W-E west-east

455 Budka 2015a.
456 Based on the original field notes composed between 2013 and 2017 by Julia Budka, Sebastian Stiefel and Jördis Vieth.
457 See Doyen 2017, 24.
458 GPS data collected by AcrossBorders illustrate that this local system is 35m (+/-5m) lower than the height according to the World Geodetic System 1984 (WGS84).

No. of feature: 1

Location of feature: SQ1 surface, SP. 1.1–4
Main category: Surface cleaning, uppermost layer
Sub category: Layer
Measurements of feature: Square 10 × 10m, see Planum 1, 2; height and depth differ
Stratigraphy: Identical with F2 in SQ2
Description: Surface cleaning of very irregular surface, sloping towards E. Mixture of sherds, pebbles and stones. Covering layer: sand, pebbles, sherds, recent material mixed. Pebbles typical of SAV1: roundish, fluvial shaped forms, up to 7 × 4cm, mostly smaller, few single stones bigger. Single pieces of sandstone, a coarse variety. Probably originally from architecture. Small pieces of slag, black and porous (more in 2). Pieces of grinding stones (more in SQ2).
08.01.2013: Mud brick debris of different measurements: L? × B 14/20 × H 8/9cm. Two pieces of mud brick with 4 parallel grooves on one surface (see SAV1 North), one measures: 18 × 12 × 5cm, the other is smaller and more fragmented.
13.01.2013: Mud brick measurements, Planum 0–1b, NW-corner: L? × B 15, 5/15 × H 8,5/9/9.5cm.
14.01.20113: Mud brick measurements: L? × B 15 × H 9cm.
Dating/Interpretation: Mixed surface layer; mostly early 18th Dynasty (cf. Level 4 SAV1 North); few Ramesside sherds, some Post-Meroitic, lots of Christian/medieval sherds.
Finds: 01/2013 40 baskets of pottery; 02/2013 fragment slag; 03/2013 pieces of bones, seashell fragment; 04/2013 faience bead; 05/2013 inlay, glazed clay

No. of feature: 2

Location of feature: SQ2, SP. 2.1–4
Main category: Surface
Sub category: Layer
Measurements of feature: 10 × 10m, surface, see Planum 1, 2; height & depth differ
Stratigraphy: Identical with F1 in SQ1
Description: Irregular height surface. Pebble (as in SAV1 North) concentration in the S of square. To the N same material as described in F1. Much fewer surface pottery, here 18 baskets (cf. 40 from SQ1).
08.01.2013: pebble concentration continues in S of Square 2.
09.01.2013: broken mud bricks; pieces of mud bricks with grooves: parallel lines on one surface, 1 to 3 lines observed on different pieces: L? × B? × H 5cm. Mud brick measurements: L? × 18.5 × 10cm; L? × 15.5 × 8cm; L? × 15 × 7.5cm; L? × 16 × 9cm; L? × 19.5 × 11cm; L? × 17.5 × 8cm; L? × 15 × 7cm.
Dating/Interpretation: Mixed material; Thutmoside and late 18th Dynasty. Much Christian/medieval material.
Finds: 06/2013 18 baskets pottery; 07/2013 pieces of slag; 08/2013 pieces of fired stone

No. of feature: 3

Location of feature: SQ1 NE-SE; SQ2 NE
Main category: Wall
Sub category: Outer wall?
Measurements of feature: L: 12.90m N-S; W: < 1.50m W-E; H: 159.40–159.27m (SQ1)
Stratigraphy: Lies below F1, lies above F4 (3), cuts F4?, contemporaneous with F16 (and F5, 6, 17?)
Description: Linear structure, wall. Mud brick measurements: 32 × ? × 8cm, ? × 15 × 9.5/7.5cm. Up to three layers preserved. Mud brick construction in some areas preserved. Feature appears as shallow ditch in pebble F4, filled with material from F1. In SE-corner of SQ1 are 11 bricks laid out as upright course on eastern edge of wall. Mud bricks mostly in broken condition, so far none completely preserved. Laid in *muna*. On various places the form of a mud brick is preserved as imprints in *muna*.
21.01.2013: In SQ2 the southern edge is a negative feature of mud bricks (*muna*).
01.02.2013: The preparation of the wall by a kind of bedding, such as F19 which was used with Wall F16 cannot be verified for Wall F3 by now, the bottom of the wall is probably already disturbed in the SQ1 area. Wall F3 runs further S, as seen on Planum 1 in SQ2A (extension of SQ2 to the E). Wall F16 abuts F3 from the W.
Dating/Interpretation: Eastern wall of Building A; enclosure of courtyard. 18th Dynasty.
Additions: 06.02.2013: assumed combined length of Wall F3: southern end runs out of SQ; limit in SQ2A.

No. of feature: 4

Location of feature: SQ1, SQ2
Main category: Layer
Sub category: Levelling layer
Measurements of feature: > 30cm height; H: 159.85m SQ1 – Planum 1
Stratigraphy: Older than F1, 2. Lies below F3, 12, 13, 18, 19. Is cut by F5, 6, 7, 8, 9, 10, 11, 15, 17
Description: Levelling layer with pebbles of local origin. Mostly up to 4 × 4cm, single stones up to 6 × 7cm (and larger). Inclusions: single spots of humous sand (approx. < 3 × 3cm), light brown. Small pieces of pottery appear rarely, occasionally

some broken bone. Height of layer still unknown, approx. > 30cm, but differs following the uneven underground levels (see western section drawing, Plan 2).
Dating/Interpretation: Gravel terrace for Building A.

No. of feature: 5

Location of feature: SQ1, Planum 0–1
Main category: Pit
Measurements of feature: N-S 1.10m, W-E 0.85m; top: 159.54m – broken mud brick, 159.39m – surface pit; base: above 159.30m
Stratigraphy: Older than F1; cuts F4
Description: Egg-shaped form in planum. Filled with material from layer 1, broken mud brick visible on surface in southern edge. Mud brick measurements: L? × W 17.5cm × H 7cm; L? × W 12.5cm × 7.5cm. The burned mud brick: L? × W 17cm × H 8cm (probably shrunken in fire?).
Dating/Interpretation: Perhaps contemporary with Building A (but cuts Wall F4). See also F6 und 17 – later building phase?
Additions: 01.02.2013: Pit does not appear on Planum 2 anymore.

No. of feature: 6

Location of feature: SQ1, Planum 0–1, 1, 2
Main category: Pit
Measurements of feature: N-S 1.30m, W-E 1.45m; top: 159.38m
Stratigraphy: Older than F1; younger than F4; cuts F4
Description: Round shape on planum. Filled with light grey sand of Layer 1.
01.02.2013: On Planum 2 the pit is still visible at 159.28m H. It could be related to F17 in SQ2.
09.02.2013: Planum 3 (not yet drawn). Measurements of the empty pit: N-S 1.25m × W-E 1.35m. Preserved depth from planum is 0.45m. Regular round shape, inner face vertical with a tendency to bag shape (slight). Bottom roughly horizontal. The inner face of the pit shows a rest of *muna*-lining(?) in the NE area, although the surrounding pebble is still clearly visible everywhere.
14.02.2013: on the eastern 1/3 of the bottom of F6 are remains of a *muna* floor, stretching to the E. This *muna* layer contains some pebble and small pieces of charcoal, baked together with *muna*.
Dating/Interpretation: Perhaps contemporary with Building A, 18th Dynasty.

No. of feature: 7

Location of feature: SQ1, Planum 1, NW-corner
Main category: Pit
Measurements of feature: N-S > 0.65m, W-E > 0.65m; top: 159.76m, base: above 159.64m
Stratigraphy: Older than F1, younger than F13, cuts F13, F4
Description: SE-edge of feature visible in SQ1, complete outline not excavated so far. Cuts F13 and Layer F4. Filled with material from Layer F1, light grey sand, including sherds and smaller stones.
Dating/Interpretation: Could be recent?
Additions: 01.02.2013: The pit does not appear on Planum 2 anymore. See W-section.

No. of feature: 8

Location of feature: SQ1, Planum 1, NW-corner
Main category: Pit
Measurements of feature: N-S > 0.80m, W-E > 0.38m; top: 159.76m; base: above 159.58m
Stratigraphy: Older than F1, younger than F4, cuts F4
Description: Eastern part of pit in planum, western part not yet excavated. Filled with F1 material: light grey sand, sherds, stones.
Dating/Interpretation: Could be a recent pit; disturbance?
Additions: 01.02.2013: The pit does not appear on Planum 2; cut off; see W-section, cut into the gravel.

No. of feature: 9

Location of feature: SQ1, Planum 1, NW-corner
Main category: Pit
Measurements of feature: N-S 0.80m, W-E 0.66m; top: 159.56m, base: above 159.30m
Stratigraphy: Older than F1, cuts F4
Description: Slightly rectangular form with round edges. Filled with light grey sand from F1 and pebble.
Dating/Interpretation: Unclear – see F8, maybe recent?
Additions: 01.02.2013: The pit was quite shallow, it does not appear on Planum 2.

No. of feature: 10

Location of feature: SQ1, Planum 1
Main category: Pole hole (?)
Measurements of feature: N-S 0.28m, W-E 0.22m; top: 159.60m, base: 159.45m
Stratigraphy: Older than F1; younger than F4; cuts F4
Description: Round form; filled with fine brown-grey sand (from F1?). No pottery found.
Dating/Interpretation: Possibly a pole hole?; relation to other features not clear (if any; could be recent).

No. of feature: 11

Location of feature: SQ1, Planum 1
Main category: Pole hole (?)
Measurements of feature: Diameter of 0.17m; top: 159.56m, base: 159.44m
Stratigraphy: Older than F1, younger than F4, cuts F4
Description: Round shape. Small feature filled with fine light brown-grey sand, from F1. No pottery found in filling. Conical form.
Dating/Interpretation: Possibly a pole hole?; relation to other features not clear (if any; could be recent).

No. of feature: 12

Location of feature: SQ1 NW-corner, Planum 0–1, 1
Main category: Collapsed mud bricks
Sub category: Wall
Measurements of feature: N-S 0.70m, W-E 0.30m; H: 159.80–159.69m
Stratigraphy: Younger than F4, contemporaneous with F3, 16 (?)
Description: Irregular rectangular form. Slightly NW – SE orientated: see Feature 3, see below. One brick layer, three joints from N-S. No edge. Bricks broken off on both sides (W+E). *Muna* in the joints. No measurements of the mud bricks possible: all sides broken off, only imprints of mud brick in *muna*.
Dating/Interpretation: Collapsed from some wall?
Additions: 06.02.2013: Though the feature is not directly connected to Building A walls, it follows the general orientation formed by the walls F3, 16 and thus could be contemporaneous with Building A.

No. of feature: 13

Location of feature: SQ1, Planum 1, 2 NW-corner; SQ1A
Main category: Mud brick structure
Sub category: Wall
Measurements of feature: N-S 0.78m, W-E 1.75m; H: 159.93m; width to W 0.72m
Stratigraphy: Older than F7 (cut by F7); younger than F4; contemporaneous with F3, 16, 21, 30, 3, belonging to F22, 21, 30
Description: Mud brick structure, rectangular shape. Max. 4 layers preserved of wall. Mud brick measurements: L? × W 15cm × H 7cm; L? × W 15cm × H 9cm. Western edge is cut by F7. Southern edge is partly preserved. Northern part not yet excavated (outside SQ1).
06.02.2013: Continues to N+E. See SQ1A Planum 1+2. First to be seen as a disruptive pit in a linear form, running W-E, obviously forming a NE-corner with Wall F3. The western end of Wall F13 is possibly still to be found on a lower level (?), as the cutting pit F7 appeared to be quite shallow and is already finished on Planum 2.
Dating/Interpretation: F13 appeared first as an unclear structure in the NW-corner of SQ1; but with the extension of SQ1A it became clear that F13 is continued by F21, meeting F3 and continuing to F30. Third layer of bricks on Wall F21. Interpretation as northern outer wall of Building A does not work, see floor. Area and construction in western end of F13 completely unclear, disturbed and destroyed. Possibly a kind of foundation trench with collapsed bricks at the southern side of F30? For dating, see foundation trench and finds from F30; mid-18th Dynasty (Thutmose III?).

No. of feature: 14

Location of feature: SQ2, Planum 1; details 1st condition, 2nd condition
Main category: Bin
Sub category: Storage bin
Measurements of feature: N-S 1.82m, W-E 1.20m; inside W-E 0.96, N-S 0.55m; H: 160.05–159.64m
Stratigraphy: Contemporaneous with area around Temple A, belonging to F18?
Description: Sub-rectangular shape, rounded edges. Hole dug into pebble and plastered on the inside with *muna/muchmarra*. Traces of finger strokes are still visible on northern inner face, from W-wall until 2/3 northern side. SW-, SE-, NE-corners are damaged; rest of *muchmarra*-lining is preserved on different heights, best preserved in NW-corner. On western edge two vessels – one red burnt jar, one beaker, are found in situ. Findno. 39/2013 was broken at top, (S), Findno. 40/2013 (N). On eastern

edge three larger pieces of mud bricks lay collapsed on the bottom of the storage bin, covering sherds from a dish, Findno. 46/2013 and a beer jar, Findno. 47/2013.
Dating/Interpretation: Storage bin similar to the ones Azim excavated in the area north of Temple A, set against gravel terrain, built with *muchmarra* and some small mud bricks. Pottery clearly pre-Thutmose III, cf. Level 4 in SAV1 North (early 18th Dynasty).
Finds: 39, 40, 46, 47/2013 = pottery vessels; 49, 50/2013 content of vessel 40
Additions: 21.01.2013: The bottom of the feature is made of *muchmarra*, same as the walls, in a relatively thin layer. It is almost 80% preserved, some broken areas are visible; after removing the content, the bin lies in gravel deposit. Parallel grooves of fingers run on northern inner face of feature, close to the edge between bottom and face. A bit shorter and smoother grooves of same origin are visible on the western inner face and SW-corner of feature. Sample was taken for micromorphology in 2016 (SM 12).

No. of feature: 15

Location of feature: SQ2, NW-corner, Planum 1, Planum 3 detail, Planum 4 detail; SQ4, SE-corner
Main category: Mud brick structure
Sub category: (Storage installation) cellar
Measurements of feature: N-S 2.05m, W-E 2.52m; H: 159.86m; preserved depth: 1.2m
Stratigraphy: Older than F2, younger than F4, cuts F4, contemporaneous with F3, 16 (?)
Description: Rectangular subterranean mud brick lined structure, burnt orange.
The northern wall is badly preserved; the original construction of the eastern and northern wall seems to be quite similar. The outside lining of the rectangular pit is formed by mud bricks placed upright in a line, set against the surrounding pebble. The inner lining is formed by red bricks, placed upright in a line with a small gap to the outer lining, which is filled with *muna*. On the inner face of the red bricks some *muna*-plaster is preserved, on the eastern wall but also in the SW of the feature.
Mud brick measurements: 1st layer: L 38cm × W ? × H 11cm, L 25cm × W 14cm × H? 2nd layer: L 34cm × W 17cm × H 10cm, L 33cm × W 17cm × H 10.5cm.
Dating/Interpretation: Domestic installation, probably storage/cellar: meticulously worked walls to isolate inside from outside. Orange bricks most probably secondarily burnt (structure was on fire). No oxidation on rest of floor or *muna*-lining in upper levels. Some burning activity in lower levels and at western edge. F15 is visible as positive anomaly on the map of the Geophysical Survey 2011; it will be published in detail elsewhere; final assessment: large vaulted rectangular cellar with brick pavement (Budka forthcoming a).
Finds: Plenty of ceramics, charcoal, bone, seal impressions and other finds (to be published elsewhere)
Additions: For its building phases, see Budka 2015a, 45, tab. 1.

No. of feature: 16

Location of feature: SQ2, Planum 0–1, Planum 1
Main category: Wall
Sub category: Southern outer wall of Building A
Measurements of feature: L: > 9.85m, W: > 0.99m; H: 160.12–159.29m surface Planum 1
Stratigraphy: Younger than F4, contemporaneous with F3, 19, lies above F4, 19
Description: Linear structure, running roughly W-E. Mostly in bad condition, only single spots of in situ mud bricks preserved like on Planum 1. Eastern end runs up to Wall F3. Western end destroyed, visible in broken and dislocated mud bricks, no structure in mud brick preserved. Lots of pottery and pieces of *muna* with parallel grooves. Western end outside SQ2 limits. Outline of wall not clearly to be seen on planum, some single spots of original face of wall preserved. Pottery between bricks mixed – both end of 18th Dynasty and Post-New Kingdom. High gravel deposit just S of Wall F16. Mud brick measurements: L 34cm × W 15.5cm × H?; L? × W 17cm × H 9cm.
22.01.2013: The actual bottom of the wall seems to slope down in height from W to E: the condition of preservation is very bad in the W, getting slightly better to the eastern limit of SQ2.
30.01.2013: Wall F16 abuts Wall F3 in the E – obviously Wall F3 continues to S. Clearly most disturbed at the western end visible in Planum 1.
08.02.2013: On the western profile of SQ2 north of Wall F16 is a thin horizontal layer of usage visible with traces of ashes and very fine debris. This indicates an inner part of the Building A-complex (which might well be an inner courtyard). This layer stops in the south at Wall F16. S of Wall F16 pebble is on the same height, which indicates the outside of Building A.
Dating/Interpretation: South wall of Building A, 18th Dynasty.
Additions: Wall is different from F3 and F30. Mud brick measurements: 35 × 18/17 × 7/9cm; 40 × 19/18 × 9cm. Important: all the loose bricks N of F16 are remains of the foundation pit; cf. F3+30, see also W-section SQ2. Set between loose pebbles. Definitely abuts F3, forming the SE-corner of Building A.

No. of feature: 17

Location of feature: SQ2, Planum 0–1, Planum. 1+2, N-border of square
Main category: Pit

Measurements of feature: W-E 1.45m, N-S 0.7m; H: 159.64m
Stratigraphy: Older than F2, younger than F4, cuts F4
Description: Round shape; southern outline visible in SQ2. Does not appear in southern part of SQ1, that means the maximum N-S measurement of the pit is roughly less than 1.25m. Filled with light grey sand, material from F2. Probably connected with F6 in SQ1 and the walls F3/16.
22.01.2013: Appears smaller on Planum 1 (minus 40cm from surface): W-E 0.95m, N-S 0.45m.
30.01.2013: Pit is still visible on Planum 2, slightly smaller in shape, at 159.54m.
14.02.2013: The pit was cut into the surrounding pebble layer, F4. It seems to be shallower than F6 in the N. The outline is not circular: round to W+NW, irregular to SE-E. On the bottom of the pit, to its western limit, there are remains of some kind of shallow clay/mud deposit, broken off on all sides. Perhaps a pole hole. Measurements: 0.38m N-S × 0.35m W-E, *c.* 4cm high. W of this clay layer are some remains of a *muna* covering, on a deeper level.
Dating/Interpretation: Probably contemporary in use to Walls F3 and F16 and the pit(s) F5 and F6 in SQ1; belonging to Building A?, 18th Dynasty.
Additions: 14.02.2013: Most probably just natural *muna* at bottom of pit – cf. SQ2A, no real floor.

No. of feature: 18

Location of feature: SQ2, Planum 1
Main category: Mud brick structure/*muna*
Measurements of feature: Between 4.70–6.45m E/1.85–3m N of SP. 2.3; H: 160.30–160.18m
Stratigraphy: Contemporaneous with F14?
Description: Irregular in shape, 3 spots of *muna*, occasionally with mud brick imprint. Outline damaged, no regular limits. Preserved up to a height of 12cm. Probably from the same period as storage bin F14? See Planum 1, however, no stratigraphic proof is left, but see ceramics. Very brown material, cf. area SQ2B with destruction levels.
Dating/Interpretation: Obviously remnants of a building horizon?; early 18th Dynasty?
Finds: 73/2013 = vessel; 74/2013 bone
Additions: 24.01.2013: Pottery vessel Findno. 73/2013 smashed on level of base. Broken Nubian rim sherd of vessel at very bottom = bottom edge of mud; between pebbles, 10cm from N-S. To the east, at level of lower edge of N-S + 5cm deeper foundation trench of mud – max. 50cm to E; 14 × 11cm. Still above upper edge of F14, but sloping area.

No. of feature: 19

Location of feature: SQ2, SP. 2.1–2.4, Planum 2
Main category: Layer/bedding
Sub category: Wall foundation/bedding
Measurements of feature: Found on two places in Planum 2: 1) W: 1.80 (–2.20?)m N-S × 2.80m W-E; 2) E: 2.20m N-S × 1.85m W-E
Stratigraphy: Lies below F16, lies above F4, contemporaneous with F16, belonging to F16
Description: Irregular outlines, but follows the linear stretch of Wall F16. The difference to the pebble Layer F4 is vague (the outline therefore drawn in a dashed line). Mixture of pebble and *muna*. The mixture was used to prepare the surface of the pebble layer F4 for the first layer of *muna* and mud brick. It appears to be more solid than the surrounding pebble and thus serves as kind of foundation for the building of Wall F16. The thickness seems to vary and is very hard to judge properly. It is approx. preserved to a height of *c*. 15cm. Preserved only in highest part of Wall F16, that is close to the square limit in the W and right in the middle of SQ2.
Dating/Interpretation: Belonging to Building A; 18th Dynasty.

No. of feature: 20

Location of feature: SQ2, Planum 1, 2/SQ2B, Planum 1, 2, 3, 4. SP. 2.3: 0.0–0.70m N/0.0–0.64m E
Main category: Mud brick structure
Sub category: Wall
Measurements of feature: 0.67m N-S, 0.54m W-E; H: 160.21m
Stratigraphy: Older than F2, younger than F4, belonging to F28?
Description: Linear wall feature: northern end in SQ2, southern end outside square limit. Eastern face formed by three mud bricks. Destroyed in western part up to square limit. Southernmost mud brick appears orange on its eastern face. Two layers visible: uppermost layer 0.48m N-S, not preserved in S, lies on pebble, does not extend over the first visible layer. The structure has been partly destroyed in its western part, 0.0–0.35m E of SP. 2.3. Broken mud brick, sherds and sand are visible in this area. Mud brick measurements: L? × W 14.5cm × H 8.5cm. *Muna* was used in joints of mud bricks, still visible on surface of middle mud brick as well.
06.02.2013: Orientation N-S: the orientation of the structure follows the main orientation of Building A, but see also F55 in SQ4. On Planum 2 another mud brick of the structure became visible. Probably the settlement debris described as F1 (partly) belongs to F20. The pit which cut F20 to the W is no longer visible on Planum 2.
11.02.2013: See Planum 4: The foundation structure F28 SE of F20 shows the same technique and well-fitting orientation. The area between is disturbed, so far there is no direct joint between the features.

Dating/Interpretation: 06.02. 2013: Probably contemporary with Building A based on the same orientation, similar stratigraphical levels. 11.02.2013: SW-edge with F28 possible.
15.02.2013: Up to 4–5 "layers" – not regular – of stones are set in the ground to support the above structure. On Planum 6, the bottom of the stone foundation has not yet been reached. On Planum 5, the height of the surrounding area is about 159.69m, the highest point of the feature is at 160.21m, that makes 0.52m in height already now. Planum 6: so far, no connection between F20+28 has become clear.
03.2015: Update – with the excavation in Square 4, in particular the discovery of F53, a date to the early 18th Dynasty is very likely for F20. It was probably part of an early structure at SAV1 East; see the parallel orientation with F53 as possible western wall; F20 would then be the eastern wall, but the connection is missing.
Additions: 08.02.2013: Planum 3: The length of the feature now reaches up to 1.25m N-S, if the sandstone pieces are considered as part of the structure, the width might then be 0.90m W-E, which fits approx. to the width of Walls F3+F16 of Building A (0.95m). Whether the outline of pit "2" is significant for F20, is still not clear.

No. of feature: 21

Location of feature: SQ1A, SP. 1.1, 1.2, 1.5–1.8
Main category: Mud brick debris
Sub category: Debris from Wall F3
Measurements of feature: L: 5.70m, W: 2m; H: 159.07–159.43m (Planum 5), 159.83–159.31m (Planum 2)
Stratigraphy: Is cut by F23
Description: Debris with irregular shape, probably follows the outline of Wall F3. Limited to the E by mud brick debris, to the NE by pebble and F23. Limit to the W by F22 (floor) and a small pebble area probably belonging to F22. To the N the outline is unclear, due to limit of excavation. Fine light grey sand; in the eastern part (between SP. 1.8 and SP. 1.2) mixed with pebbles and sherds and some small mud brick fragments.
Dating/Interpretation: Collapsed part of Wall F3 of Building A, 18th Dynasty.

No. of feature: 22

Location of feature: SQ1A, extension to SQ1 (North); SP. 1.1, 1.2, 1.5–1.8
Main category: Floor (probably of F13)
Sub category: Circulation floor/thin mud floor
Measurements of feature: Max. L: *c.* 4m, max. W: *c.* 1.50m; H: 159.71–160.0m
Stratigraphy: Lies above F21, contemporaneous with F13?, poss. cuts F21, belonging to 13
Description: Approx. rectangular shape, slightly sloping to the E, probably includes pebble area to its SE (limited by F21). Broken off to the N. To the S (connection to F21) only traces of "Begehungshorizont" left. The undermost layer (pebble) of the floor is visible. Limited to the N by mud brick assemblage. Material: muddy clay with layer of pebbles in the lowest level.
Dating/Interpretation: Circulation floor belonging to F13.

No. of feature: 23

Location of feature: SQ1A, SP. 1.1, 1.2, 1.5–1.8
Main category: Mud brick structure/assemblage
Measurements of feature: L: *c.* 1.50m, W: *c.* 0.50m; H: 159.40–159.58m
Stratigraphy: cuts F21
Description: In planum rectangular shape, because it is cut by limits of excavation in the N. Mostly consisting of mud brick debris mixed with lots of sherds and pebbles. To the E perhaps start of mud brick structure to which the assemblage belongs (2 bricks in situ?). Seems to continue to the NE of SQ1A. Limited to the E by mud brick debris (to the S by F21).
Dating/Interpretation: Mud brick structure – later phase of 18th Dynasty?

No. of feature: 24

Location of feature: SQ2B, Planum 2, 3, 4; SP. 2.8: 3.85–5.25m E/0.85–2.05m N
Main category: Pit
Measurements of feature: 1.40m W-E, 1.30m N-S; H: 159.27m
Stratigraphy: Younger than F4
Description: Irregular, triangular shape; complete on planum. Filled with fine light grey sand, without inclusions so far. Cuts the surrounding areas with various settlement debris-concentrations, as described on Planum 2 as "6", and the pebble in the N, described as "7" on Planum 2.
08.02.2013: On Planum 3 the form of the pit has changed to oblong: 1.55m W-E × 0.55m N-S. The pebble of the levelling layer is now visible in the NW of the former pit-outline and the area of sandy-clay settlement debris in the S.
13.02.2013: Planum 4: only a small rest of pit filling is still on the surface. Planum 5: the pit has disappeared. See further development Planum 6+7 with 28 + cleaning of debris along the slope towards S.
Dating/Interpretation: Pit similar to F6 and 7.

No. of feature: 25

Location of feature: SQ2B, Planum 2, 3; SP. 2.8:5.0–7.50m E/0.20–1.45m N
Main category: Pit
Sub category: Depression in debris
Measurements of feature: Max. 2.60m SW-NE/1.15m NW-SE; H: 159.57m
Stratigraphy: Unclear – see above F9
Description: Irregular oblong feature, completely on planum. Described as "9" on Planum 1. Cuts the surrounding areas of settlement debris. Contains mainly fine light grey sand. Includes some broken mud bricks, sherds, little pebbles, stone fragments, concentrated mostly on some spots (W, NW, NE) of the feature. One broken red brick was observed on Planum 1, with the measurements: L > 16cm × W 15cm × H 6cm.
08.02.2013: On Planum 3 the outline of the pit is bigger to the E. The pit and its filling have been covered by the concentrated mud brick debris from which there are still remains on Planum 3. The debris is described as "4" on Planum 3. 2.9m W-E (SP. 2.8: 4.80–7.65m E).
13.02.2013: Planum 4: the shape of the pit changed, perhaps due to the more stable material described as "5" on the planum in the N. Planum 5: the size of the pit appears smaller, apparently it is now only shallow on the pebble underneath, but still definable. In the filling are pieces of mud bricks laying loose, probably from the cut settlement debris to the N+E of the pit. Planum 6: still visible as semi-circular pit with sandy filling.
Dating/Interpretation: Filling material mostly 18th Dynasty, but most probably the pit stems from Post-New Kingdom times.
Additions: 02.03.2013: See photos after Planum 6: sandy filling and mud brick debris were set on gravel, pit has more or less disappeared, possibly some collapsed bricks in southern bulk belong to F25, see also F32. All in all less defined/deep than F26. Very few ashy remains and charcoal. A lot of 18th Dynasty material from this area.

No. of feature: 26

Location of feature: SQ2B, eastern part Planum 2, 3, 6 and final Planum; SP. 2.9: 3.12 – 5.0m E/0.0 – 2.05m N
Main category: Mud brick lined circular feature
Sub category: Oven?
Measurements of feature: 1.85m W-E, 2.05m N-S; H: 159.69m
Stratigraphy: Contemporaneous with F25, 32, 28?, sunk into F2a – gravel deposit
Description: Irregular shape. Eastern and southern outline are beyond square limits. Cut in the N by trench. Described as "11" on Planum 1. The pit contains mainly fine light grey sand which includes bigger pieces of broken mud brick in the N, some pebble and few sherds. To the S and SE-corner of SQ2B the concentration of inclusions is higher. The sand contains more settlement material like small stone fragments, sherds, broken mud bricks and one fragment of red brick (L > 13.5cm × E > 11cm × H 8cm).
08.02.2013: On Planum 3 the pit has not changed much, it is still very sandy – fine light grey sand – and stretches all over the eastern end of SQ2B. There are now bigger pieces of broken mud brick on the surface of the filling. The pit cuts into the settlement debris described as "4" in the N, still no other pit limits are visible in SQ2B.
13.02.2013: Planum 4+5: The pit gets smaller in shape while deepening the excavation level. It is still visible, but the surrounding mud brick debris has an even higher concentration, parts of the debris are also lying in the pit filling.
Dating/Interpretation: Date still unclear – mixed and disturbed until base. Most probably Ottoman? Possibly an oven, see additions.
Additions: 02.03.2013: After Planum 6, further deepening of SQ2B in E part, clarification of nature of F26: it clearly is a badly preserved circular structure of mud bricks, set on the gravel, scarce remains of floor/*muna* have survived. The NE-corner is much collapsed and includes a flat stone topped with *muna* – cf. F28, indicative of a Post-New Kingdom date. *C.* 1.20m from the N is a small fragment of red brick in ashes, also indication of late date? NW+SW area are very ashy at bottom, also some charcoal and remains of burned mud bricks: thus possibly an oven?

No. of feature: 27

Location of feature: SQ2, 2B Planum 4
Main category: Bin/mud brick feature
Sub category: Bin
Measurements of feature: 0.32m W-E, > 0.24m N-S, from SP. 2.8: 7.24–7.55m E/1.93–2.18m N; top: 159.53m, base: 159.46m
Stratigraphy: Unclear
Description: Circular. Northern 1/3 disturbed by trench. Basket built of organic fibres. Upper part disturbed. Rim pressed down on west side by small fragments of mud bricks, smashed. Filled with fine light grey sand, including pieces of clay – from mud bricks – sherds, 1 pebble, 1 piece of bone (already on Planum 3). One bigger fragment of mud brick covers the NW of the basket. At the broken northern edge the bottom of the basket is still to be seen, so it might be preserved underneath the filling. The content is part of the surrounding debris. Drawn in its first condition in detail, scale 1:10.
13.02.2013: 2nd condition drawing (emptied) in scale 1:5. The basket is not disturbed in its upper part; it is complete apart from the recent cut in the N. It is worked in a simple weaving technique with crossing reed-leaves. It has no defined rim, is very simple in shape, only one kind of material has been used: up to approx. 1cm wide leaves from reed (?). The bottom seems to be

eaten by termites. The surface of approx. 50% and the inner part and up to 80% of the rim are eaten by termites. The pressure of the debris above reduced the original depth of the basket to 13cm but was surely deeper when used, see the deformed area along the western part of the rim.
Dating/Interpretation: Until base mixed ceramics. Basket: Ottoman or sub-recent (as evident from plaiting technique); possibly working basket from 20th century explorers (Breasted, Vercoutter, Azim)?

No. of feature: 28

Location of feature: SQ2B, Planum 4; SP. 2.8: 2.70–4.50m E/0.65–1.28 N
Main category: Building
Sub category: Stone foundation
Measurements of feature: 1.75m W-E, 0.55m N-S; H: 159.73m; final shape see Planum 7 and photos 02.03.2013; NS = 0.90 + xm, EW = *c.* 3.30m
Stratigraphy: Unclear (area with mixed fillings/disturbance); but see F57 towards the W (contemporaneous to F57)
Description: Linear orientation W-E (follows the general orientation given by Building A – Features 16, 3). Built against natural gravel terrace; remnants of a foundation for a wall. 2 layers preserved. Large, more or less flat stones set close to each other in one line. The joints are filled with *muna* to keep the stones in place, on the surfaces are rests of *muna* still in place, the easternmost patch of *muna* shows a clear imprint of the stone/mud brick of the following layer. The preserved part consists of 7 bigger stones. One small piece of a mud brick still sticks to the *muna* on the surface between first and second stone from W. The southern outline seems to be in the original shape, whereas the northern part of the feature is disturbed. The original width of the foundation is not preserved, same as W- and E-ends. Following the southern outline to the W, the feature would meet the prolongation of F20 to the S, forming a SW-edge. The technique for a foundation layer with bigger stones combined with mud bricks and *muna* seems to be the same in both F20+28. The small heaps of dislocated stones/mud brick/*muna*/fragments in the NW of the feature, described on Planum 4 as "3", could be the rest of the foundation on this side and indicates the proceeding to the W.
13.02.2013: Planum 5: difference to Planum 4-condition: below *muna* patch (SP. 2.8: 3.65–3.8m E/0.90–1.15m N) in the middle of foundation remains another stone appeared. As the stones are very irregular in size and shape, there are no regular layers of foundation work. The feature is rather worked in steps than layers. *Muna* and mud brick was used to equalise the differences in level which are given by the natural slope; the stones are unworked.
15.02.2013: Planum 6: the stones forming the foundation appear more defined at the W+E ends, the stones in between are now higher, but otherwise did not change much; there is still no trace of a possible connection between F20 and 28.
Dating/Interpretation: 2013: Seems to be an Ottoman building technique? Date unclear.
2015: Probably eastern extension of F57; thanks to the stratigraphic information of F57 part of an early structure at SAV1 East; possibly related to Kerma *galoos* building technique.
Finds: 351/2013 cleaning S-baulk and a bit of the surface 1–6m to E; lot of debris + dump
Additions: 18.02.2013: See Planum 6 and photos, extension of structure. Feature with 7 large stones packed together in E-W alignment; are set within muddy-sandy depression on foot of gravel deposit S of SQ2; it therefore extends further to the S than F20, which ends at the gravel deposit. Southern outer face of F28 is regular and almost in one line, whereas the stones towards the N facing the pebble are irregular, this supports an interpretation as retaining wall against the pebble. Below Planum 6 further extension of F28. First: towards W, in line with F33. Three single headers of mud brick with *muna* preserved – attached to stone foundation of F28. Forth brick is closing a gap to F33; some remains of mud brick debris in muddy surface (gap of 35cm), mud brick format: 32 × 15 × 7cm. Second: towards E, small corner, single line of stretchers, 2 pieces of mud bricks preserved, 1 very small fragment, format 33 × 17 × 8cm. Adjacent to F28. All in all, F28 sits in the gravel – towards N there is a very loose back filling of gravel, towards the S mud brick debris. The max. length of F28 in Planum 7 is 3.30m, with stone foundation *c.* 2m in lentgh. All in all, a mixture of mud bricks and stones, 4 layers and stones account to 50cm in height. No floor is preserved.

No. of feature: 29

Location of feature: SQ1A, Planum 6, SP. 1.5–1.6
Main category: Pit/silo
Measurements of feature: 1.75m W-E, 0.75m N-S
Stratigraphy: Younger than F22, cuts F22
Description: A pit of nearly half-round shape, cut by limits of excavation towards the north. Filled with mud brick debris, different kinds of sherds, bones and some burnt bricks as well. Humous material.
Dating/Interpretation: Post-dates the floor. Probably dug into the floor in recent time (Ottoman period onwards). Filling material mixed, lot of Ottoman material. Visible as deep dark anomaly on map of geophysical survey 2011. Addition: With SQ1B in 2014, the northern half was excavated; although the pit cuts Floor F22, it might be 18th Dynasty after all; F49 is a dividing wall at its base and makes it likely that F29 was a circular silo. Thus, F29 illustrates that several building phases of Building A can be reconstructed (cf. Wall F44).

No. of feature: 30

Location of feature: SQ1A, Planum 6, SP. 1.6–1.7
Main category: Mud brick structure

Sub category: Wall
Stratigraphy: Contemporaneous with F13, 21, 3?, is cut by pit, see Planum 6 SQ1A SE part
Description: Extension attached to E-W wall of F13, 21. Roughly rectangular in shape, cut by pit at western and southern edges. Consists of mud bricks and *muna*, pits filled with clayish sand and mud brick debris, some small stones/pebbles, few potsherds. Northern face consisting of bricks *c.* L 34/32 × W 16 × H 8cm. Easternmost brick nearly completely weathered but shape can still be traced. N to structure is a trench filled with pebble material and mud brick/*muna* debris. The pebble slopes over the layer of *muna* on top of the bricks in the NW-corner. Western end severely damaged by sandy pit, negative of binder joining with remains of its northern counterpart still visible on *muna* in SW-corner. Construction joint with distinctive gap to older wall of F13, as can be seen in the southern part of the town, possibly still visible in pit. Big piece of mud brick at bottom of pit rather belonging to Wall F13/21. Southern line of stretcher only traceable by 1–½ bricks in SW-corner at this level. Most of the structure S of the N-line of the stretcher is disturbed by a big nearly half-round pit filled with sandy material, surrounded by compact mud brick/*muna* material → in upper levels very humous/dense and very mixed ceramics. Course to eastern direction remains unclear because of damage; definitely broken/cut off.
Dating/Interpretation: Structure attached to Wall F13; 18th Dynasty. Likely construction joint as in N-part of town (SAV1 North). Continuation to east remains unclear.

No. of feature: 31

Location of feature: SQ1A, see Plana 6+7
Main category: Foundation
Sub category: Foundation trench
Measurements of feature: W: *c.* 35–45cm at eastern side, S of F30
Stratigraphy: Contemporaneous with F30, 3, 21
Description: Narrow foundation trench alongside F30; see also collapsed bricks of F3. Cf. SAV1 North – along lowest layers of round brick wall, loose gravel, filled/mixed with collapsed mud bricks, very few sherds, see SAV1E P57+P58. All in all, foundation trench traceable in SQ1A (negative outline); in SQ1 along F3 obviously cut, see collapsed bricks. At eastern side of F30/towards S cut by pit. Undisturbed area S of F30 with few mixed 18th Dynasty sherds.
Dating/Interpretation: Foundation trench of wall of Building A, mid-18th Dynasty/Thutmose III.
Finds: Pottery vessels SAV1E P57+P58

No. of feature: 32

Location of feature: SQ2B, S of F27; 7–8.30m to E; see Planum 7
Main category: Pit
Sub category: Mud brick debris/assemblage
Stratigraphy: Contemporaneous with F25?
Description: Final shape of mud brick debris in SQ2B, S of F27; possibly once a rectangular, round structure, bricks are collapsed and sit on gravel deposit, between and below still mixed sherds. Towards the E (to F26) ashy remains. Separated from F27. Very dense mud brick assemblage also in the southern baulk in this area of SQ2B.
Dating/Interpretation: Post-New Kingdom, possibly Ottoman? Some of the collapsed and removed bricks had Christian sherds inside (medieval or post-medieval).

No. of feature: 33

Location of feature: SQ2B, SW-corner, see Planum 7; up to 1.80m to E
Main category: Mud brick structure
Sub category: Wall
Measurements of feature: W-E 70cm, N-S 37cm; H: 27–30cm
Stratigraphy: Unclear
Description: Remains of a wall, disappearing in S-baulk + W-baulk of SQ2B. Mud bricks: 30/33 × 15 × 7/8cm in line with F28, but different building technique and seems to make a corner towards the south. Obviously E-corner with stretchers and then 2 headers towards the W. 3 layers of brick preserved; some *muna* between them.
Dating/Interpretation: 18th Dynasty? unclear – but most likely connected with F28 and also F57 towards the W.

No. of feature: 35

Location of feature: SQ3 and 4; SQ3: 1.9–5.25m E-E/0–10m N-S; SQ4: 3.4–(5.5 m) W-E/0–(3.6 m) N-S
Main category: Foundation trench
Measurements of feature: L: 14m, W: min 0.9m, max 1.9m
Stratigraphy: See Harris Matrix
Description: Foundation trench of Wall F36. Longitudinal ditch running N-S. Sunk into the artificial terracing of gravel. Western edge quite regular in height/depth and outline; except for recess of *c.* 0.5m towards the E in the northern 2.5m – gets shallower. Eastern edge more irregular in height/depth and outline, most probably due to slope S to N and slightly W to E → in northern *c.*

5m E-edge at bottom level of ditch. Contains remains of Wall F36, which is in most parts heavily disturbed. Filling material very mixed: above substantial wall remains sandy/loose material; in disturbed areas dense layer of mud brick debris, mixed with lots of pottery; towards bottom sandy layer with smaller debris fragments and pottery. Not completely excavated towards the S in SQ4.
Dating/Interpretation: 18th Dynasty; foundation trench of one wall of Building A.

No. of feature: 36

Location of feature: SQ3 and 4; SQ3: 1.9–5.25m W-E/0–10m N-S; SQ4: 3.4–(5.5 m) W-E/0–(3.6 m) N-S
Main category: Wall
Measurements of feature: L: 14m; W: max 1.8m; H: max 0.5m
Stratigraphy: Sunk into F35
Description: Heavily disturbed N-S wall of Building A. Not more than 4 layers of bricks preserved. Brick measurements range from 32 × 15 × 10cm to 38 × 20 × 10cm. 4 – 4 ½ bricks wide. Gets shallower in the northernmost stretch of 2.5m; width *c.* 90cm/2 ½ bricks. Consisting of mud bricks, connected with mortar of different thicknesses. Not completely excavated towards the S in SQ4.
Dating/Interpretation: One of the main walls of Building A, 18th Dynasty.

No. of feature: 37

Location of feature: SQ3, 0.4–1.3m W-E/0.2–1.15m N-S
Main category: Mud brick structure
Measurements of feature: L: 0.90m; W: 0.70m; H: 0.10–0.15m
Stratigraphy: Connected to F41
Description: 2 brick thick mud brick structure in NW-corner of SQ3. 2 bricks high preserved. Brick measurements: 32 × 15cm, height not completely preserved. Lowest layer composed of 2 stretchers; above only one header at W-edge preserved. Mud bricks with mortar, showing traces of heavy disturbances. On the top the bricks are wind eroded. Floor pavement F41 connected to bottom edge of the wall in the W.
Dating/Interpretation: Structure within Building A, 18th Dynasty.

No. of feature: 38

Location of feature: SQ1B, 0–(8.4 m) W-E/(1.5m)–3.75m N-S
Main category: Wall
Measurements of feature: L: 8.4m; W: 0.9.–1.1m; H: max. 0.3m in the W
Stratigraphy: See Harris Matrix
Description: Very few remains of W-E wall (and foundation trench?) N of F13. Set against artificial terracing-layer of gravel to the S. Bottom *c.* 30cm lower than level of terracing in the W. In the westernmost 2m probably cut by either F29 or joining to Wall F39 (unclear). Level of terracing is sloping towards E until it reaches bottom level of F38. Bottom consisting of rather loose gravel, in some areas still covered with sand. On top very few remains of the possible mud brick structure. At 8.4m W-E two bricks in very bad condition still in situ. At 6.5m and 5m W-E some possible remains of bricks or filling of foundation trench at S-edge; N-edge at 4.7m W-E. At 1.5m W-E eastern outline of one row of bricks, very poorly preserved. To the N limited by gravel layer (with possible floor remains?) some 5–10cm below bottom level (SU 51) in the W, in the E no difference in level between F38 and bottom surface of SU 51.
Dating/Interpretation: Wall of a room/unit to the north of Building A's courtyard?; 18th Dynasty.

No. of feature: 39

Location of feature: SQ1B, 0–1.5m W-E/0–4m N-S
Main category: Wall
Measurements of feature: L: min 4m; W: min 0.9m; H: *c.* 0.3m preserved
Stratigraphy: See Harris Matrix
Description: Few remains of N-S wall (and foundation trench) N of F29 at W-edge of square. S-end not precisely distinguishable due to disturbances by pit F29. W-edge and N-end outside of limits of excavation. Possible 2 brick thick wall, very poorly preserved. At 2.5m N-S one stretcher in uppermost layer preserved in situ: 34 × 12 × 9cm. Three to four more rows of stretchers towards the N visible in W-profile, but badly preserved. On bottom layer of gravel. Towards W limited by area 5–10cm below bottom level (SU 51).
Dating/Interpretation: Wall of a room/unit to the north of Building A's courtyard?; west of F38; 18th Dynasty.

No. of feature: 40

Location of feature: SQ3, 0.1–2.4m W-E/6.6–7.4m N-S
Main category: Wall
Measurements of feature: L: 2.2m; W: 0.57m; H: 0.22m

Stratigraphy: See Harris Matrix (contemporaneous to F45)
Description: 1 ½ brick wide W-E wall, west of F36. Two layers of bricks preserved. One stretcher, one header each: 34x16x-10cm. Until 1.5m W-E complete outline preserved; 1.5–2.4m W-E only southern edge preserved.
Dating/Interpretation: Part of domestic building/unit; early 18th Dynasty?; probably formerly connected with F45.

No. of feature: 41

Location of feature: SQ3, 0–2.5m W-E/7.1–8.5m N-S
Main category: Floor
Measurements of feature: L: 2.5m; W: 1.4m
Stratigraphy: See Harris Matrix
Description: Floor pavement between F40 and F46, east of F35/36. Cut away in the east towards F36 by later disturbances also cutting into F36. To the S disturbed by F46. State of preservation declining from SE to NW. Sits on top of gravel, which is partly visible in less well-preserved areas. Consisting of loamy mud.
Dating/Interpretation: Pavement of building set up by F40 and 46; early phase of occupation.

No. of feature: 42

Location of feature: SQ3, 3.4–5.8m W-E/0–10m N-S
Main category: Floor
Measurements of feature: L: 10m; W: 2m
Stratigraphy: See Harris Matrix
Description: Floor plaster on levelled area between F35 and F43. In some parts very thick layer remaining, but also several big holes through which gravel layer underneath is visible. Surface is in general very uneven. In some parts, especially to the N, thin lines, probably scratched or hacked into the floor. At 5–6.2m N-S it still touches some remains of F36. To the E it only runs against remains of F44 in the very north, otherwise connection to F43/44 is lost. Between 3.3–4.1m, 5.3–6.4m and 8.7–9.5m N-S at eastern edge remains of small mud brick structures attached, but no connection to F43/44; either installations of some kind or levelled part of Wall F44. Material is compact and loamy.
Dating/Interpretation: Pavement of building set up by F35 and F43/44; early phase of occupation.

No. of feature: 43

Location of feature: SQ3: 5.9–9m W-E/0–10m N-S; SQ4: 7.1–10m W-E/0–6m N-S
Main category: Foundation trench
Measurements of feature: L: 16.5m; W: 1.3m; H: ca 0.35–0.45m
Stratigraphy: Contemporaneous to F25 and 42; F44
Description: Foundation of Wall F44. Longitudinal ditch running N-S. In SQ3 no eastern edge – bottom level equals floor level below SU 70. One exception: N of remains F13 1m of E-edge running into limits of excavation. W-edge against limit of artificial terracing – top edge = bottom level of F42. In SQ4 no straight eastern edge but rather sloping towards W. Regular W-edge between 2.3–6m N-S. In area of sandy disturbance/F15 between 0–2.3m N-S W-edge extends about 1m to the W; no E-edge at all in that area; F15 cuts the trench. At 6m N-S it runs into the trench of F16. Northern extension unclarified, runs further north of F13 and into limit of excavation. Contains remains of Wall F44.
Dating/Interpretation: Foundation trench of Wall F44 of Building A, mid-18th Dynasty.

No. of feature: 44

Location of feature: SQ3: 5.9–9m W-E/0–10m N-S; SQ4: 7.1–10m W-E/0–6m N-S
Main category: Wall
Measurements of feature: L: 16.5m; W: 1.1–1.2m; H: max 0.45m
Stratigraphy: Contemporaneous to F13, 25, 42 and 43; younger than oldest phase of Thutmose III; set on SU 1336
Description: heavily disturbed remains of N-S wall east of F36 in Building A. Set against artificial levelling at area of Floor F42 to the W. Northern end beyond limits of excavation. Junction with W-E Wall F13 at *c.* 1m N-S. Ends to the south at junction with W-E Wall F16. Two and half to three bricks strong. Max. 4 layers of bricks preserved (possible 4th layer in very bad condition). Brick measurements: 32 × 14 × 8cm. In SQ4 almost no remains. Was set into F15.
Dating/Interpretation: F44 was one of the main walls of Building A (western side of courtyard). The part of Wall F44 in F15 was removed in 2016; it was set on top of SU 1336, its base was 20–22cm above the pavement of F15. SU 1336 was identical with the lower filling of F15 in the eastern part, very organic-rich ashy deposits, mixed with some pebbles. Directly below Wall F44 a stamped seal impression with the cartouche of Thutmose III was found (SAV1E 0203); Wall F44 must, therefore, be later than the early-mid reign of Thutmose III.

No. of feature: 45

Location of feature: SQ3, 0–1.4m W-E/3.8–6.8m N-S
Main category: Mud brick wall and floor

Measurements of feature: L: 2.7m; W: 1.4m; H: *c.* 0.25m
Stratigraphy: contemporaneous to F40
Description: Slight depression, almost rectangular with few mud brick remains. Surrounded by floor remains to N and E; limited by F40 in the S. Western edge uncertain due to limits of excavation. Floor remains on top of gravel, not preserved at eastern edge. Several ashy spots on top of floor. One substantial deposit of ash in SW-corner/W-profile on top of floor pavement. Runs against F40.
Dating/Interpretation: A floor belonging to E-W Wall F40; once also a N-S wall possible, but mud bricks ripped out, only faint traces; 18th Dynasty.

No. of feature: 46

Location of feature: SQ3: 8.3–10m N-S/0–2.7m W-E; SQ4: 0–3.7m N-S/0.2–3.0m W-E
Main category: Pit
Measurements of feature: L: 5.9m; W: 2.8m
Stratigraphy: Post-New Kingdom (cuts E-W wall)
Description: Irregular shaped pit, to N almost circular, with small round appendix in S; cuts into E-W mud brick wall, filled with loose and mixed material including mud brick fragments; bottom base on gravel terrace.
Dating/Interpretation: Evidence for Post-New Kingdom destruction of mud brick structures at SAV1 East; maybe Ottoman.

No. of feature: 47

Location of feature: SQ1B, 0.6–2.1m W-E/4.5–5.0m N-S
Main category: Wall
Measurements of feature: L: 1.5m; W: 0.19m; H: 0.16–0.30m
Stratigraphy: Set into F29
Description: Half brick strong W-E wall set into F29 (pit/silo). Two layers of stretchers preserved. Each layer consisting of 4 ½ bricks. On top of westernmost brick remains of one stretcher of possible third brick layer. Wall set right on top of gravel bottom and against gravel edge of pit F29. Brick measurements: 30/31 × 19 × 8cm, made of unburnt mud.
Dating/Interpretation: Interior wall of pit/silo; maybe New Kingdom? Silos with dividing walls are also known from Kerma city (e.g. silo 758 of M224, see Bonnet 2014, 44–45).

No. of feature: 48

Location of feature: SQ4, western half: 0.6–3.3m W-E/5.3–6.4m N-S
Main category: Floor
Measurements of feature: *c.* 1.7m × 1.2m; H: *c.* 2–4cm
Stratigraphy: Probably contemporaneous to F45
Description: Floor with irregular shape due to bad preservation. Towards E seems connected to F45, N-S wall remains. Towards N lies F46 wall, but no connection here. Towards W mud bricks in situ connected with floor. On top of floor is a *c.* 10cm thick compact layer of mud/loam mixed with some pottery and charcoal. Material of flooring is mud/loam on top of pebble (decomposed mud bricks).
Dating/Interpretation: Probably pavement of "entrance room" in western part of Building A; early phase? (18th Dynasty).
Finds: SU 205: 1054–1064, 1089–1093, 1094–1113/2015

No. of feature: 49

Location of feature: SQ4, SW-corner: 2.8–4.6m W-E/7.6–8.3m N-S
Main category: Wall
Measurements of feature: L: 2(–2.2)m; W: 0.8m; H: 0.4m
Stratigraphy: On top of F50
Description: E-W running remains of mud brick wall. Badly preserved and whether outlines crossed or are connected with F36 or F16 remains unclear (although it seems to be abutting on the western side). The corpus of the wall is cut in the middle by a pit, *c.* 40cm deep. Eastern and western extensions/outlines unclear/not preserved. Towards the W the wall is partly cut away. Towards the N connection with another brick structure. Towards the W and E there is a connection to Floor F50. S-wall remains sit on layer of diverse use (mixed with pottery and ashy remains, charcoal pieces). Below this stratigraphic deposit is Floor F50. Three courses of bricks preserved. Bottom layer stretchers, on top headers, then again stretchers. Brick measurements: 36 × 16 × 10cm.
Dating/Interpretation: Belonging to western units of Building A; early to mid-18th Dynasty.
Finds: SU 205: 1065–1071, 1114–1124, 1137–1149/2015; SU 206: 1145–1147/2015; SU 214: 1255–1264/2015; SU 224: 1329–1331/2015

No. of feature: 50

Location of feature: SQ4+4A, SW half/corner: 0.8–3.9m W-E/7.6–11.40m N-S
Main category: Floor

Measurements of feature: 3.1 × 3.8m
Stratigraphy: Contemporaneous with F51, 52, belonging to 51
Description: Floor with irregular shape, slightly rectangle trough limitations by Wall remains F49 towards the N, Wall remains F52 towards the E, Wall remains F51 towards the W and S by limits of excavation. Floor runs below F49. Not entirely preserved, cut away in SE. Floor material is loam/mud, on top of pebble. Connected with F51 (E). F52 Wall sits on top of floor. Best connection to F51; F52 faded and disturbed. Close to F51 Wall (W) small pit/disturbance with grinding stone piece inside (similar to SAV1 North).
Dating/Interpretation: Earlier building phase than Building A?; possibly older than F49.
Finds: SU 226: 1334–1344/2015; SU 227: 1345–1359/2015; SU 228: 1360–1371/2015; SU 205: 1065–1079, 1125–1136, 1137–1144, 1149–1160, 1161–1172/2015

No. of feature: 51

Location of feature: SQ4+4A, SW-corner: 0.3–1.5m W-E/9–11.3m N-S
Main category: Wall
Sub category: Part of structure
Measurements of feature: L: 2.20m; W: 0.78m; H: 1.10m (final: L: 4.20m; W: 0.35–0.50m, H. 1.10m)
Stratigraphy: Contemporaneous to F50; probably connected to F58
Description: Slightly T-shaped remains of N-S running mud brick wall, preserved to 1.10m height. Cut away towards the N and S, towards the W it runs into section of excavation and seems to continue further W (status 2015). On top is *muna*. Eastern façade has whitish plaster on it. Inside of northern part of structure (corner) are traces of firing/burning – some bricks are red and black. Mud bricks laid alternately in headers and stretchers. 6–7 layers preserved. Floor F50 is connected to wall. Brick measurements: ? × 16 × 10cm.
12.08.2016: 2016 season of excavation clarified situation of Wall F51. It appears now as much extended wall towards N and S: max. length of 4.2m. The width varies from 0.35m to 0.50m. The former T-part now also extends further W (E-W: 1.10m). This part is badly preserved and contains a reddish, big stone together with ceramics in the construction. In line (*c.* 0.25m distance) lie wall remains of F58, but without a junction, because it is disturbed/hacked away. However, most probably we can assume a connection to Wall F58. In the N of the wall the lowest layer of the construction could be uncovered with a row of headers. At the inner SW-corner the headers turned to more broken undefined mud brick remains. The southern extended part is only preserved as a base layer of bricks. The bricks are cut off, however they must have been headers. The southern end seemed cut off as well – but here the not yet fully excavated area starts. At approx. 3.5m N-S another base layer of bricks (headers) is connected to the wall and runs E-W. The bricks of that E-W layer are disturbed and hacked away by the same disturbance as the N-S running base layer. The eastern end is cut off. The preserved length of this structure/layer is *c.* 1.30m. To the W of the wall a small foundation trench showed up, then the mud floor F78 follows further W. The floor level of the western side of the wall is higher than on the eastern outer side. Related SUs: 352, 377, 374, 424, 453, 459, 460.
Dating/Interpretation: F51 seems to be the T-part of a structure extending to the N and S, with the western extension of F51 as dividing wall of two units/rooms; possibly connected to the structure is the storage installation F75 to the NE. F51 belongs to the earliest building phase at SAV1 East and seems to predate Building A.
Finds: SU 200: 1000–1007/2015; SU 205: 1065–1079/2015; SU 215: 1265–1270/2015; SU 216: 1271–1274/2015: SU 217: 1276, 1278/2015; SU 218: 1277, 1279–1283/2015; SU 227: 1345–1350/2015; SU 228: 13601371/215

No. of feature: 52

Location of feature: SQ4+4A, central S part: 4.15–4.35m W-E/8.6–10.20m N-S
Main category: Wall
Measurements of feature: L: 1.62m; W: 0.20m; H: 0.27m
Stratigraphy: Contemporaneous with F50
Description: Badly preserved mud brick wall remains. N-S running, eventually in line with Wall F45. Towards N no connection to Wall F49, but connected to Floor F50. Towards W the connection to the floor is cut by a disturbance. Wall remains set into pebble. Southernmost brick in disturbance/pit sits on loose material (SU 205/213). Brick measurements: 38/41 × 16/19 × 10/12cm
Dating/Interpretation: Earlier building phase than Building A?; could belong to the same structure as F51, but connection is missing.
Finds: SU 202: 1009–1021/2015; SU 205: 1065–1079, 1137–1144, 1449–1160, 1161–1172/2015; SU 214: 1255–1264/2015

No. of feature: 53

Location of feature: SQ4+4A, central S part; 8.8–11.6m N-S/4.9–5.6m W-E
Main category: Wall
Measurements of feature: L: 3.1m; W: 0.34m; H: 0.25 m
Stratigraphy: Contemporaneous to F54
Description: N-S running remains of mud brick wall; isolated except for floor to the E. Towards the S it runs through the section, probably continues there? No visible connection to the N, seems cut away, but probably in line with remains of either F49

of F16? Badly preserved, towards S cut away in between. Two bricks besides layer of headers. Three (bad condition) bricks high, all headers. Wall sits on Floor F54 towards the E. Eventually this part of mud brick remains belongs to corner of F55? Brick measurements: 30/32 × 15 × 10cm.
Dating/Interpretation: Earliest phase to S of Building A; maybe neighbouring building to F51 (same orientation and construction, similar floor).
Finds: SU 211: 1207–1209/2015; SU 213: 1225–1254/2015; SU 214:1255–1264/2015; SU 230: 1383–1391/2015; SU 231: 1392–1394/2015

No. of feature: 54

Location of feature: SQ4, SE-corner: 5.2–9.2m W-E/9.9.8m N-S
Main category: Floor
Measurements of feature: 4 × 0.8m
Stratigraphy: Contemporaneous to F53 and F55
Description: Floor of irregular shape, because of bad preservation condition. Towards the W and S connected to Wall F53 and Wall F55. Wall F53 sits on top of the floor. Eastern part and southern end connected with Wall F55. In the eastern part floor is disturbed and cut away; a small patch of floor towards the east connected to F55 probably represents the same horizon but is not connected. Material of floor is mud/loam on top of pebble.
Dating/Interpretation: This floor seems to cover the interior of the room created by Wall F53 in the west and Wall F55 in the S; early 18th Dynasty, pre-dating Building A.
Finds: SU 202: 1009–1021/2015; SU 213: 12225–1254/2015; SU 233: 1401–1403/2015

No. of feature: 55

Location of feature: SQ4+4A, SE-corner: 5.65–10.3m W-E/9.7–10.3m N-S
Main category: Wall
Measurements of feature: L: 4.75m; W: 0.17–0.67m; H: 0.35m
Stratigraphy: Contemporaneous to F54, F56 (also to F20?)
Description: E-W running remains of mud brick wall, half-brick thick. To the N built against pebble from which also floor remains of F54 runs over/above the wall (connected to F54). Towards S Floor F56 is connected with the wall in the area of the most western brick. Floor F56 is also connected with a parallel running stone terracing wall. In middle area two bricks are visible which were set against the wall (towards the S) – could be a kind of a pilaster (see SAV1 North). Connected with the possible pilaster is a very compact layer mixed with pebbles in a curving shape, which runs S towards mud brick remains on top of the terracing stone wall. Below this thick layer are remains of mud flooring (F56). The wall is a structure of one row headers, beside two rows of possible pilaster bricks and two (three) layers of headers preserved. Brick measurements: 40 × 17 × 10cm.
Dating/Interpretation: Part of an early structure at SAV1 East; southern wall of unit/room with F53 as western wall; presumably an interior of a building, see floor towards the south (F56); early 18th Dynasty. F20 in SQ2 seems to be the eastern wall of this structure, but it is not connected to it.
Finds: SU 213: 1225–1254/2015; SU 230: 1383–1391/2015; SU 232: 1395–1401/2015; SU 233: 1401–1402/2015; SU 234: 1043–1407/2015; SU235: 1408–1413/2015; SU 239: 1435–1441/2015

No. of feature: 56

Location of feature: SQ4+4A, SE-corner: 5.7–8.1m W-E/0.3–1.6m N-S
Main category: Floor
Measurements of feature: 2.4 × 1.3m
Stratigraphy: Contemporaneous to F55 and F57
Description: Floor with irregular shape due to bad preservation and disturbances. Towards the N the mud floor is connected to the F55 Wall and to the S to F57, the stone terracing wall. To the E the flooring is cut away or disturbed and shows up again below the presumed pilaster bricks of the F55 wall. In this area there is also a thick loam/mud layer mixed with pebbles in a curving shape above the floor – most probably the coating of the pilaster (cf. SAV1 North, N24Pil3, Doyen 2017, 41–43, figs. 19–20).
Dating/Interpretation: Early level at SAV1 East; connected with F57.
Finds: SU 241: 1444–1448/2015; SU 239: 1435–1441/2015; SU 240: 1442–1443/2015: SU 232: 1395–1401/2015; SU230: 1383–1391/2015: SU 213: 1125–1254/2015

No. of feature: 57

Location of feature: SQ4A+2A, SE-corner: 6.1–11.5m W-E/0.3–1.8m N-S
Main category: Structure
Sub category: Stone terracing wall
Measurements of feature: 5.4 × 0.6m
Stratigraphy: Contemporaneous to F55 and F56

Description: Terracing wall made of stones set against the pebble. E-W running. Runs through southern section of SQ4A and most probably continues there. Parallel to the stone terracing wall in SQ2A. Stones are neither worked nor are architectural pieces. Stones set up irregularly, undefined. Mainly sandstone. Mud bricks were laid in a row of headers on top of stones. In the W-part two layers high preserved. In E-part no mud bricks are any longer visible. Mud pavement F56 is connected to the stone terracing wall in the western part and in the middle sector. In the middle sector on top of the connected floor is a thick layer of mud/loam in a curving shape, which also runs towards the stone wall and is to the S connected to the pilaster mud bricks of F56. Mud bricks in no good state of preservation for measurements: length at least 33cm × 15 x10cm. Stones have various sizes from 20 × 24 × 15cm to 50 × 25 × 20cm.
Dating/Interpretation: Dry-stone wall of a building phase pre-dating Building A at SAV1 East; maybe inspired by Kerma *galoos*-technique; important link to the area around Temple A. Early 18th Dynasty. Probably western extension of F20.
Finds: SU 238: 1427–1434, 1449–1453, 1457–1460/2015; SU 240: 1442–1443/2015; SU 241: 1444–1448/2015; SU 239: 1435–1441/2015; SU 236: 1416–1423/2015; SU 235: 1408–1413/2015; SU 234: 1403–1407/2015; SU232: 1395–1401/2015; SU 230: 1383–1391/2015

No. of feature: 58

Location of feature: SQ4B
Main category: Wall
Measurements of feature: L: 2.8m; W: 0.55m; H: 0.30m
Stratigraphy: Contemporaneous to F51 and F59
Description: E-W running wall, badly preserved. From all sides hacked away, only N-side/face at western end is in this sense not destroyed (probably). Wall is in line with T-shaped Wall F51, but not really connected, because disturbed in that part. A slight slope towards the E is visible. Concerning the height, three layers are preserved. The building technique seems to change (maybe due to slope) from stretchers as the lowest row in the W to headers from the middle on towards the E. There again, a single row of stretchers seems to be below the header. The wall abuts the higher level (pebble terrace) N of it. Brick measurements: 32 × 15 × 6cm. The eastern most underlying header is slightly smaller with a width of 11cm. Related SUs: 451, 452, 386, 346.
Dating/Interpretation: This wall is maybe the southern wall of an elongated room which integrates F51+F59; the unit belongs to the early 18th Dynasty.

No. of feature: 59

Location of feature: SQ4B, northern half
Main category: Wall
Measurements of feature: L: 0.80m; W: 0.20m; H: 0.91m
Stratigraphy: Probably contemporaneous to F58
Description: E-W running remains of mud brick structure, possibly wall. Very badly preserved. Only one brick is still visible, but also much destroyed and eroded. The brick is surrounded by mortar/*muna* and is sitting on top of *muna*. To the W only the mortar of a further possible mud brick is preserved. The mud brick is laid out as stretcher. Measurements: 36 × 15 × 9cm. Related SU 387, 359.
Dating/Interpretation: F59 is maybe the remaining part of an interior wall of a room which integrates F51+F58; the unit belongs to the early 18th Dynasty.

No. of feature: 60

Location of feature: SQ4B, eastern part at junction to SQ4
Main category: Wall
Measurements of feature: L: 0.49m; W: 0.55m; H: 0.35m
Stratigraphy: Probably contemporaneous to F59, F58 and F51
Description: Slightly T-shaped structure aligned N-S. Badly preserved. Hacked away to the N, W and S. To the E lies the foundation trench of F51 (wall). The structure itself is erected above a mud floor. Below the mud floor the pebble is visible. The remains are preserved to the height of 4 layers of mud brick. The first row are stretchers, above are 3 layers of headers, in between is *muna* mixed with some smaller pebbles (2–3cm). The northern end of the structure is only visible due to mortar impressions of mud bricks. Brick measurements: 36 × 15 × 9cm. Related SUs: 412, 385.
Dating/Interpretation: F60 is maybe part of a room/unit, involving F51, F58 and F59 from the early 18th Dynasty.

No. of feature: 61

Location of feature: SQ4B, eastern limits of excavation at junction to SQ4A
Main category: Wall
Measurements of feature: L: 1.35m; W: 0.35m; H: 0.42m
Stratigraphy: Contemporaneous to F60 and F51
Description: E-W running mud brick wall. Badly preserved. E- and W-ends were hacked away. Fragments of mud bricks, possibly from structure, were lying next to it, out of place – one in the little pit/disturbance to the W. In the NW a piece of mortar impression from a mud brick survived. Below the structure the pebble is visible. The remains are preserved to a height of four

layers of mud bricks. All layers are laid out as headers, with mortar in between. Brick measurements: 36 × 15x 9cm. Related SUs: 444, 431.
Dating/Interpretation: The structure was maybe connected to the southern remains of mud brick Wall F60 and also Wall F51; early 18th Dynasty.

No. of feature: 62

Location of feature: SQ4B
Main category: Wall
Measurements of feature: L: 0.55m; W: 0.28m; H: 0.33m
Stratigraphy: Contemporaneous to F59 and F63 (and maybe F58, 51)
Description: N-S running remains of mud brick structure, badly preserved. N- and S-ends were hacked away. The structure is sitting on a mud floor F63, which continues a bit further south. Below the floor the pebble is visible. A height of four layers is preserved. All seem to be stretchers, in between mortar. Brick measurements: 30 × 13 × 7cm. Related SUs: 388, 358.
Dating/Interpretation: Could be part of (back) wall of a room formed by that wall and F59; early 18th Dynasty.

No. of feature: 63

Location of feature: SQ4B+4C
Main category: Floor
Measurements of feature: 2.30 × 1.25m; H: *c*. 10cm
Stratigraphy: contemporaneous to F62 and F64
Description: The mud floor is preserved from the height of F62 and runs towards S to Wall F64 and is connected with that wall. The eastern part is clearly hacked away, the western extension is unknown, because of limits of excavation, but presumably continues to the W. Above the floor, N of the wall remains, a baking plate with stratification deposit (SU 449) was found (Fig. 31). The place is now indicated by traces of reddish-black colour on mud floor (burnt). Further to the N, where the floor remains start, is a small depression, *c*. 50 × 40cm, in which the floor remains (or fragments of brick) also show traces of possible firing or burning, because of the same reddish-brown colour (see F77). Related SUs: 449, 474, 390. The stratigraphy under the baking plate was sampled for micromorphology (SM 02).
Dating/Interpretation: Presumably an open-air area where cooking/baking activities took place? Early 18th Dynasty.

No. of feature: 64

Location of feature: SQ4C, western half
Main category: Wall
Measurements of feature: L: 0.90m; W: 0.80m; H: 0.35m
Stratigraphy: Contemporaneous (or younger) than F63
Description: Probably E-W running mud brick structure which is connected to the northern mud flooring F63. The flooring also continues to the southern end of the wall (runs below). The structure itself is quite massive with large mud bricks, however it is hacked away to the E, S and W. Preserved to a height of four layers. All layers seem to be stretchers, except the lowest bricks to the southern end are three headers. Brick measurements: 38 × 18 × 9cm. Related SUs: 380, 348. The junction of the wall and pavement was sampled for micromorphology (SM 09).
Dating/Interpretation: Fragment of an E-W wall of a structure; probably slightly younger than the open-air area with F63, 18th Dynasty.

No. of feature: 65

Location of feature: SQ4C, SW-corner
Main category: Wall
Measurements of feature: L: 2.9m; W: 0.35m; H: 0.36m
Stratigraphy: Contemporaneous with F64
Description: E-W running wall made of mud bricks. The western end runs into the limits of the excavation and possibly continues further to the W (see 2017: hacked away). But only one row of mud bricks is preserved, the rest is hacked away, although there are many destroyed and weathered remains of mortar brick impressions, which continue in line

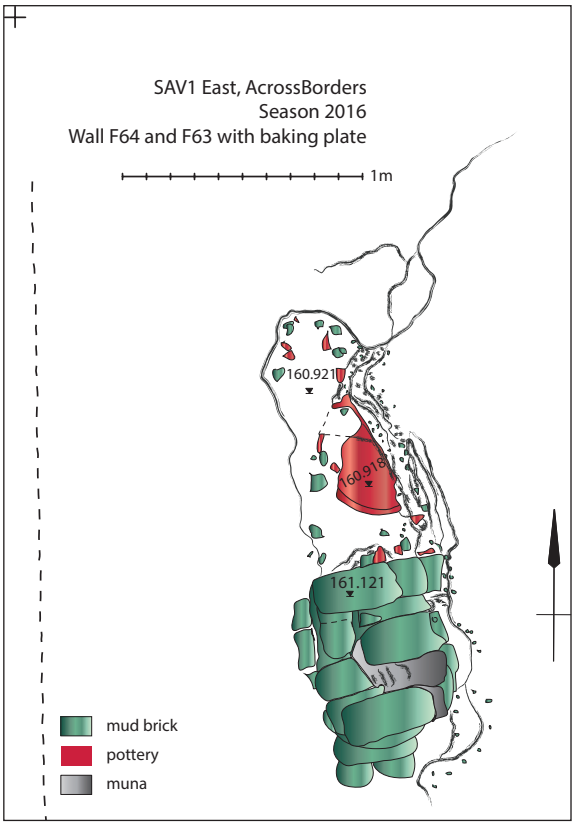

Fig. 31 Wall Feature 64 and Floor Feature 63 with baking plate in situ

with the wall (over approx. 2.40 m) and therefore presumably belonging to the same wall. Preserved height of four layers. The layers are all headers (topmost uncertain), to the eastern side it changes from header, two stretchers to headers again (only one layer preserved here). In a distance of *c*. 5–10cm (filled with pebble and presumably mortar) a row of stretchers is laid out S of the header-complex (western end turns into the baulk/section, southern end is also hacked away). A few mortar impressions of the upper row of mud brick are still preserved. To the S, at the height of the end of the wall structure, some more N-S running remains of mortar impressions are preserved and were maybe connected with the wall because it is direct in line with the last preserved header of the wall, however no direct connection is preserved. To the N the wall is connected to a mud floor. This floor is also connected to the wall remains of F64 (distance approx. 0.70m). To the S, in a distance of *c*. 0.60m, the wall and schist flooring remains of F66 are situated, but were not connected through mud flooring; only the pebble is still visible. Brick measurements: 31 × 15 × 9cm. Related SUs: 404, 399, 388.
Dating/Interpretation: Fragment of an E-W wall of a structure; cf. F64, 18th Dynasty. The floor between the two structures might be a street level/horizon.

No. of feature: 66

Location of feature: SQ4, SW-corner
Main category: Wall remains with connected schist floor
Measurements of feature: L: 1.5m; W: 1.6m; H: 0.35m
Stratigraphy: Belongs to floor covering of F85, possibly contemporaneous to Wall F84
Description: Directly at the SW-corner of the square, limited by the limits of excavation (extended as SQ4C and 4D in 2017). It is a substantial mud floor, *c*. 30cm thick, with above lying schist plates which are bounded by white plaster. The mud foundation seems to have at least 2 phases; the lowest layer almost looked like solid brickwork. The mud flooring/foundation is hacked away on the northern and southern sides. On top of the schist pavement lies a big fragment of sandstone (= SAV1E 2904). To the E remains of a wall structure out of mud brick were connected with the substantial mud foundation. A micromorphological sample was taken from the mud flooring/foundation (SM 01). Related SUs: 375, 378, 349.
Dating/Interpretation: Thutmoside; presumably schist floor of magazine building (will be published in detail elsewhere).
Addition: Clear from work in 2017 that the schist pavement continued from SQ4 to 4C to 4D (see F85).

No. of feature: 67

Location of feature: SQ4B1, eastern half
Main category: Wall
Measurements of feature: L: 3.3m; W: (0.55) 0.70m; H: 0.29m
Stratigraphy: Contemporaneous or older than F69
Description: Hacked out, N-S running remains of mud brick wall. Northern end runs into limits of excavation. Towards the S the mud bricks are connected to the mud bricks of the wall remains of F68, but they were not set in the same line and out of angle. Only the outer row of mud bricks is preserved, however in no good condition. Directly adjacent runs the further wall structure F69 N-S and either the eastern outer side of mud bricks from F69 were lying/set against the wall or they may be sharing the same wall. This is not clear also due to the change in line/angle to the other walls F76+69. E of the wall structure mud flooring is preserved in which the outline of the not preserved mud bricks are still visible. Brick measurements: 32 × 17 × 9cm. Related SUs: 428, 426, 413.
Dating/Interpretation: Part of a 18th Dynasty structure; alignment see Building A and earlier phase.

No. of feature: 68

Location of feature: SQ4B, N-part
Main category: Wall
Measurements of feature: L: 1.62m; W: 0.57m; H: 0.27m
Stratigraphy: Contemporaneous to F67?
Description: N-S running mud brick wall in northern part of square at junction to SQ4B1. At the northern end it is connected to another remnant of a mud brick wall (F67), although not as direct extension, but rather slightly out of angle towards the W. The mud brick wall itself is badly preserved, not one entire brick is visible or in place any longer. The N-end is slightly better preserved, here at least the length of the brick is attested. The southern part is almost completely hacked away. The height is preserved to two layers of brick. One layer of headers, above a row of stretchers. The wall is situated on pebble/mud flooring, also hacked away almost completely. To the W is Wall F69 (distance 0.44m). Brick measurements (taken by several ones): 32 × 16 × 9cm. Related SUs: 391, 347.
Dating/Interpretation: Part of an 18th Dynasty structure; alignment see Building A and earlier phase.

No. of feature: 69

Location of feature: SQ4B1+4B
Main category: Wall (and schist pavement)
Measurements of feature: L: 5.35 m: W: 1.58; H: 0.45 m

Stratigraphy: Contemporaneous or younger than F67
Description: N-S running mud brick wall. The northern end runs into the limits of the excavation and continues there. Part of the wall or mud brick is even visible on the recent surface. The southern end is hacked away as well as the inner part of the wall – only one connecting E-W running row of bricks (also badly preserved) is preserved. The outer face of the wall is plastered, well visible on the western side of the wall. It is preserved almost over the entire length of the wall. The eastern outer wall is maybe a joint wall with Wall F67 – although not clear, maybe two building phases. A height of four layers is preserved. The western side/wall is laid out as headers, except the southernmost underlying bricks (first layer) are set out as two stretchers and one stretcher in the third layer. A few centimetres further S remains of mud bricks (F70) occur and were visible in line with the wall but were not connected. It is possibly a further extension of F70, which is also laid out as headers. The western side is connected to the schist plates and the stratification deposit below them through a mud floor. This floor was sampled for micromorphology (SM 08). Brick measurements: 32 × 15 × 9cm. Related SUs: 423, 405, 401.
Dating/Interpretation: Probably a magazine wall, mid-18th Dynasty, with a schist pavement.

No. of feature: 70

Location of feature: SQ4B
Main category: Wall
Measurements of feature: L: 0.90m; W: 0.80m; H: 0.25m
Stratigraphy: Contemporaneous with F69
Description: E-W running remains of a wall structure, badly preserved. Hacked away at northern and southern ends. To the N, in 25cm distance, the remains of Wall F69 are situated, but there is no connection, it is, however, aligned with F69. Two layers are preserved, all stretchers. Brick measurements: 32 × 16 × 9cm. Related SUs: 366, 336.
Dating/Interpretation: Probably E-W wall of mid-18th Dynasty magazine with schist pavement.

No. of feature: 71

Location of feature: SQ4B1, western half
Main category: Floor
Sub category: Schist plate pavement
Measurements of feature: L: 0.95m; W: 0.16–0.45m; H: 1–4cm (with stratification remains 22–23cm)
Stratigraphy: Lies above F72, but is presumably contemporaneous
Description: Two connected schist plates which are connected by white plaster also sitting above the schist plates. Partially preserved to a height of 3–4cm (the plaster). On top of the southern plate and plaster are remains of loamy material/deposit along with some pebbles, 3–4cm, as inclusions. The schist plates are situated above the stratification deposit; the deposit itself is solid and mixed with some bone, pottery, charcoal. The deposit is situated above the surrounding *muna* floor. Related SU: 414.
Dating/Interpretation: Schist pavement of mid-18th Dynasty magazine.

No. of feature: 72

Location of feature: SQ4B1, western half
Main category: Stratification deposit
Measurements of feature: 1.5m W-E; 1.2m N-S; H: 10–30cm
Stratigraphy: Lies below F71, but presumably contemporaneous
Description: L-shaped. Directly adjacent to mud bricks (N-S) and also situated above them (F69). The northern part of the stratification remains also runs below the schist plates of F71. The stratification remains consist of compact loamy material mixed with charcoal. In between seem to be several "layers" of flooring. Material defined as SU 470. A sample was taken for micromorphology (SM 03). Connected with F82, the E-W wall toward the W. Related SU: 470.
Dating/Interpretation: Foundation for schist pavement of mid-18th Dynasty magazine.

No. of feature: 73

Location of feature: SQ4B1, NE-corner of excavation limits
Main category: Pit
Measurements of feature: Outer extensions: L: 1.55 × W: 0.85m; inner extensions: 1.47 × 0.80m; H: *c*. 0.50m
Stratigraphy: Cuts into gravel and debris layers
Description: The pit is only partially excavated due to the limits of the excavation (N). For stabilisation of the section and better working conditions, a wall of modern, red burned bricks was built against the section. The pit was found filled with fine, light sand. Towards its bottom were a few mud brick fragments. The pit is dug into the pebble and cuts the adjacent mud floor above (to the W).
Dating/Interpretation: Evidence of Post-New Kingdom destruction.

No. of feature: 75

Location of feature: SQ4

Main category: Storage pit
Measurements of feature: Outer extensions: L: 0.87 × W: 0.82m; inner extensions: 0.76 × 0.67m; H: ca 0.24m
Stratigraphy: Contemporaneous to F51?
Description: Storage pit with a slightly trapezoid shape. Laid out in mud – floor and sides. Above the gravel terrace with mud floor and to the W lies the N-S wall F51. A sample was taken for micromorphology (SM 11). Related SUs: 465, 462, 461, 458, 454, 442.
Dating/Interpretation: Early 18th Dynasty storage pit, cf. Azim's structures around Temple A; within structure encompassing Wall F51.

No. of feature: 76

Location of feature: SQ4C, western half
Main category: Storage pit
Measurements of feature: L: 1.06m; W: 0.75m; H: 0.15m
Stratigraphy: Contemporaneous with F63 and 77
Description: Storage pit with a square shape, laid out in mud – floor and sides. Set in the pebble terrace. The western and northern sides seem to be set directly on top of the outlines of the pit (mud bricks). At the western side above the bricks, pebble shows up and on top of the pebble a mud floor was laid out, which shows traces of firing of some baking installations (see F77+63). Here the baking plate was found. Samples were taken of the filling material (NW-corner, SM 06 and 10). Related SUs: 473, 469, 440.
Dating/Interpretation: Early 18th Dynasty storage pit, cf. Azim's structures around Temple A; maybe connected with the baking area F63+77.

No. of feature: 77

Location of feature: SQ4C
Main category: Baking installation
Measurements of feature: Northern one: approx. 0.50 × 0.70m; southern one: approx. 0.55 × 0.55m
Stratigraphy: Contemporaneous to F63 and F64
Description: Only traces of these baking installations are preserved, indicated by a reddish-black coloured mud floor (F63). The mud floor itself is connected to the wall remains of F64 in the S. The northern trace has an oval shape and the inner part is of reddish colour, which turns to brownish-black on the outlines. The southern one has an almost rectangular shape and is also reddish coloured in the middle and brownish-black on the outlines. The baking plate was found in situ above this spot with a stratification deposit below (on top of the floor). To the W is the limit of the excavation profile. For the baking plate, see F63 and SU 449. Related SUs: 449, 474, 390.
Dating/Interpretation: Open-air area with baking plate; 18th Dynasty.

No. of feature: 78

Location of feature: SQ4B+4C
Main category: Mud floor
Measurements of feature: L: 4.1m; W: 2.5m; H: 3cm
Stratigraphy: Contemporaneous to F51, F58 and F79
Description: Elongated shape, not entirely preserved. Especially in the middle only the underlying pebble is still visible. In the SW a block of stratification deposit (L: 0.60m, W: 0.50m, H: 0.20m) is situated on the floor and was left there at the end of season intentionally/on purpose. Related SUs: 475, 467, 456, 455, 443, 437, 436, 396.
Dating/Interpretation: The floor connects the wall F58 in the N, Wall F51 in the E and Wall F79 in the S, which all together would shape an elongated room. Early 18th Dynasty.

No. of feature: 79

Location of feature: SQ4C
Main category: Wall
Measurements of feature: L: 0.95m; W: 0.38m; H: 0.22m
Stratigraphy: Contemporaneous to F78
Description: E-W running remains of a mud brick wall, badly preserved. Height of two layers still visible and preserved, all stretchers; the eastern brick was a header but was hacked away. Mud bricks set against a slightly higher pebble terracing (towards the S). Related SUs: 463, 456.
Dating/Interpretation: These wall remains could be the southern back wall of a room which would be shaped by Walls F51 (E), F58 (N) and F62 (W). In the N the structure is connected to a mud floor (F78), which itself is also connected to Wall F58 in the N. Early 18th Dynasty.

No. of feature: 80

Location of feature: SQ4B1, western half

Main category: Architecture piece (and pit)
Sub category: Column base
Measurements of feature: Diam. 0.45m
Stratigraphy: Unclear – re-used in pavement F72?
Description: Stone column base and pit west of Wall F69. Related SUs: 472, 433, 420
Dating/Interpretation: This column seems to have been re-used in the pavement F72; since the area around the column was disturbed, it could also derive from a later destruction phase.

No. of feature: 81

Location of feature: SQ4B1, eastern half
Main category: Part of structure
Sub category: Mud brick
Measurements of feature: 30 ×10 × 8cm
Stratigraphy: Unclear (isolated)
Description: Single mud brick east of Wall F67. Related SUs: 432, 413, 405.
Dating/Interpretation: Unclear in this state of preservation; probably a former 18th Dynasty structure, maybe related to F67.

No. of feature: 82

Location of feature: SQ4B1, western half
Main category: Mud brick structure
Sub category: Wall
Measurements of feature: L: 0.9m; W: 0.2m
Stratigraphy: Below F71
Description: Mud brick structure, running W-E towards F71/72 (schist plates/stratification deposit). Related SUs: 438, 420.
Dating/Interpretation: Unclear – looks as if it was part of the foundation deposit for the schist pavement; early 18th Dynasty; maybe overbuilt structure?

No. of feature: 83

Location of feature: SQ4D, central part
Main category: Mud brick structure
Sub category: Cellar
Measurements of feature: L: 3.3m; W: 1.8m; H: 2m
Stratigraphy: Contemporaneous with F85
Description: Rectangular cellar; southern wall partly collapsed; vault found collapsed on the floor; set into gravel deposit.
Dating/Interpretation: Thutmoside; same alignment as F15 and F85; will be published in detail elsewhere.
Finds: Pottery, bones, charcoal etc.

No. of feature: 84

Location of feature: SQ4D, northern part, N of F85
Main category: Wall
Sub category: Magazine wall
Measurements of feature: L: 6.35m; W: 0.56–0.60m; H: 0.26m
Stratigraphy: Contemporaneous with F85
Description: E-W aligned fragment of a brick wall; half-brick thick; two layers preserved; northern outer face burnt.
Dating/Interpretation: Probably the northern wall of the magazine encompassing Cellar F85; will be published in detail elsewhere. Thutmoside.
Finds: Pottery, bones, charcoal etc.

No. of feature: 85

Location of feature: SQ4D, northern part, S of F84
Main category: Mud brick structure
Sub category: Cellar
Measurements of feature: L: 3.7m; W: 1.5m; H: 2.05m
Stratigraphy: Contemporaneous with F83 (and F84)
Description: Rectangular cellar; vault still partly preserved; set into gravel deposit.
Dating/Interpretation: Thutmoside; same alignment as F15 and F83; will be published in detail elsewhere.
Finds: Pottery, bones, charcoal etc.

No. of feature: 86

Location of feature: SQ4, western half: 1.6–2.4m W-E/0.4–6.9m N-S
Main category: Wall
Measurements of feature: L: 6.35m; W: 0.56–0.60m; H: 0.26m
Stratigraphy: Contemporaneous with F87+88
Description: Elongated N-S running remains of a mud brick wall. Not preserved on the entire length, due to bad preservation in the northern part. At the northern and southern ends only negative impressions of mud brick remained. The central part shows mud brick in structure: two mud brick thick wall preserved with *muna*/mortar on top, *c.* 2cm thick. Consists of one layer of headers and one layer of stretchers. Three headers and max. four stretchers are visible/preserved. Generally not in a good state of preservation. Brick measurements: 35 × 16 × 10cm. Situated on top of pebble/gravel deposit. No pavement/floor remains below. Towards the W the connection to Wall F46 has remained. Here also junction with F47 – the pavement adjacent to F46 (N of 46).
Dating/Interpretation: Possibly interior wall of Building A (mid-18th Dynasty). No clear context for dating, mixed material.
Finds: SU 205: 1054–1064, 1080–1093, 1094–1113/2015; SU 223: 1325–1328/2015

No. of feature: 87

Location of feature: SQ4, western half: 0.8–2.35m W-E/4.7–5m N-S
Main category: Wall
Measurements of feature: L: 1.53m; W: 0.28–0.50m; H: 0.35m
Stratigraphy: Contemporaneous with F86+88
Description: E-W running remains of a mud brick wall. Three layers of bricks preserved, but in general in bad condition. On top of the western part a thin layer of *muna* is preserved. In the N mud pavement of flooring is connected to the wall. Towards the W the wall seems cut away, towards the E junction to N-S running Wall F45. Towards the S no connection to Pavement F48. Remains of the wall consist of one layer of headers, one layer of stretchers, one layer of headers, then *muna* on top. Brick measurements: 28 × 15 x10cm. Connected with Floor F47 to the N. Large piece of *muna* at the western edge possible indication of multiple phases?
Dating/Interpretation: Interior wall of Building A.
Finds: SU 220: 1293–1298/2015; SU 223: 1320–1324/2015

No. of feature: 88

Location of feature: SQ4, NW half: 0.4–4.7m N-S/0.5–2.2m W-E
Main category: Floor
Measurements of feature: *c.* 4.30 × 1.7m; H: *c.* 2–4cm
Stratigraphy: Contemporaneous with F46/45, belonging to F46
Description: Irregular shape, due to very bad preservation and several disturbances. Seems to be limited by Walls F45 (E) and F46 (S) and connected with them. Towards the western section a circular pit cuts into floor. Between this pit and the remains of Wall F46 compact dense/loamy material appears on top of the floor. Probably comprised very bad preserved remains of mud bricks? Material of flooring is mud/loam mixed with pebbles (as inclusions).
Dating/Interpretation: Floor connected to 18th Dynasty structure remains F45, cut off by F46.
Finds: SU 220: 1293–1298/2015

No. of feature: 89

Location of feature: SQ4C, eastern part
Main category: Wall
Sub category: Part of building
Measurements of feature: *c.* 3.17 × 0.56m
Stratigraphy: Contemporaneous with F90 and F91
Description: Largely destroyed N-S wall of mud bricks (16cm wide); aligned with structure in SQ4; connected to F90.
Dating/Interpretation: Outer wall of mud brick structure; mid-18th Dynasty.

No. of feature: 90

Location of feature: SQ4C, northern part
Main category: Wall
Sub category: Part of building
Measurements of feature: *c.* 1.47 × 0.51m
Stratigraphy: Contemporaneous with F89 and F91
Description: Largely destroyed E-W wall made of mud bricks (16cm wide); aligned with structure in westernmost part of SQ4C (thus bridging a distance of 6.38m E-W in Square 4C); connected to F89.
Dating/Interpretation: Outer wall of mud brick structure; mid-18th Dynasty.

No. of feature: 91

Location of feature: SQ4C, northern part
Main category: Floor
Sub category: Mud floor
Measurements of feature: *c.* 0.55 × 0.25m
Stratigraphy: Contemporaneous with F89 and F90
Description: Remains of a mud floor set in the corner of E-W Wall F91 and N-S Wall F89; small patch of mud floor.
Dating/Interpretation: Flooring of a mud brick structure (BS SU 1484); mid-18th Dynasty.

3.3 Sector SAV1 West

3.3.1 Progress of excavation

Season 2014

One of the goals of the 2014 season was to investigate the enclosure wall of the fortified New Kingdom town on its western side, just north of the main town gate. At the new site towards the west, labelled SAV1 West, two new trenches were opened – Square 1 (10 × 10m, Pl. 48) and Square 2 (5 × 15m) (see Pl. 51).[459] An extension to the west was later added to Square 1 (Square 1W, 5 × 10m) and to the northwest (Square 1NW, 2 × 5m).

Based on the experience from work at SAV1 East in 2013, the excavation method was modified into a one surface documentation, conducting a stratigraphical excavation according to stratigraphical units (see above, Chapter 3.1.3). For removing the deposits according to their stratigraphical position, Structure from Motion (SfM) documenting was introduced.[460] With a camera (Canon EOS 70D) and a monopod each working step was documented by photographs and then processed with PhotoSCAN, thus resulting in Structure from Motion models of each surface on a daily basis.

Square 1 (and Squares 1W and 1NW)

Initially removing the upper debris levels of Square 1, it soon became clear that its western half was occupied by the remains of the New Kingdom town enclosure (Feature 100), while its eastern part displayed large sandy pits with much 18th Dynasty pottery, loose mud bricks and many worked stone fragments (Pl. 49). The scattered worked stone fragments were in general very common at SAV1 West and also appeared in deeper layers, mostly in fillings of disturbances and as part of debris (Fig. 32).

In the southwestern corner of Square 1 a large pit filled with mostly Christian pottery was cut into the enclosure wall. Similar holes had also been dug into the brickwork of the enclosure wall at SAV1 North.[461] As was already observed by Azim in the 1970s, the Sai fortification suffered from several destructions, but also restoration phases in its use-life.[462] This was confirmed by work at SAV1 West.

Despite much ancient destruction work and disturbing pits, the complete thickness of the town wall is visible (4.3–4.5m) and the foundation level was reached in the northern part. The outline of the enclosure wall exactly follows the plan as assumed by previous surveying. To clarify the area in front of the town enclosure, a western extension was added as Square 1W (5 × 10m). Here, mud brick features and a glacis-like slope towards the west were recorded. In particular, later additions to the western outline of the 18th Dynasty town wall were traceable with the extension towards the west, Square 1W. Secondary constructions were set outside of the New Kingdom brickwork, partly reusing the bricks from the enclosure wall (Features 101, 102 and 103, see Fig. 38). Feature 102 is in particular interesting, as this

459 See Budka 2014a, 28–37; Budka 2015d, 63–65.
460 See Fera and Budka 2016; Fera and Geiger 2018.
461 See Doyen 2009, 17–20.
462 Azim 1975, 122.

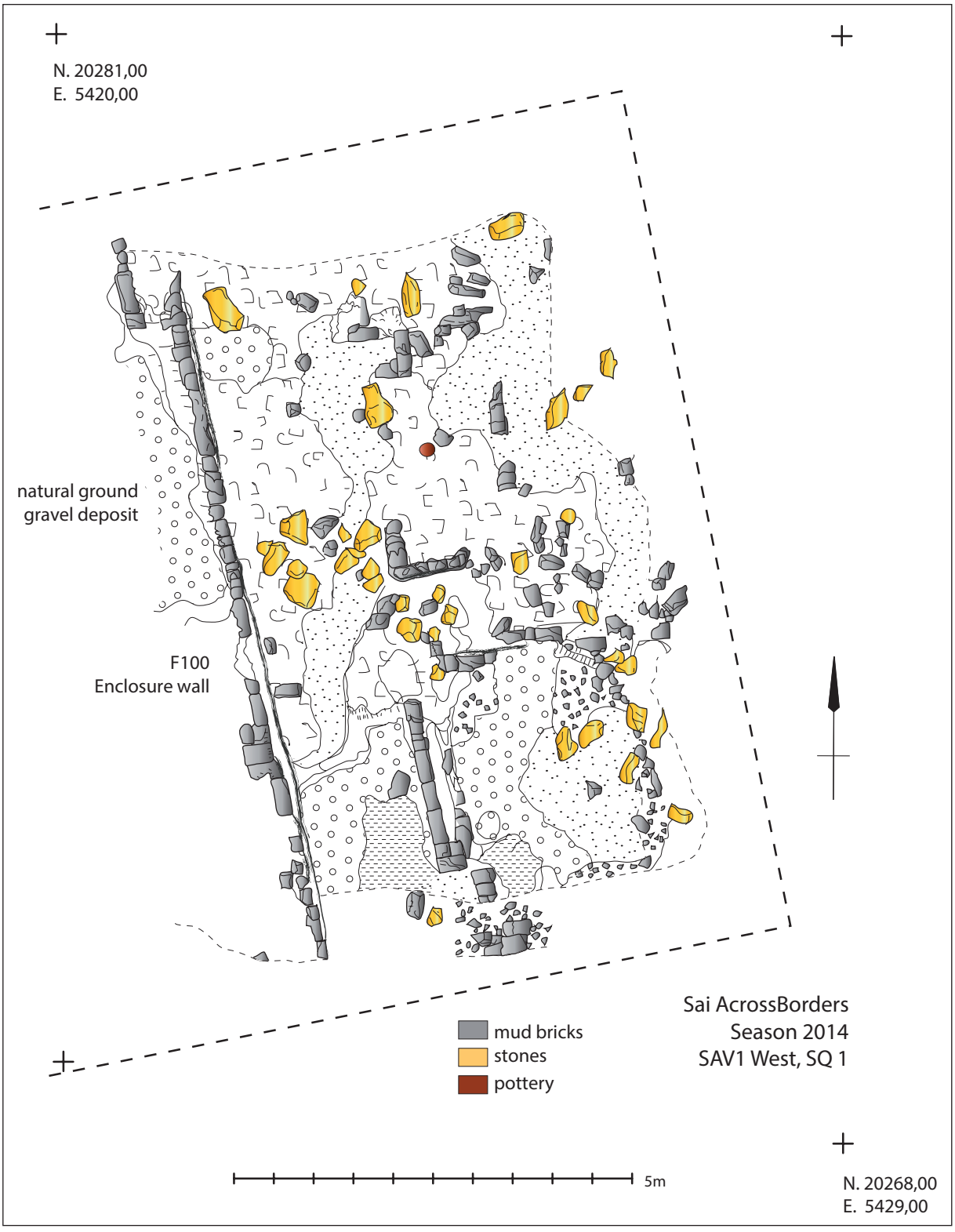

Fig. 32 SAV1 West, Square 1 mud brick remains and debris with abundant stone fragments east of the town enclosure

longitudinal mud brick structure was built with a simple pile of bricks toward the west, on top of the glacis (Fig. 33). Only its inner side, facing Feature 101 which is located further to the east and parallel to the New Kingdom town wall, was well-smoothed and plastered. A layer in the space between Features 101 and 102 holding much organic material, charcoal and pottery of a domestic character may indicate a

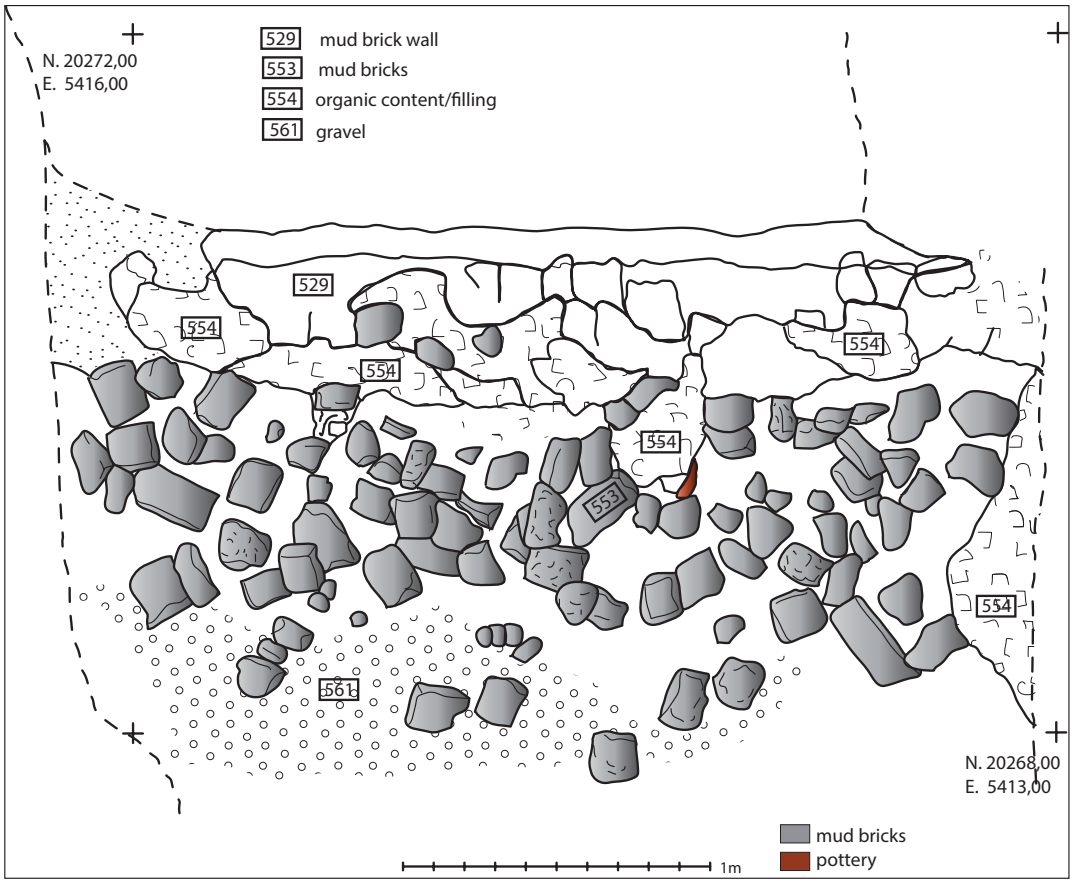

Fig. 33 SAV1 West, Square 1W, Post-New Kingdom Feature 102

small occupation spot, maybe a modest hut or shelter. Its date remains to be established, but the pottery points to a Late Christian origin.

Towards the east of the enclosure wall, thus within the New Kingdom Pharaonic town, large amounts of sandy backfilling of pits and collapsed mud bricks were removed. At the end of the season, a level was reached in the eastern half of Square 1 where in situ New Kingdom structures were visible (Fig. 34). In the southeastern corner a pit was dug into the Pharaonic remains – cleaning this hole, a north-south wall of bricks and another east-west wall, forming a rectangular structure, were exposed. The gap between the north-south wall and the enclosure wall nicely corresponds to the distance one would estimate for a 'wall street' running along the enclosure wall (Pl. 50, see also below, Chapter 3.3.2). Several floor levels and ashy layers attest to a multi-period use of this small building in the southeastern corner of Square 1 (see Features 112, 113 and 116, Structure C).

Occupation layers were also visible in a section created by a Post-Pharaonic pit just to the east of the enclosure wall in the northern part. Again, several floor levels testify that this area was in use for a considerable time span during the New Kingdom (see Feature 110). Based on the assessment deriving from the ceramics, the mud brick structures and remains in Square 1 seem to originate from the mid- until the late 18th Dynasty. No material earlier than Thutmose III was found, seemingly providing a *terminus ante quem non* for the building of the town wall and the visible structures belonging to the interior occupation.

Square 2

Square 2 is located in a shallow depression close to the western city gate. Some mud bricks had been visible on the surface and after cleaning a superficial deposit, the remains of the New Kingdom town enclosure were exposed in the eastern part of the trench (Fig. 35, Pl. 51). Similar to Square 1, the structure had been pitted in antiquity and most of the mud bricks had been removed. However, the outline

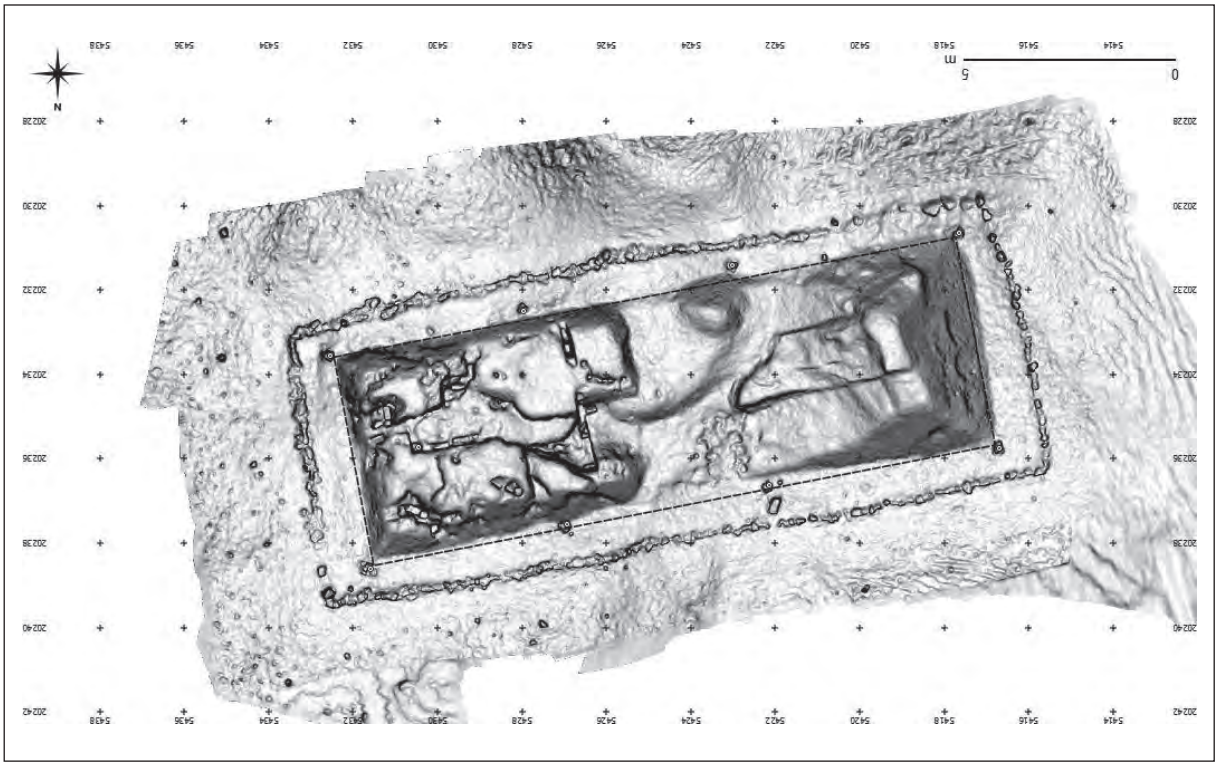

Fig. 35 SAV1 West, Square 2 at the end of the 2014 season

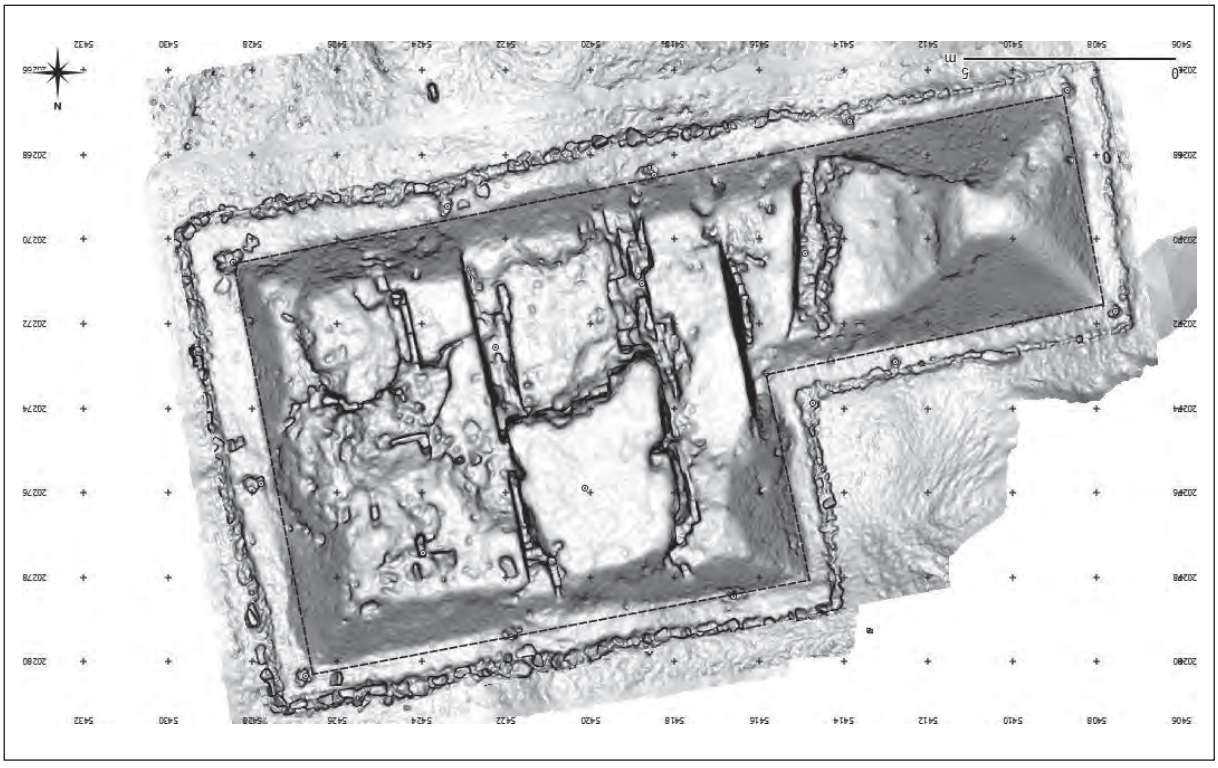

Fig. 34 SAV1 West, Square 1, 1W and 1NW at the end of the 2014 season

Fig. 36 SAV1 West, end of 2015 season

of the 18th Dynasty wall was traceable. A deep sandy pit cut off the New Kingdom enclosure wall in the southeastern corner of Square 2. From this sandy filling, reaching down to the foundation of the town wall, came one of the most interesting finds of the 2014 season: SAV1W 0532, a complete dummy brick, a cartouche shaped plaque with hieroglyphic inscription (see Chapter 4.3.2).[463]

In the northeastern corner of Square 2 a Post-Pharaonic feature was documented, comprising some mud brick walls and adjacent occupation levels, corresponding well to the findings in Square 1.

The western half of Square 2 was dominated by a glacis-like slope in front of the town wall, conforming to the findings in Square 1W. Excavating this area was almost impossible due to the large amounts of sand covering the ancient remains, including the three trench borders. At the top of the glacis some much eroded mud bricks were found. They compare well in composition and location with Feature 102 in Square 1W, suggesting a Post-New Kingdom date for these remains.

All in all, excavations at Square 2 confirmed the location of the western town enclosure and yielded very similar findings as Square 1, but in a less well-preserved state. No protrusion or gate was found for the enclosure wall, but traces of pitting and re-use.

Season 2015

One of the goals of the 2015 season was to investigate the New Kingdom remains on the inner side of the enclosure wall of the New Kingdom town in SAV1 West. In order to study a representative area, a new southern extension to the 2014 Square 1 was opened towards the south – Square 1S (10 × 10m, see Fig. 15). Based on the experience from 2014, the excavation method of a single surface documentation was continued. Every stratigraphical unit was documented by application of image-based modelling (SfM).

Square 1 South

Upon removing the upper debris levels of Square 1S, it soon became clear that its western half was occupied by the remains of the New Kingdom town enclosure, while its eastern part displayed large sandy pits with much 18th Dynasty pottery, loose mud bricks and many worked stone fragments. All of this corresponds to the findings in Square 1 in 2014.

Towards the east of the enclosure wall, thus within the New Kingdom town, large amounts of sandy backfilling of pits and collapsed mud bricks were removed. Below, remains of several mud brick buildings were found (Figs. 36–37, Pl. 52). All in all, seven features were documented in Square 1S (Fig. 38, Feature 117–123, see Chapter 3.3.4). Most promising was a small rectangular structure in the southeastern corner, Feature 123 – it was situated on debris and, therefore, possibly concealed an earlier phase of occupation, to be excavated in 2016.

Square 1

The work of the 2015 season in Square 1 focused on its eastern half, where in situ New Kingdom structures had already been visible in 2014. A total of seven features (Fig. 38, Features 110–116) were documented. In the southeastern corner, while cleaning the bottom part of a large sandy pit, a nicely preserved rectangular cellar with a vaulted ceiling was excavated (Feature 115). Several ceramic vessels were found on its base and these indicate a dating to the mid- to maximum late 18th Dynasty (see below, including a 14C date from the bottom of Feature 115).

Feature 111 is the remaining part of a building along the ‘wall street’ in the northern part of Square 1. It has several building phases and the earliest could be dated to the Thutmoside era. Because of substantial deposits of ash and charcoal, Feature 111 can be interpreted as an oven room of a larger building unit (see below).

[463] Budka 2015d, 66, fig. 10.

Fig. 37 Status in Squares 1 and 1S at SAV1 West, end of the 2015 season

For the stratigraphy of SAV1 West, it was highly interesting to find stratigraphic units holding mostly early Ramesside sherds – these layers were directly on top of the features tentatively assigned to the late 18th Dynasty (especially Feature 113). All in all, several floor levels, re-building phases and new sections of walls testify that this area was in use for a considerable time span during the New Kingdom, from Thutmose III (or slightly earlier) until Seti I/Ramesses II.

Season 2016

One of the goals of the 2016 season was to investigate the New Kingdom remains on the inner side of the enclosure wall of the New Kingdom town in SAV1 West. In order to study a representative area, a new eastern extension to the 2015 Square 1S was opened – Square 1SE (6 × 10m, Fig. 39). The excavation method as a stratigraphic excavation with single surface documentation continued (see above).

In the 2016 season work focused on this new eastern extension of Square 1S (Fig. 40). Upon removing the upper debris levels of Square 1SE, it soon became clear that it resembles the eastern part of Square 1S. Large sandy pits with much 18th Dynasty pottery, loose mud bricks and many worked stone fragments were documented in detail.

A small rectangular structure along the southern edge, stretching from Square 1S to Square 1SE (Feature 123) was completely exposed. Its layout differed from the other structures along the 'wall street' and an infant burial was discovered in its westernmost compartment – probably from a later phase of use, most likely the Christian period.

In Square 1NW, already investigated in 2014, a test trench was opened in front of the 18th Dynasty enclosure wall to check the foundation of the wall towards the western side (Fig. 40). After a solid pottery layer of later date, 19th and 18th Dynasty levels were documented. No tower feature was found but rather a solid, sloping mud surface resembling a glacis. It seemed as if the foundation layers of the town

Fig. 38 Features at SAV1 West, status of 2015

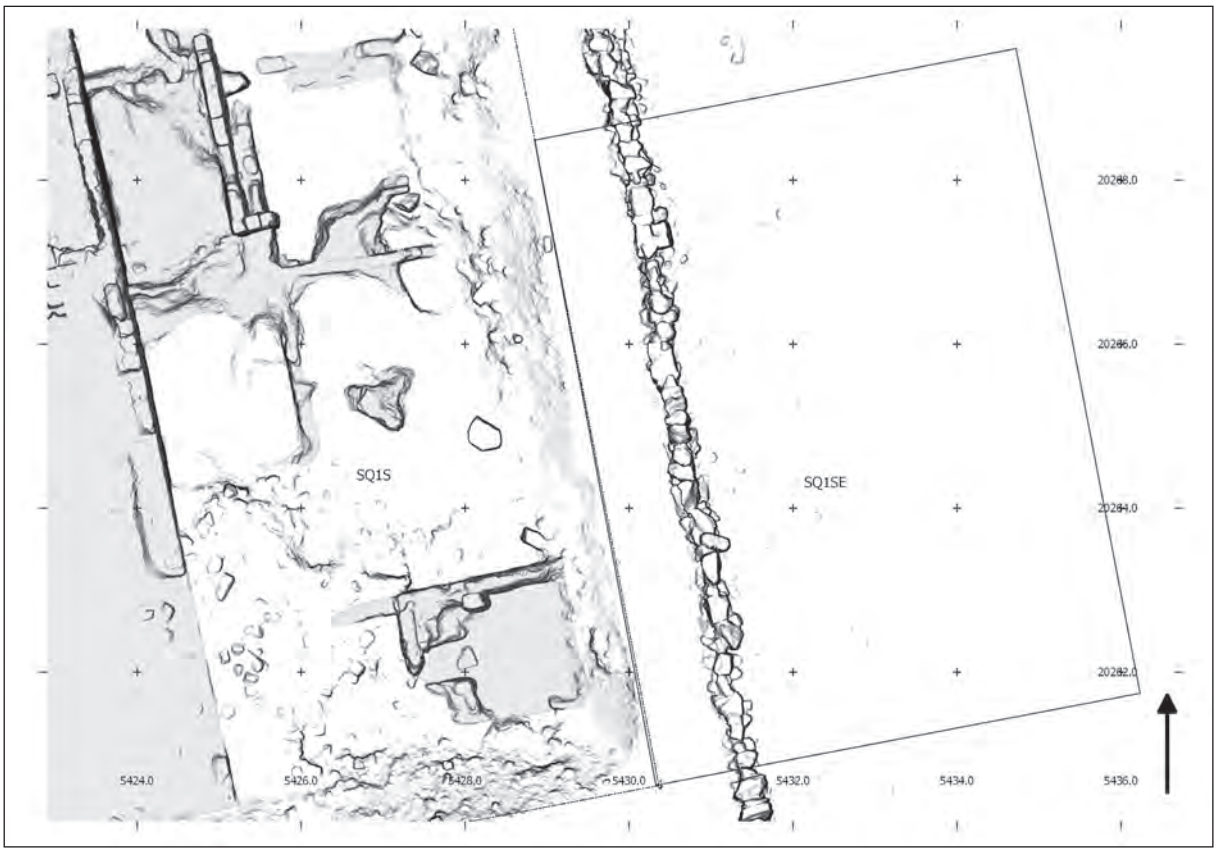

Fig. 39 SAV1 West, area of extension for Square 1SE, 2016 season

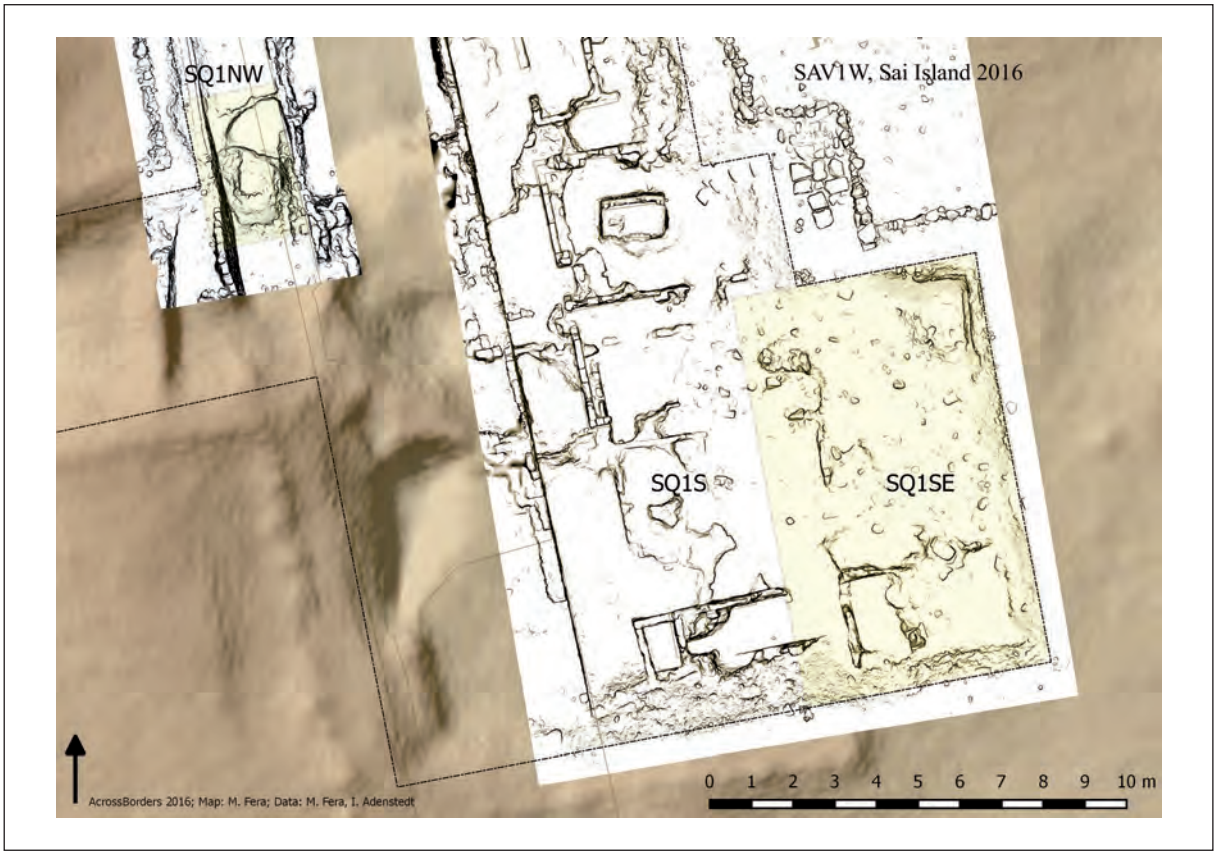

Fig. 40 Working areas at SAV1 West, 2016 season

Fig. 41 SAV1 West, status at the beginning of the 2017 season

enclosure were partly concealed on the other side by this glacis. This stresses again that Features 101 and 102 in Square 1W must postdate the New Kingdom (see above, 2014).

Related to the investigations in Square 1NW was, therefore, another testing of the slope and glacis-like structure in Square 1W. A sequence of augering transects, conducted by Sayantani Neogi and Sean Taylor, confirmed a sand-filled depression of at least 3.4m in depth. All in all, this seems to represent a ditch in front of the town enclosure, similar to findings at the main city gate by Azim (see Chapter 2.6).[464]

Season 2017

In 2017 remaining deposits in Squares 1S and 1SE (Fig. 41) were investigated to clarify the building sequences at SAV1 West. The discovery of a cellar in the northeastern corner of Square 1SE (Feature 152) made it necessary to make a small eastern extension (3 × 5m) labelled as Square 1SE_E (Fig. 42). This new square was dominated by mud brick debris, partly associated with the cellar and surrounding walls (Fig. 43), and sandy fillings with mixed material.

All in all, the remains of several small mud brick buildings were exposed and stratigraphic information was received from cleaning selected areas (Fig. 44), including deposits in the 'wall street' along the town enclosure. Most importantly, the earliest phase of occupation at SAV1 West seems to be contemporaneous to the one at SAV1 North – and clearly predates the building of the town wall under Thutmose III. Evidence for this was found in the 'wall street' of Square 1S (Pl. 53) and at Feature 121. Only scarce remains of this early 18th Dynasty occupation at SAV1 West have survived, with the major phase of the

464 Azim 1975, 121–122. See also Adenstedt 2018.

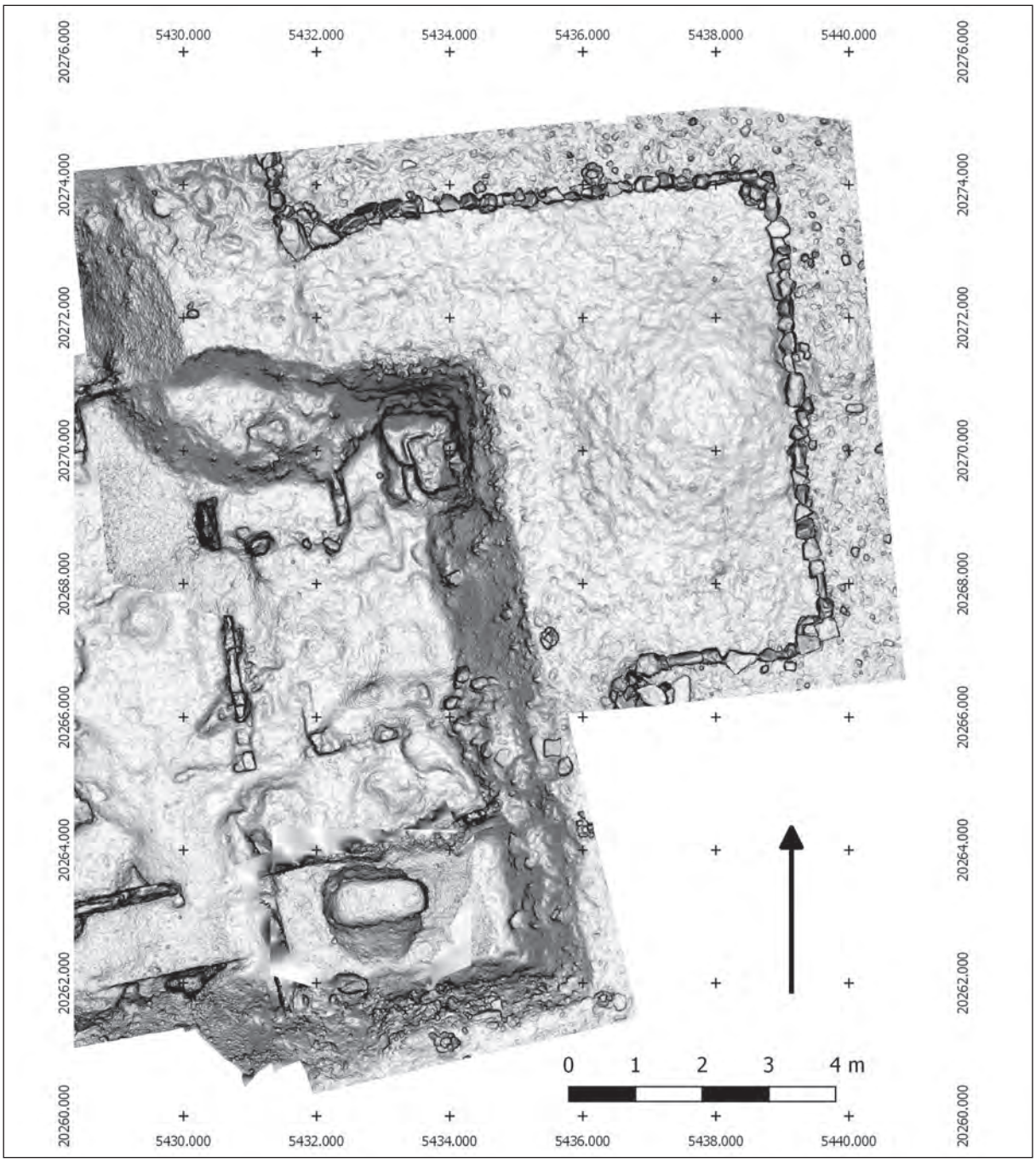

Fig. 42 SAV1 West, 2017 season, first traces of Cellar Feature 152 and extension area to Square 1SE

mid-18th Dynasty partly superimposing earlier structures and lasting well into the late 18th Dynasty (see below, Chapter 3.3.3).

Square 1 Southeast and Square 1 Southeast_East (Extension 2017)

In 2016, a substantial demolition layer with many mud brick fragments and large quantities of worked stones and pottery was left unexcavated in the eastern half of Square 1 _SE. Removing this debris in 2017, earlier deposits and traces of mud brick structures were unearthed. Work focused in particular on a pile of bricks, debris and rubble in the southeastern corner. One of the large stones was situated on top of

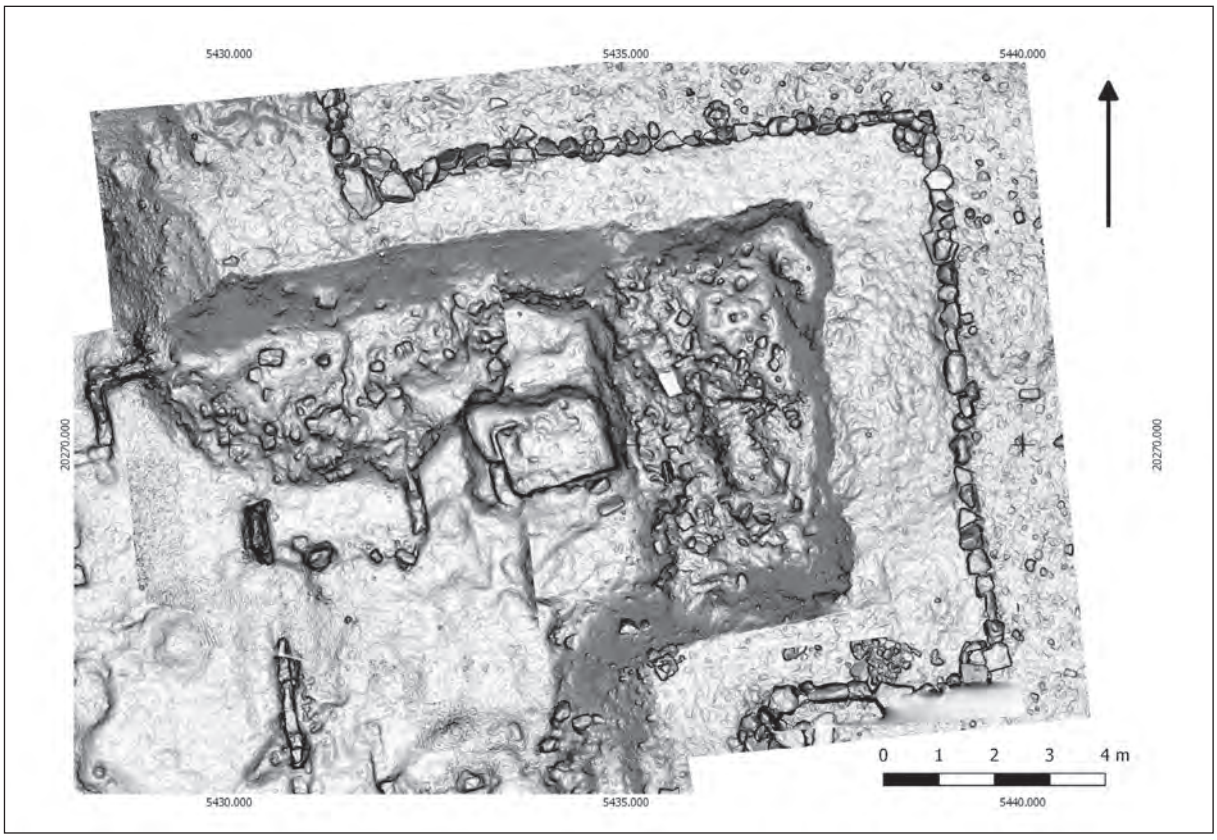

Fig. 43 SAV1 West, 2017 season, debris above Feature 152 and in extension SQ1SE_E

the debris filling the oval-shaped storage pit Feature 151 (Pl. 54). It turned out as a re-cut royal lintel of the mid-18th Dynasty (Pl. 55). Based on the filling of Feature 151, the storage pit was used and backfilled in Thutmoside times (see Chapter 4.5).

A similar storage installation was discovered with the rectangular cellar Feature 152 in the northeastern corner of Square 1SE and the extension 1SE_E. Like Feature 151, it belongs to the mid-18th Dynasty building phase at SAV1 West (Figs. 42–43) (see Chapter 4.5). Furthermore, several fragments of mud brick walls allow reconstructing the layout of several building units in this area which find close parallels in sector SAV1 North. Of special interest was Feature 159, aligned to the main east-west axis/lane exposed in sector SAV1 West and including a quern emplacement (Fig. 44).

3.3.2 Architecture

Both the New Kingdom town enclosure and the contemporaneous remains on the inner side of this wall were investigated in the four seasons of work at SAV1 West (Fig. 45). The general appearance of these architectural remains is very similar to sector SAV1 North, including the building technique (Pl. 56).[465]

Town enclosure

Despite much ancient destruction and disturbance, the complete thickness of the town wall (Feature 100) is visible (4.3–4.5m) on a length of *c.* 18m – its alignment follows exactly the plan as assumed

[465] See Doyen 2017.

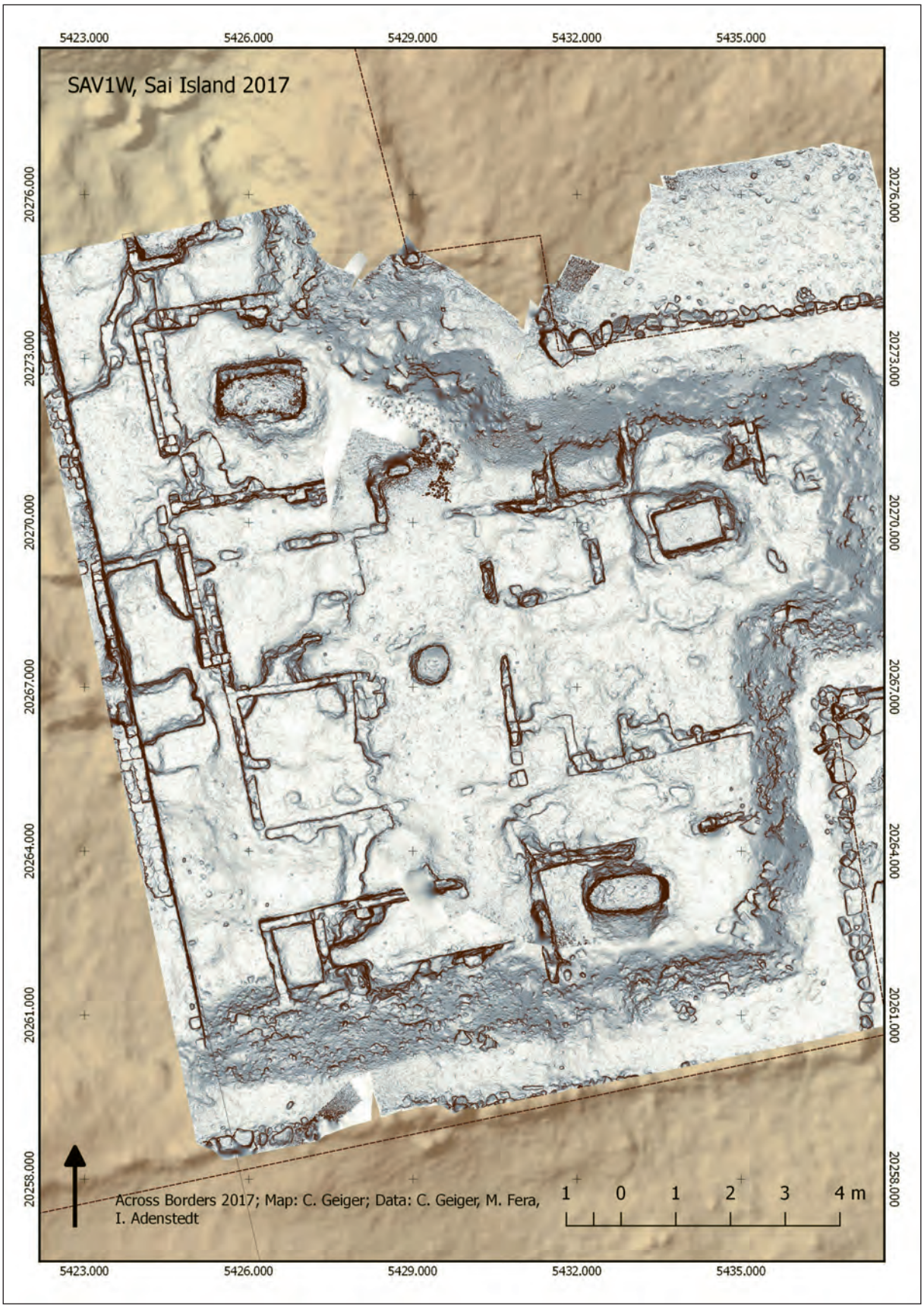

Fig. 44 SAV1 West, 2017 season, final status of excavation

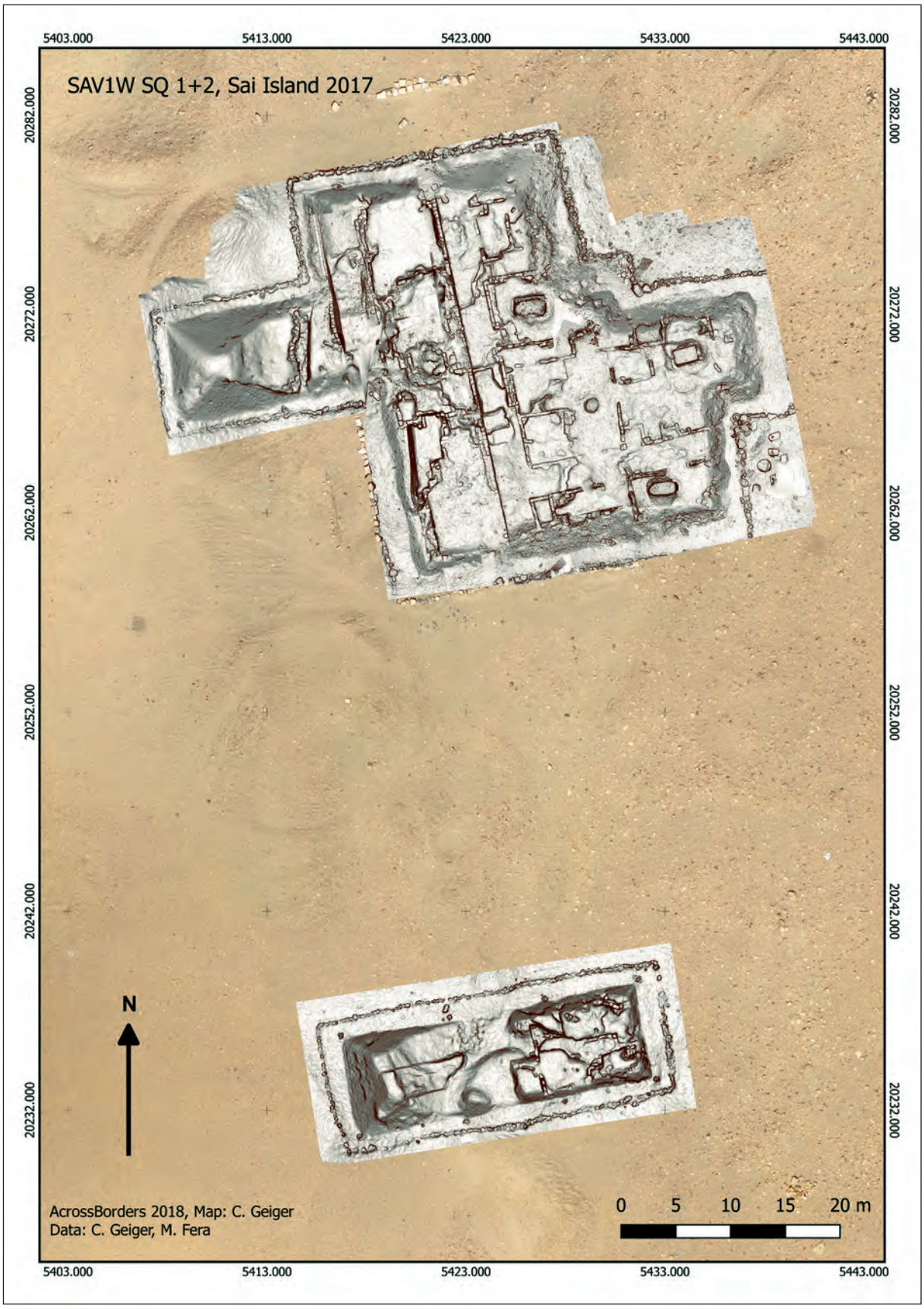

Fig. 45 SAV1 West, plan of all excavation seasons

by previous surveying of French colleagues.[466] As in the south and the north, the enclosure wall is once again composed of 10 rows of mud brick headers, alternating with layers of stretchers. Other than in the northern and southern sections of the enclosure wall, no towers/protrusions were discovered along a length of about 20m of the western wall. Neither was an opening discovered, but later additions as well as *marog* digging activities.[467]

For the purpose of looking for structures on the outer side of the wall at a lower level, a test trench to the west of the enclosure wall revealed a solid, sloping mud surface that resembles a glacis. This glacis-like structure was unearthed underneath a layer of pottery of Post-New Kingdom date and 19th and 18th Dynasty levels. Maybe certain restoration phases of the town enclosure already occurred during the New Kingdom. Based on a series of augering transects at SAV1 West, the glacis is fronted by a "ditch", a sand-filled depression of at least 3.4m in depth. A similar feature was already noted by Azim at the western city gate, thus towards the south of SAV1 West.[468]

All in all, the western town wall unearthed at SAV1 West corresponds to the other sections already uncovered in the south and the north in terms of size and building technique. It furthermore illustrates certain elements of a fortification character as the glacis-like slope and the ditch in front of the western side. It still remains unclear whether these features were stimulated by the topographical situation at the western side (see above, Chapter 2.6), or whether they represent underestimated or so far little understood elements of an Egyptian fortified town in Nubia.[469]

Wall street and internal structure

On the inner side of the town enclosure, in the eastern half of both Squares 1 and 1S, in situ New Kingdom structures were exposed at SAV1 West (see Fig. 37). The gap between the various north-south walls and the enclosure wall nicely corresponds to a suitable width for a 'wall street' running along the enclosure wall. Such a small lane was already noted by Azim[470] in the southern part and by Doyen in the northern part.[471] Its width of *c*. 1.5m at SAV1 West corresponds to the measurements in the other sectors.[472]

As will be pointed out below, the domestic structures to the east of the 'wall street' at SAV1 West belong to different building phases. It is important to stress that the later walls reduce the width of the lane because they are not set directly on top of the older walls, but are half-brick shifted to the west (width was now *c*. 1.28–1.30m). Such a shifting of the alignment of later walls was already observed at SAV1 North.[473]

The 'wall street' is the only clear north-south lane at SAV1 West. That there once was a street system and the architecture followed a certain grid can be estimated from the layout of the structural units and in particular from the main east-west lane exposed in SAV1 West. It leads from the 'wall street' in Square 1S to Square 1SE, separating Features 161, 144 and 159 in the north (from west to east) from Features 123, 146 and 150 in the south (from west to east) (Fig. 46). The measurements of this lane are as follow: 9.5m east-west extension (but continuing, disappearing into the eastern baulk of Square 1SE); 1.34–1.38m in width. Its width is thus smaller than the 'wall street' and also of the main streets documented by Azim and Adenstedt in SAV1.[474] It is roughly comparable to the 1.3m wide NS3 in SAV1, which was

466 See Azim 1975, 94, pl. 2, 120–122; also Adenstedt 2018.
467 These are comparable to SAV1 North; see Budka and Doyen 2013, 178.
468 Azim 1975, 120–122; Adenstedt 2018, 137.
469 No ditches are attested at other fortified temple towns in Nubia, see Kemp 1972, 651.
470 Azim 1975, pl. 6.
471 Doyen 2014, 368, fig. 1.
472 Doyen 2017, 49.
473 Doyen 2017, 104.
474 See Adenstedt 2016, 31–33.

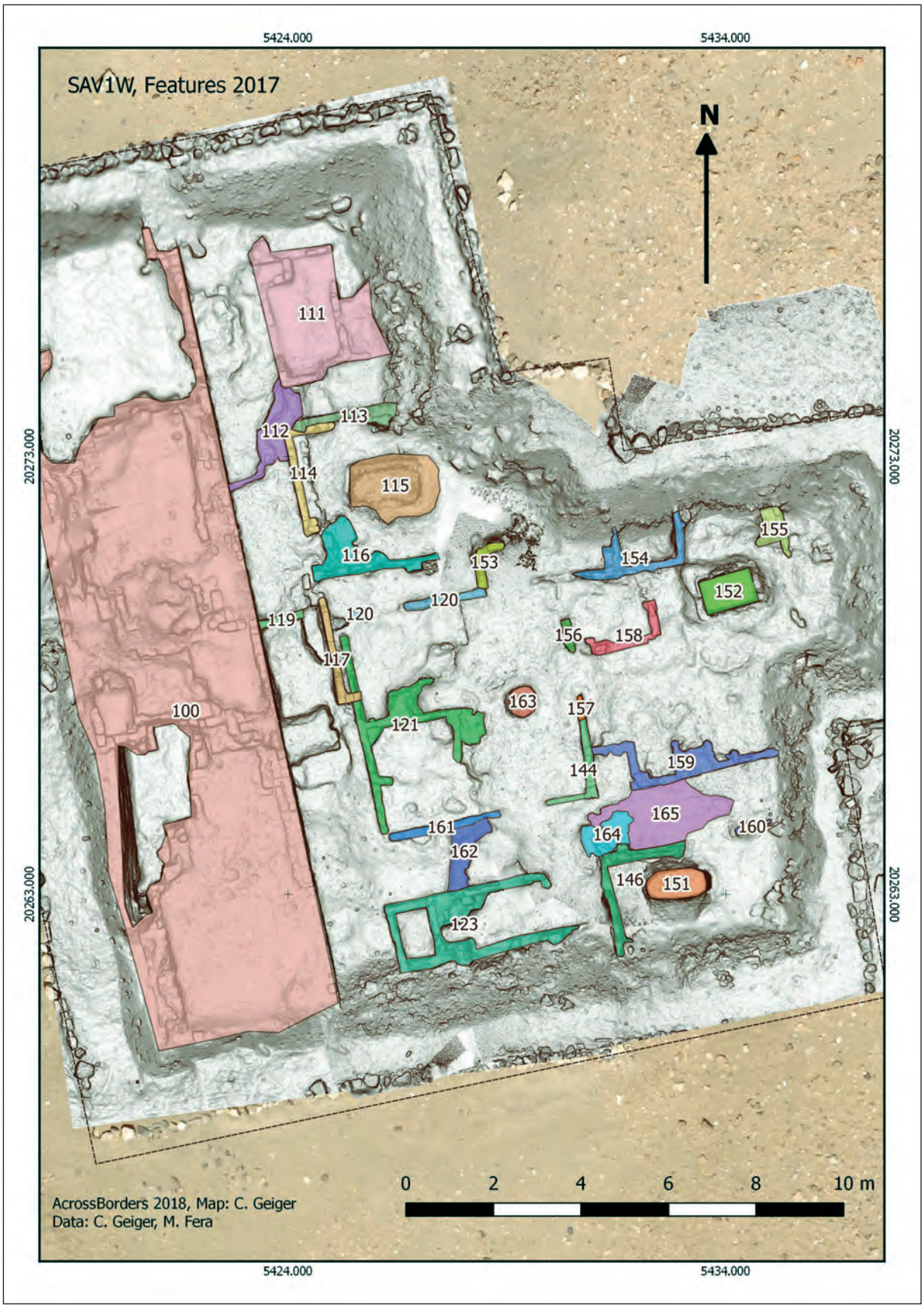

Fig. 46 Features at SAV1 West, status of 2017

labelled as "narrow corridor" by Adenstedt.[475] With Features 162 and 145 some street deposits were documented within the east-west corridor at SAV1 East (see Chapter 3.3.4).

All in all, the arrangement of streets and structures at SAV1 West on the inner side of the enclosure wall is very similar to the situation at SAV1 North. Obviously, the town walls and their parallel 'wall streets' were major construction guidelines and a grid-system with a focus on an east-west orientation is traceable. As will be outlined below (Chapter 3.7), however, activity areas and footways within an Egyptian town may be altered over time and continuously modified, depicting the impact of the occupants on the built structures.

Domestic architecture

The modest walls of half-brick thickness at SAV1 West include open courtyard areas which enclosed small cellars and other installations, such as a quern emplacement (Fig. 46). For the 18th Dynasty phases of architecture at SAV1 West, a total of six domestic structures can be reconstructed (Structures A–F). The ground plan of all of these structures remains tentative because of the state of preservation and excavation, but can be reconstructed based on close parallels from SAV1 North.

Structure A is located in the southern part of SAV1 West in Square 1S, just east of the 'wall street', at the junction to the main east-west lane of the sector (Fig. 46). It finds a close parallel, also in terms of size in building unit N24 at SAV1 North.[476] Structure A is delineated by Wall Feature 121 to the west and Walls Feature 156, Feature 144 and Feature 157 to the east, Feature 120 to the north and Feature 161 to the south. All of these perimeter walls were constructed using layers of mud brick stretchers in the traditional running bond pattern, generally half-a-brick thick. With the east-west section of Wall Feature 121, an internal wall is also preserved and corresponds to this building technique. All in all, Structure A covers a square area of approximately 26.31m^2.

Contrary to N24 at SAV1 North, no pilasters were documented in the brickwork of Structure A. However, in the northwestern inner corner of Feature 121 there is a small installation – several bricks form a roughly triangular bin-like structure. Such settings against inner corners of rooms were also found in the city of Kerma.[477] Since Structure A seems to represent the earliest New Kingdom structure at SAV1 West, these parallels to indigenous Nubian mud brick architecture raise several questions. Similar to the structures excavated by Azim around Temple A, a circular storage pit/silo was found in the open-air part of Structure A (Feature 163).[478] No other installations were observed within this building unit.

Structure B is located in the northeastern half of Square 1, directly at the 'wall street' (Fig. 46). It was only partially excavated and consists mainly of Feature 111, the oven room with *c*. 4.88m^2 described above, which represents a unit at the southwestern corner of Structure B. Parallels for oven rooms can be found in the town of Elephantine,[479] but also at sector SAV1 North, within building unit N12.[480] Unfortunately, the original size and ground plan of Structure B cannot be estimated.

Structure C is located in the southeastern corner of Square 1, just east of the 'wall street' (Fig. 46). Structure C is delineated by Wall Feature 116 to the west and the south and by Wall Feature 113 to the north. The eastern part of the structure disappears into the baulk of Square 1. All of its perimeter walls were constructed using layers of mud brick stretchers in the traditional running bond pattern, generally half-a-brick thick. Structure C closely resembles building unit N25 at SAV1 North. This unit is located next to N24 and this setup compares very well to the unit composed of Structure A and Structure C at SAV1 West. The structures are also of very similar dimensions; the preserved part of Structure C covers a square area of approximately 11.60m^2. The western part of Structure C represents a courtyard, but

475 Adenstedt 2016, 32.
476 Doyen 2017, 35–57.
477 Personal observation at the site; see also Bonnet 2014, 60–61 (e.g. installation in M238).
478 Cf. Azim and Carlotti 2012, fig. 6a, see structures G6 and G2.
479 See von Pilgrim 1996, 209–211; Budka 2015a, 46.
480 Doyen 2017, 80–81. Note, however, that in the case of N12A the ash deposits were a misinterpretation of articulated phytoliths, see Budka 2017f, 173–174.

presumably it was once an elongated structure with several rooms, maybe of a tripartite type. In the courtyard of Structure C a rectangular cellar, Feature 115, was set into the gravel. This cellar with mud coating and part of its vault still in situ is a miniature version of the large cellars in SAV1 East, Features 83 and 85 (see above). Remains of the mud pavement of the courtyard have survived in the inner corner of Feature 116.

Structure D occupies the eastern half of Square 1SE and extends into Square 1SE_E. Although several wall features are partly preserved (Features 154, 155, 158 and 159, Fig. 46), these small portions do not allow a proper assessment of Structure D's ground plan and size. It probably continued towards the north and was maybe directly adjacent to Structure A. Its southern side is delineated by Feature 159 as perimeter and the above mentioned east-west lane. Structure D finds certain parallels in building units N26 and N27 at SAV1 North. It is a large courtyard building with several side rooms/lateral units. Along the southern side, a quern emplacement represents an installation and Cellar Feature 152 was set into the northern part of the courtyard.

The northern part of Structure D is most likely formed by Features 154 and 155 as possible side rooms. In line with the north-south dividing Wall Feature 158, the installation along the east-west Wall Feature 159 can be named. This installation is a quern emplacement for a grindstone, abutting the southern inner face of the east-west aligned wall. It was probably used during the process of milling grain into flour,[481] serving as a pedestal for grinding activities using a quern stone. This type of grindstone would originally have been set into the depression of the once plastered upper surface, but none was found here in situ[482] and the pedestal itself is also badly preserved. Quern emplacements are regular installations in Egyptian houses.[483] Within the New Kingdom town of Sai, the best parallel for this feature at SAV1 West can be found in building unit N12C at SAV1 North.[484]

If one calculates the northern rooms Feature 154 and Feature 155 as belonging to Structure D, its excavated part covers a square area of approximately 29.50m^2.

Structure E is located south of the main east-west street (or corridor) at SAV1 West in Square 1SE (Fig. 46). It occupies the southeastern corner of Square 1SE and lies opposite of Structure D. Its northern perimeter wall is partly preserved (Feature 146 and Feature 160) and the north-south section of Feature 146 forms its western perimeter wall. These small portions do not allow a proper assessment of Structure E's ground plan and size. The preserved part of Structure E covers a square area of approximately 8.18m^2. Despite its fragmented preservation, it seems to be similar to Structure C and is also east-west oriented, probably with an elongated shape and several rooms. It comprises Silo Feature 151 which was presumably set up in a courtyard of the building. A possible entrance into the building from the corridor in the north could have been in the space lacking brickwork between Feature 146 and Feature 160.

Structure F was partly excavated in the southern part of Square 1 (Fig. 46). It is located at the junction of the 'wall street' and south of the east-west lane, thus opposite of Structure A. The remaining deposits in the east-west lane, Feature 162, suggest an 18th Dynasty date for the structure. Its preserved parts comprise Feature 123: a northern perimeter wall, a western perimeter wall and a very small room unit to the west (0.95m^2). Especially this small room without a preserved entrance finds certain parallels in building unit N26 at SAV1 North.[485] However, since Feature 123 was re-used in the Post-New Kingdom period, uncertainties about the dating and building phases remain, which might be answered by means of future excavation of the southern part of this building. The excavated part of Structure F covers a square area of approximately only 4.40m^2.

All in all, the remains of the 18th Dynasty structures along the enclosure wall in SAV1 West are very similar to findings at SAV1 North.[486] Both areas within the New Kingdom town are markedly different from the southern sector and SAV1 East – there are no large structures of a possible administrative

[481] See Samuel 2000, 561.
[482] A large number of grindstones were, however, found in filling contexts at SAV1 West, see Chapter 4.4.
[483] Samuel 2009, 467 and related bibliography; see also Budka and Doyen 2013, 177 with parallels in notes 66 and 69.
[484] Doyen 2017, 66–67, 81–82.
[485] Doyen 2017, 96 (room N26/2).
[486] Budka and Doyen 2013, 171–177; Doyen 2017.

function and no substantial magazines, but rather simple domestic buildings of small dimensions with oven installations, grindstone emplacements, small-sized cellars and storage bins (see also Chapter 3.4).

3.3.3 Building phases

Similar to SAV1 East and also comparable to SAV1 North, three main building phases within the 18th Dynasty can be distinguished at SAV1 West. These building phases are all associated with architecture. Like at SAV1 East, Ramesside activities at SAV1 West are attested by means of scattered pottery, but no architectural remains of the late New Kingdom were detected. Based on architecture and deposits, the following phases can be differentiated at the western sector of the New Kingdom town:

Phase A: early remains with unclear architectural shape, represented by settlement debris and midden deposits (early 18th Dynasty)

Phase B: town enclosure and first building units east of the enclosure wall, with storage installations (Thutmose III/mid-18th Dynasty); presumably several individual phases

Phase C: additions/modifications and new building units (mid-18th Dynasty to late 18th Dynasty)

All three main phases can be subdivided in various sub-phases; the strongest evidence for such sub-phases derives from Phase B. Phase A is in general a little problematic. In 2017, a building phase prior to the town wall was confirmed at SAV1 West. Midden deposits below the 'wall street' as well as scarce traces of simple mud brick structures comparable to finds in SAV1 North are clearly earlier than the town wall. The limited exposed sections do not allow detailed information about this early building phase in the western town sector, but the comparison with SAV1 North suggests some simple style buildings for housing and workshop purposes.[487] This phase seems to slightly pre-date Structures A and B.

Regarding the six structures of 18th Dynasty date at SAV1 West, the following phasing within the main Phase B is possible. Structures A and B belong to the early phase within these building units, most probably attributable to Phase B or maybe to a transition phase between Phases A and B. They both seem to be contemporaneous with the town wall, but they might even be slightly earlier. Structures A and B could be contemporaneous to Level 4 at SAV1 North, which is associated with the early 18th Dynasty to Thutmoside times. Structure C of Phase B is definitely slightly later and could be dated to the mid-18th Dynasty, most likely the advanced reign of Thutmose III.[488] Also belonging to Phase B are Structures D and E which are contemporaneous to each other and datable to the mid-18th Dynasty. These building units, Structures C, D and E, clearly represent the heyday of SAV1 West which is also associated with the town enclosure and is comparable to Phase B at SAV1 East and Level 3 at SAV1 North. Slightly later, possibly from Phase C, is Structure F with Feature 123. One wall, which was almost parallel to Feature 120 (northern perimeter of Structure A), Feature 118 (Fig. 47), might be attributed to the late 18th Dynasty or Ramesside period, but its precise chronological dating could not be clarified.

Other than the walls Feature 118 and Feature 123, Phase C is mainly represented by deposits, but not architectural remains. This can be best shown by Feature 112. The occupation layers labelled as Feature 112 testify to the multi-period use of a corner between 18th Dynasty buildings (Structure B and Structure C) and the 'wall street'. According to the pottery, Feature 112 also comprises the Ramesside period. Since it partly overlies Feature 113 and Feature 114, this deposit also seems to attest a phase with standing ruins from the 18th Dynasty.

All in all, the earliest building unit at SAV1 West is Structure A. At present evidence, there must have been some kind of architecture already prior to the town enclosure, but apart from settlement debris no substantial remains were uncovered. Similar to SAV1 North, the best preserved building phase at SAV1 West is associated with the town wall (Phase B).

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487 Budka 2017c, 73.

488 This corresponds with a 14C date from Feature 115, the cellar within Structure C: charcoal from the undisturbed filling of this cellar was dated to 3454–3345 cal BP, 1505–1396 cal BC (analysis was undertaken by Beta Analythic Inc).

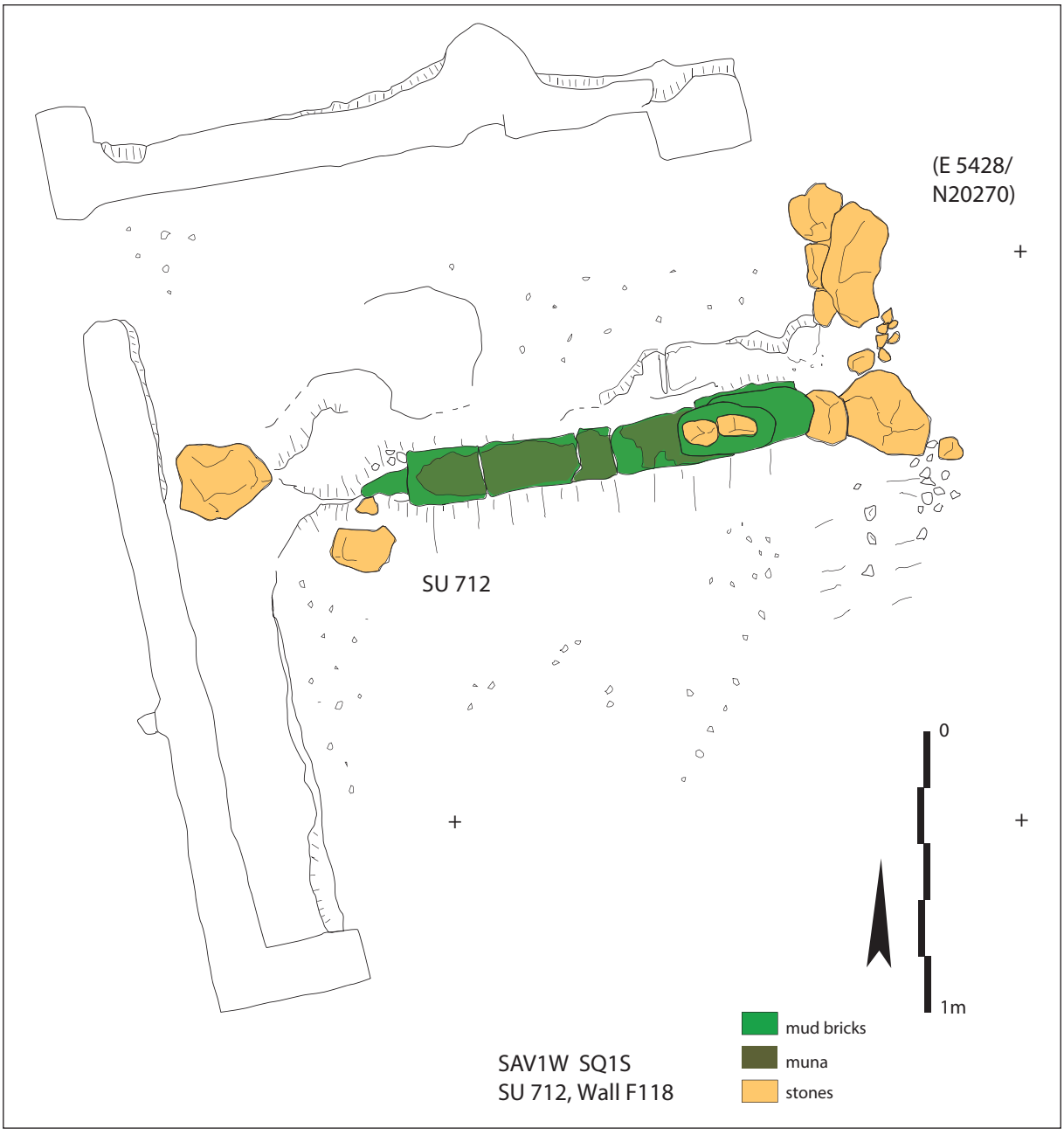


Fig. 47 Square 1S at SAV1 West with Wall Feature 118

3.3.4 List of features of SAV1 West[489]

Other than in sector SAV1 East, the numbers of the features were not always assigned simultaneously to the excavation at SAV1 West. The list of features in SAV1 West was rather completed after each season of excavation as well as in the post-excavation phase (while establishing the Harris Matrix; used especially for interfaces). This explains why several numbers starting from Feature 100 were not given to contexts at SAV1 West; the "empty" numbers (104–109 and 127–129) are not simply missing in the following catalogue, but were never used.

[489] Based on the original field notes composed between 2014 and 2017 by Julia Budka, Martin Fera, Cajetan Geiger, Stefanie Juch, Fatma Keshk, Franziska Lehmann and Klara Sauter.

No. of feature: 100

Location of feature: SQ1 and SQ1S
Main category: Mud brick wall
Sub category: Town enclosure wall
Measurements of feature: Preserved L: 18m; W: *c.* 4.26m, max. 4.3m; H: max. 1.14m
Stratigraphy: See Harris Matrix
Description: Lower part of the western enclosure wall of the New Kingdom town. Despite much ancient destruction, the town wall could be uncovered in its entire thickness of *c.* 4.3m, in some parts the foundation level was reached. Note the glacis-like structure and the ditch to its western side. For the building technique and measurements, cf. SAV1 North. No tower/buttress was found; no further gate or entrance was noted here at the western side of the town.
Dating/Interpretation: Part of the western town enclosure of the New Kingdom town; Thutmoside (Thutmose III); corresponding to other excavated parts of the enclosure in the south and the north.

No. of feature: 101

Location of feature: SQ1W
Main category: Mud brick wall
Sub category: Post-New Kingdom structure
Measurements of feature: L: *c.* 2.45m; W: 0.45m
Stratigraphy: See Harris Matrix (cut by F148 and F150)
Description: Linear mud brick feature
Dating/Interpretation: Probably eastern wall of small stable/hut formed with F102; Post-New Kingdom, possibly Ottoman.

No. of feature: 102

Location of feature: SQ1W
Main category: Mud brick wall
Sub category: Post-New Kingdom structure
Measurements of feature: linear feature L: 3.38m; W: 0.45m; max. extension of feature L: 4.1m, W: 2.4m
Stratigraphy: See Harris Matrix; contemporaneous with F101
Description: Linear mud brick feature, N-S oriented, parallel to F100; mud bricks set at eastern side, but against western face just loose single bricks without bond; large areas covered with organic deposits full of doum fruits and dung (SU 554); situated on top of gravel SU 561.
Dating/Interpretation: Probably western wall of small stable/hut formed with F101, set against glacis of New Kingdom town Wall F100; Post-New Kingdom, possibly Ottoman.

No. of feature: 103

Location of feature: SQ1
Main category: Mud brick wall
Sub category: Post-New Kingdom structure
Measurements of feature: L: 3.5m; W: 0.40m
Stratigraphy: See Harris Matrix, older than F101; abutting F100
Description: Linear mud brick feature; directly abutting F100.
Dating/Interpretation: Remains from the re-use of F100; see F101 and F102; Post-New Kingdom, possibly Ottoman.

No. of feature: 110

Location of feature: SQ1, along E face of F100; NW part of E half of square
Main category: Occupation deposits
Sub category: Street horizons
Measurements of feature: L: 2.1m; W: 1.08m
Stratigraphy: Abutting F100 (SU 664, 556, 692, 693) – see SU 623 and Harris Matrix
Description: Remains of street horizons in 'wall street', contemporaneous to use of F100 (abutting the east face); all layers very compact, on top of ashy layer.
Dating/Interpretation: 18th Dynasty layers within 'wall street' – original phase of use of this lane along F100; disturbed by later re-use and cutting, see mixed material in SU 664 (see micromorphological Profile 11).

No. of feature: 111

Location of feature: SQ1, NW-corner of square

Main category: Mud brick wall/structure
Sub category: Domestic building
Measurements of feature: L: 2.5m; W: 1.43m
Stratigraphy: SU 684, 687, 699; based on SU 699 contemporaneous to F100
Description: Various partly preserved mud brick wall remains; rectangular form, with additional (?) wall in the N; very ashy deposits inside.
Dating/Interpretation: Most probably one room of a domestic building from the early-mid 18th Dynasty occupation; according to parallels in Elephantine and the nature of the deposits probably used as an oven room. Remaining structure was not excavated; to be located to the N and E.

No. of feature: 112

Location of feature: SQ1, in the centre of the square, between brick walls
Main category: Occupation layers
Sub category: Settlement stratification
Measurements of feature: L: 1.35m; W: 1.48m
Stratigraphy: SU 676, 677, 702; SU 686, 690 and 694
Description: Remains of preserved stratification between and above brick walls (F111, F113 and F114); different layers (debris, organic, ashy…).
Dating/Interpretation: Multi-period use of corner between buildings and 'wall street'; earliest phase probably 18th Dynasty; but according to pottery also Ramesside period. With F112 partly overlying F113 and F114, it seems to attest a phase with standing ruins from the 18th Dynasty. F112 also comprises one or more phases when the 'wall street' was used as traffic route, with incidental deposition of anthropogenic debris typical for streets (see micromorphological Profiles 12 and 14). The earliest phase of Profile 14 attests that the structures and streets at SAV1 West were at least partly built directly on the natural surface, in this case the gravel terrace (see SAV1 North).

No. of feature: 113

Location of feature: SQ1, east of F112
Main category: Mud brick walls
Sub category: Domestic structure
Measurements of feature: L: 2.01m; W: 0.48m
Stratigraphy: Lies partly below F112
Description: Two parallel E-W running walls; the western end lies under F112; the eastern end is not determined (because of the border of the square).
Dating/Interpretation: Probably the northern wall of a mud brick structure with a courtyard, comprising F115.

No. of feature: 114

Location of feature: SQ1
Main category: Mud brick wall
Sub category: Western wall of domestic structure
Measurements of feature: L: 1.91m; W: 0.31m
Stratigraphy: Partly below F112
Description: Complex of walls running N-S; remains from F112 towards the S; along eastern border of the 'wall street'; two parallel walls – probably of various phases.
Dating/Interpretation: Probably western wall of a structure encompassing the courtyard with F115; at eastern side of 'wall street'. Two walls running parallel to Enclosure wall F100; western one preserved to approx. 30cm in height; eastern one to approx. 10cm; probably belonging to two phases in the 18th Dynasty; western wall seems the later one (mid-late 18th Dynasty); comprising occupational deposits, partly disturbed in upper part. Micromorphological Profile 16.

No. of feature: 115

Location of feature: SQ1, SE-corner of square
Main category: Storage installation
Sub category: Rectangular cellar
Measurements of feature: L: 1.41m; W: 0.98m
Stratigraphy: See Harris Matrix
Description: Rectangular cellar with part of vault still in situ; excavated in the gravel below the courtyard surface (see F116) encompassed by Walls F113, F114 and F116.
Dating/Interpretation: According to the finds, this cellar dates to the Thutmoside period. It probably belongs to Phase B at SAV1 West. This also corresponds to one 14C Sample: SAV1W 848/2015, charcoal, from SU 732 (lowest filling), interior of F115 – calibrated date: 1505–1396 BC, Amenhotep I–Amenhotep III.

No. of feature: 116

Location of feature: SQ1, southern part of square
Main category: Mud brick wall and floor remains
Sub category: Inner corner of domestic building
Measurements of feature: L: 2.5m; W: 1.1m (with floor)
Stratigraphy: Below SU 675; comprises SU 707, 709
Description: Floor remains to the N and E-W running part of brick wall; most probably inner corner (SW) of a domestic structure; parallel to 'wall street'.
Dating/Interpretation: Very well-preserved mud floor, abutting the mud brick wall; clearly 18th Dynasty; probably Phase B at SAV1 West. Micromorphological Profile 18.

No. of feature: 117

Location of feature: SQ1S, NW-corner of square
Main category: Mud brick wall
Sub category: Domestic structure
Measurements of feature: L: 2.01m; W: 0.5m
Stratigraphy: On top of F120
Description: Linear mud brick feature; parallel to Enclosure wall F100 in the northern part, in S-corner toward the E; corner of building with southern and western walls; at eastern side of 'wall street'. Well-formed bricks on top of F120 (32 × 16 × 8–9cm).
Dating/Interpretation: Probably a domestic structure from a later phase within the 18th Dynasty occupation at SAV1 West; half-brick thick wall.

No. of feature: 118

Location of feature: SQ1S
Main category: Mud brick wall
Sub category: Domestic structure
Measurements of feature: L: 1.45m; W: 0.21m
Stratigraphy: Younger than F117 and 116; above SU 712; below SU 658; comprises SU 715, 716, 723 and 724
Description: Linear mud brick feature, E-W running, adjacent to former trench border (now F116); four bricks long (32 × 18 × 8.10cm), four bricks high – had to be removed.
Dating/Interpretation: Most probably remains of a Ramesside or Post-New Kingdom structure. Micromorphological Profile 19.

No. of feature: 119

Location of feature: SQ1S
Main category: Occupation layers
Sub category: Street horizons/levels
Measurements of feature: L: 3.1m; W: 1.42m
Stratigraphy: Abutting F100; below SU 648; 701, 704, 710
Description: Floors/street remains in the N and S; along the inner face of Enclosure wall F100; an E-W running wall in the northern part of the feature; directly abutting F100. Micromorphological Profile 17.
Dating/Interpretation: Re-use of 'wall street'; most probably Post-New Kingdom; highly disturbed sediments according to micromorphology but some remains of stable surfaces, supporting the re-use of F100 as shelter in Post-New Kingdom times.

No. of feature: 120

Location of feature: SQ1S, northern part
Main category: Mud brick wall
Sub category: Domestic structure
Measurements of feature: L. max. 1.85m; W. 0.20m
Stratigraphy: Below SU 697, 712 (older than F118)
Description: E-W running wall, badly preserved, adjacent to F118 (removed; Profile 19); only the top of the bricks are visible.
Dating/Interpretation: Most probably the northern wall of a structure from the early phase at SAV1 West; due to the bad state of preservation unclear; 18th Dynasty.

No. of feature: 121

Location of feature: SQ1S
Main category: Deposit/floor
Sub category: Floor remains

Measurements of feature: Max. extensions L: 3.5m; W: 1.5m
Stratigraphy: Below F117; below SU 711, 718, 720; above SU 877
Description: Stratigraphic sequence below F117, parallel to it and in 90° towards the E; different floor remains; fin thick fillings between; also some badly preserved remains of walls visible.
Dating/Interpretation: Presumably connected with F120 – maybe the southern part of a structure/room; dating to the 18th Dynasty; domestic area, roofed part of a former building.

No. of feature: 122

Location of feature: SQ1S, central E part of square
Main category: Stratigraphical layers
Sub category: Occupational deposits
Measurements of feature: L: 0.80m; W: 0.65m
Stratigraphy: SU 681–683 (2015); SU 896, 888, 889, 890, 892, 893, 896, 897 (2016); below SU 896
Description: Finely preserved street deposits, stratigraphic sequence of silty and ashy layers.
Dating/Interpretation: Stratigraphical layers from the 18th Dynasty, see Harris Matrix 2015 (and micromorphological Profile 13) and 2016 (differentiation in F122.1–122.5); still unclear if street levels or rather occupational deposits from within a structure – the latter is more likely, see Structure A. Located below F142.

No. of feature: 123

Location of feature: SQ1S, SE-corner of square
Main category: Mud brick wall
Sub category: Domestic structure
Measurements of feature: L: 3.91m; W: 1.6m
Stratigraphy: SU 863, 866–868, 873–876, 893; below SU 705
Description: Different wall fragments which form a rectangular structure with preserved corners; low brick quality; fully excavated in 2016 – W of F146, E of F141, relation remained unclear.
Dating/Interpretation: Rectangular mud brick structure; date unclear. Its layout differs from the other structures along the 'wall street' and an infant burial was discovered in its westernmost compartment – probably from a later phase of use, most likely the Christian period; see, however F162 (street levels between F123 and Structure A of the 18th Dynasty). Cf. also similar structures from the 18th Dynasty at SAV1 North, e.g. N26.

No. of feature: 124

Location of feature: SQ1, N part of square
Main category: Destruction
Sub category: Traces of *marog* digging
Measurements of feature: L: 5.51m; W: 3.98m–4.12m
Stratigraphy: Later than F100
Description: Destruction of the inner part of Enclosure wall F100 – complete removal of mud bricks until the natural ground.
Dating/Interpretation: Definitely Post-New Kingdom destruction; unclear if already Ottoman or most probably more recent *marog* digging (re-use of bricks as fertilizer).

No. of feature: 125

Location of feature: SQ1S, NW-corner of square – in Enclosure wall F100
Main category: Destruction
Sub category: Traces of *marog* digging
Measurements of feature: L: 4.12m; W: 2.57m
Stratigraphy: Later than F100
Description: Deep hole within the New Kingdom enclosure wall.
Dating/Interpretation: Definitely Post-New Kingdom destruction; unclear if already Ottoman or most probably more recent *marog* digging (re-use of bricks as fertilizer).

No. of feature: 126

Location of feature: SQ1S, E of Enclosure wall F100
Main category: Destruction
Sub category: Traces of *marog* digging?
Measurements of feature: L: 4.01m; W: 2.43m
Stratigraphy: Later than F100
Description: Huge pit with sandy filling on top of broken bricks/the remains of the enclosure wall; destruction of standing Pharaonic architecture.

Dating/Interpretation: Definitely Post-New Kingdom destruction; unclear if Ottoman or more recent (deep pit with sandy filling, similar to other pits in north-western part of the New Kingdom town).

No. of feature: 130

Location of feature: SQ1SE, N of F131, E of F136
Main category: Feature interface
Stratigraphy: SU 822, 840; above SU 823, 841; below SU 847
Description: Feature interface of oval shaped pit.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 131

Location of feature: SQ1SE, in southern part, delimited by baulk of square
Main category: Feature interface
Stratigraphy: below SU 831; above SU 839
Description: Feature interface of almost oval shaped pit.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 132

Location of feature: SQ1SE, in SE part, delimited by E-border of square
Main category: Feature interface
Stratigraphy: SU 803; below SU 807; above SU 809
Description: Feature interface of pit; arch shaped.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 133

Location of feature: SQ1SE, in centre of E part, delimited by E-border of square
Main category: Feature interface
Stratigraphy: Below SU 821; above SU 817, 832
Description: Feature interface of pit in N of F132; almost oval shaped.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 134

Location of feature: SQ1SE, in centre of W part, towards N-part of square
Main category: Feature interface
Stratigraphy: Below SU 824; above SU 826, 827, 833
Description: Feature interface of pit, N of F136 and F130, W of F138, S of F135; irregular shape.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 135

Location of feature: SQ1SE, in NW-corner of square
Main category: Feature interface
Stratigraphy: Below SU 825; above SU 833, 850
Description: Feature interface of pit; irregular shape.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 136

Location of feature: SQ1SE, in SW part of square
Main category: Feature interface
Stratigraphy: SU 823; below SU 841; above SU 828
Description: Feature interface of pit; almost oval shape, between W-border of square and F130.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 137

Location of feature: SQ1SE, in centre of square
Main category: Feature interface
Stratigraphy: Below SU 830; above SU 817, 832
Description: Feature interface of pit; almost circular shape; in NW of F138, in NE of 133, in SE of F140.
Dating/Interpretation: Post-New Kingdom.

No. of feature: 138

Location of feature: SQ1SE, in centre of square
Main category: Feature interface
Stratigraphy: Below SU 827, above SU 844
Description: Feature interface of trampling horizon SU 827, cut by F130, 134, 137; irregular shape.
Dating/Interpretation: New Kingdom?

No. of feature: 139

Location of feature: SQ1SE, in NE-corner of square
Main category: Beature interface
Stratigraphy: Below SU 817; above SU 845
Description: Feature interface of trampling horizon SU 817; irregular shape; N of F137 and F133.
Dating/Interpretation: Post-New Kingdom? unclear – F140 below cuts into F152 (18th Dynasty cellar).

No. of feature: 140

Location of feature: SQ1SE, in NE-corner of square
Main category: Feature interface
Stratigraphy: Below SU 845; above SU 851
Description: Feature interface of pit filled with sand almost of triangular shape; below F139.
Dating/Interpretation: Post-New Kingdom? F140 cuts into F152 (18th Dynasty cellar) and was filled with mixed material.

No. of feature: 141

Location of feature: SQ1S, in SW of square, next to F100
Main category: Trampling horizon
Stratigraphy: Below SU 863; above SU 870
Description: Last remains of a trampling horizon in W of F123, but relation unclear, just E of F100.
Dating/Interpretation: Post-New Kingdom? Definitely younger than F100, but precise chronology unclear; feature with mixed material.

No. of feature: 142

Location of feature: SQ1S, central E part of square, surrounding F122
Main category: Stratigraphical layers
Sub category: Occupational deposits
Measurements of feature: L: 2.48m; W: 2.71m
Stratigraphy: SU 877; below SU 882, 878, 870; above SU 896
Description: Irregular shape of cut off occupation layers, in N of F123 (to which the relation remains unclear).
Dating/Interpretation: Stratigraphical layers surrounding F122 from the 18th Dynasty, see Harris Matrix 2016; dating unclear, possibly late 18th Dynasty or Ramesside.

No. of feature: 143

Location of feature: SQ1S, in E of square; SQ1SE, in W of square
Main category: Mud brick wall (collapsed)
Sub category: Domestic building
Measurements of feature: L: 0.95m; W: 0.65m
Stratigraphy: Below SU 865; above F156
Description: Fallen/collapsed mud brick wall and some stones; destruction part of Structure D.
Dating/Interpretation: Collapsed part of F156; probably belonging to 18th Dynasty domestic architecture of SAV1 West, Structure D.

No. of feature: 144

Location of feature: SQ1SE, W border of square, N of F145 and 146
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: L: 2.4m; W: 0.31m
Stratigraphy: Below SU 880, 884
Description: Remains of a mud brick wall of a structure; N-S fragment in line with F156; including faint traces of E-W running wall, in line with F161 (2 bricks); probably SE-corner of Structure A; half-brick wide wall.

Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; only a small part of the structure is preserved; probably belonging to F156 (and F120, 121, 161), forming Structure A; northern extension of this wall was excavated in 2017 (F157).

No. of feature: 145

Location of feature: SQ1SE, W part, next to F146 and F147
Main category: Feature interface
Stratigraphy: Below SU 881
Description: Feature interface of cut off stratigraphy; traces of occupational layers to the N of F146.
Dating/Interpretation: Material below the interface is definitely from the 18th Dynasty (see F146 and also F164 and 165).

No. of feature: 146

Location of feature: SQ1SE, south-eastern part
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: E-W wall: L: 2.12m; W: 0.31m; N-S wall: L: 2.4m; W: 0.30m
Stratigraphy: Below SU 860
Description: Remains of a mud brick wall of a structure; running E-W, in line with F123 and F160; towards the western end the corner and the N-S running wall are preserved; belonging to rectangular structure encompassing F151 (Structure D); half-brick thick; S of F145 and SW of F147.
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; NW-corner of Structure D.

No. of feature: 147

Location of feature: SQ1SE, south-eastern part, E of F146
Main category: Mud brick collapse
Sub category: Collapsed building
Measurements of feature: L: 1.5m; W: 0.98m
Stratigraphy: Below SU 860
Description: Fallen mud bricks and larger stones; covering northern wall of Structure D, east and above of F146.
Dating/Interpretation: Collapse of Structure D and debris; below F147 the wall F160 was unearthed in 2017. The collapse is probably from Post-New Kingdom times.

No. of feature: 148

Location of feature: SQ1NW, in centre of square, between F100 and F101
Main category: Interface
Stratigraphy: Below SU 883; above F101
Description: Cut off feature/interface of possible prepared surface/loamy silt; installation on outer face of F100; N of F149 and 150.
Dating/Interpretation: Post-New Kingdom; younger or contemporaneous to F101.

No. of feature: 149

Location of feature: SQ1NW, in southern part of square, between F100 and F101
Main category: Interface
Stratigraphy: SU 886; below SU 894; above F103
Description: Cut off feature/interface of installation on outer face of F100; S of F148, N of F150.
Dating/Interpretation: Post-New Kingdom; older than F101; younger or contemporaneous to F103.

No. of feature: 150

Location of feature: SQ1NW, between F100 and F101
Main category: Installation
Measurements of feature: L: 1.01m; W: 0.95m
Stratigraphy: Below SU 887; above F101
Description: Installation on outer face of F100.
Dating/Interpretation: Post-New Kingdom; younger or contemporaneous to F101; younger than F103.

No. of feature: 151

Location of feature: SQ1SE, S part of square

Main category: Storage installation
Sub category: Cellar/silo
Measurements of feature: L: 1.60m; W: 1.50m (top); 0.70m (base)
Stratigraphy: SU 907, 908 and 909
Description: Complete silo in the S part of Square 1SE; oval shape, lined with mud coating, no brick setting.
Dating/Interpretation: mid-18th Dynasty; Thutmoside

No. of feature: 152

Location of feature: SQ1SE + SQ1SE_E
Main category: Storage installation
Sub category: Cellar
Measurements of feature: L: 1.51m; W: 1.1m (top); 0.75m (base)
Stratigraphy: SU 917, 947 and 952
Description: Almost rectangular cellar, very similar to F115, with mud brick setting; located between Squares 1SE and extension 1SE_E.
Dating/Interpretation: Cellar within only partly preserved Structure C; mid-18th Dynasty; Thutmoside.

No. of feature: 153

Location of feature: SQ1, southern part of square and SQ1SE
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: E-W part L: 1.01m; 0.20m; N-S part L: 0.90m; W: 0.21m
Stratigraphy: Maybe contemporaneous to F120
Description: Mud brick wall remains; probably a corner of a room or structure; E-W running part of brick wall in line with F116; at the western end two bricks are aligned N-S, connected as a corner; southern end up to F120.
Dating/Interpretation: Clearly 18th Dynasty; most probably Phase B at SAV1 West; later than F120.

No. of feature: 154

Location of feature: SQ1SE, northern part of square
Main category: Mud brick walls
Sub category: Domestic building
Measurements of feature: L: 2.51; W: 1.41m
Stratigraphy: Contemporaneous with F120?
Description: Remaining walls of a structure; E-W line of bricks in line with F120: two N-S adjoining fragments preserved; creating a small room, probably a domestic structure of which the northern part was not excavated.
Dating/Interpretation: Belonging to 18th Dynasty domestic architecture of SAV1 West; only a small part of the structure was excavated.

No. of feature: 155

Location of feature: SQ1SE/SQ1SE_E
Main category: Mud brick walls
Sub category: Domestic building
Measurements of feature: L: 1.1m; W: 0.20m (N-S fragment); L: 0.60m; W: 0.41m (E-W fragment)
Stratigraphy: Contemporaneous to F154
Description: Remaining walls of a structure; N-S fragment in line with N-S extensions of F154; maybe belonging to F154; E-W running wall/corner only preserved with 2.5 broken bricks; N of F152.
Dating/Interpretation: Belonging to 18th Dynasty domestic architecture of SAV1 West; only a small part of the structure was excavated.

No. of feature: 156

Location of feature: SQ1SE
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: L: 0.80m; W: 0.21m
Stratigraphy: Below F143
Description: Remains of a mud brick wall of a structure; N-S fragment in line with F157; probably eastern wall of Structure A; half-brick wide wall. Isolated fragment.
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; only a small part of the structure is preserved; probably belonging to F157 (and F120, 121, 161), forming Structure A.

No. of feature: 157

Location of feature: SQ1SE
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: L: 0.85m (total: 1.65m); W: 0.20m (without southernmost bricks calculated as corner in F144)
Description: This is the northern extension of Wall F144 which was covered with some debris in 2016.
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; only a small part of the structure is preserved; probably belonging to F156 (and F120, 121, 161), forming Structure A.

No. of feature: 158

Location of feature: SQ1SE
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: L: 0.90m; W: 0.18m (N-S wall); L. 1.38m; W. 40.45m (E-W wall)
Stratigraphy: Contemporaneous to F156?
Description: Remains of a mud brick wall of a structure; N-S fragment parallel to F156; probably western wall/interior wall of Structure C; half-brick wide wall. Isolated fragment; in line with the corner of the quern emplacement of F159. E-W fragment parallel to F159.
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; probably small part of Structure C (courtyard house).

No. of feature: 159

Location of feature: SQ1SE
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: L: 3.51m; W: 0.90m
Stratigraphy: Contemporaneous to F158
Description: Remains of a mud brick wall of a structure; running E-W, in line with F161; probably southern wall of Structure C; half-brick wide wall (width: 0.20m). Remains of a quern emplacement attached to the northern side of the wall (max. 1.01m × 0.52m). A possible entrance area is preserved at the western end of the E-W wall, faint traces of a N-S extension towards the N (1.10m) with a corner at the end.
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; only small parts of Structure C are preserved; probably belonging to F158 and F152; street façade of courtyard house with installations.

No. of feature: 160

Location of feature: SQ1SE, southern part
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: L: 0.91m; W: 0.19m
Stratigraphy: Below F147; belonging to F146
Description: Remains of a mud brick wall of a structure; running E-W, in line with F123 and F146; probably eastern extension of F146 and thus belonging to the rectangular structure encompassing F151 (Structure D).
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; only a small part of Structure D is preserved; one corner with N-S and E-W walls; some street levels still attached to the north-western corner (outside the structure).

No. of feature: 161

Location of feature: SQ1SE
Main category: Mud brick wall
Sub category: Domestic building
Measurements of feature: L: 2.51m; W: 0.17m
Stratigraphy: Contemporaneous to F162
Description: Remaining part of a mud brick wall of a structure; running E-W, in line with F159; probably southern wall of Structure A; half-brick wide wall. Some stratigraphic layers preserved at the southern side – street layers F162.
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; only a small part of the structure is preserved; probably belonging to F157 (and F120, 121, 156), forming Structure A.

No. of feature: 162

Location of feature: SQ1SE

Main category: Occupational layers
Sub category: Street horizons
Measurements of feature: L: 1.4m; W: 1.01m
Stratigraphy: Contemporaneous to F161
Description: Street layers attached to the mud brick wall of F161; fine silty layers; cut at both sides, but most probably adjacent to F123 – thus bridging the complete distance of the main E-W street at SAV1 West.
Dating/Interpretation: Belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; remains of the main lane running towards the E at SAV1 West; connected with 'wall street'; separating (and possibly connecting) Structure A with F123.

No. of feature: 163

Location of feature: SQ1SE
Main category: Installation
Sub category: Storage pit
Measurements of feature: Diam. 0.70m
Stratigraphy: Contemporaneous to F121?
Description: Small circular pit dug into the natural gravel.
Dating/Interpretation: Installation, most probably storage pit, belonging to early-mid 18th Dynasty domestic architecture of SAV1 West; located in courtyard/open space of Structure A.

No. of feature: 164

Location of feature: SQ1SE
Main category: Cultural surface
Sub category: Street layer
Measurements of feature: L: 1.1m; W: 0.89m
Stratigraphy: Below F145; younger than F165
Description: Street layers attached to the mud brick wall of F146; mud surface, silty layers; cut towards the N and to the E and W.
Dating/Interpretation: Small patch of remains of street surface in the E-W lane between Structures D and E.

No. of feature: 165

Location of feature: SQ1SE
Main category: Cultural surface
Sub category: Street layer
Measurements of feature: Max. L: 3.3m; W: 1.35m
Stratigraphy: Older than F164
Description: Street layers covering the complete width of the E-W lane in SQ1SE; attached to the mud brick wall of F146 and F159; mud surface, silty layers; cut towards the E and W.
Dating/Interpretation: Remains of an older street surface in the E-W lane between Structures D and E.

3.3.5 The Harris Matrix of SAV1 West[490]

As outcome of the stratigraphic excavation at SAV1 West, the complete Harris Matrix of the sequences was established for the excavations in 2015 (Plan 4) and 2016 (Plan 5). The results of the other seasons, in particular the relations to the stratigraphy, was incorporated into the catalogue of features (Chapter 3.3.4).

3.4 Comparison between SAV1 East and SAV1 West

The comparison between the sites excavated by AcrossBorders in the town area will focus on the sectors SAV1 East and SAV1 West. Sector SAV1 Northeast is not suitable for an assessment in this respect because it only represents a test trench for tracing the town wall (see Chapter 3.5). The evaluation of similarities and dissimilarities between SAV1 East and SAV1 West shall start with highlighting the correspondences: both sectors yielded abundant material from the 18th Dynasty; both attest by means

[490] Composed by Klara Sauter for the years 2015 and 2016 with the software HarrisMatrixComposer.

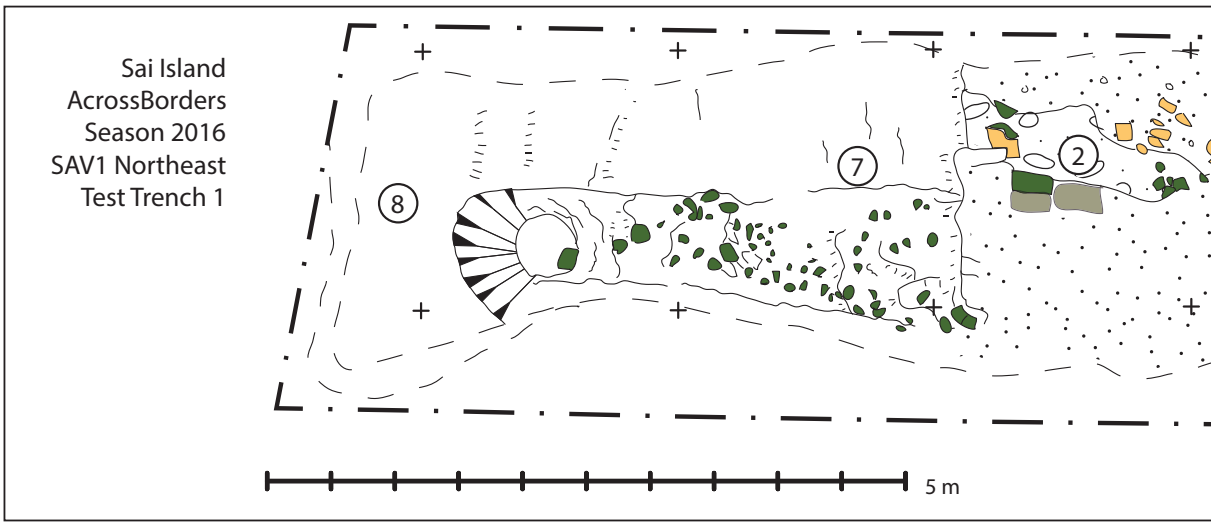


Fig. 48 Excavation results in Trench 1

of scattered Ramesside sherds to a use of the areas in the later New Kingdom, missing, however, clear architectural remains. SAV1 East and SAV1 West have both experienced Post-New Kingdom activities and have suffered from pitting and *marog* digging, partly destroying the stratigraphic evidence. Both sectors held remains of modest domestic mud brick buildings with storage installations.

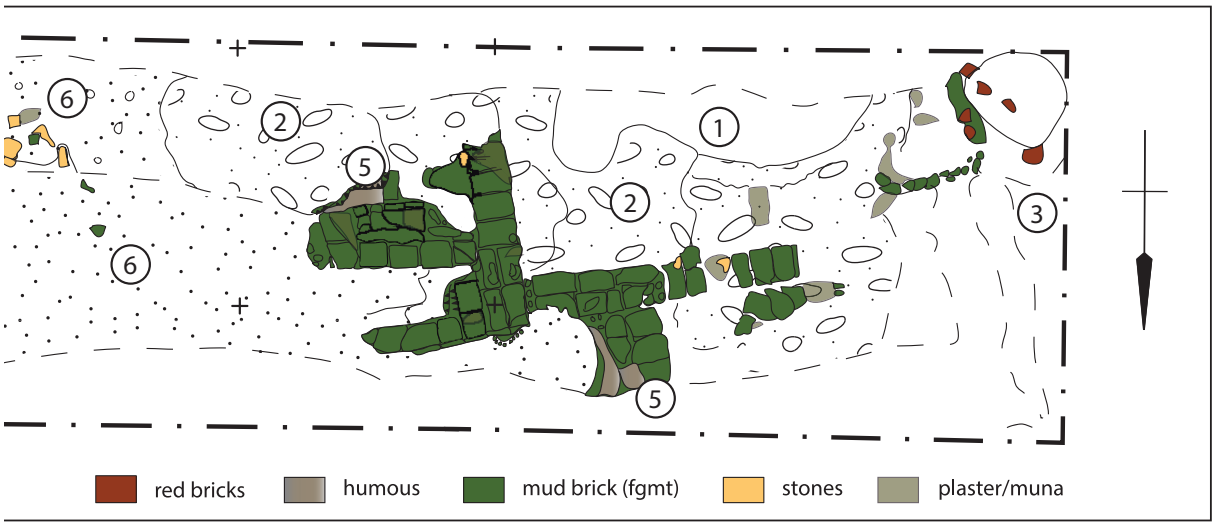
The differences between SAV1 East and SAV1 West first concern the topographical situation: SAV1 East lies above the sandstone cliff, the area is sloping in this part and the preserved deposits were in general quite shallow. The best preserved remains at SAV1 East were the subterranean cellars. SAV1 West is fronted by a ditch towards the west but shows a rather even topographical surface in its eastern half. The main feature at SAV1 West is the town enclosure and this substantial structure seems to have protected adjacent mud brick structures which are much better preserved, despite of *marog* digging, than at SAV1 East. The town enclosure at SAV1 West compares well to SAV1 North, as does the general outline as well as the sequence of the site. A narrow wall street and houses of half-brick thickness were documented at SAV1 West east of the town enclosure wall and are very similar to the remains in the northern sector, also including storage installations/silos.[491]

SAV1 East is slightly different in character; it best compares in its early phase to the area excavated by Azim around Temple A. Its later phase, however, markedly contrasts from both SAV1 West and SAV1 North and in its architectural layout finds close parallels at SAV1. Like the southern part of the town, SAV1 East comprises with Building A a large, probably administrative building as well as large magazines and substantial cellars. Comparable buildings and magazines are missing at SAV1 West; the cellars found there are much smaller and of a less sophisticated type.

All in all, although the general phasing and the dating of the occupation at SAV1 East and SAV1 West are very similar, there are substantial differences in the general organisation and structure of the sites. These alterations can best be explained with New Kingdom Sai as an Egyptian town with several distinct sectors: whereas SAV1 North and SAV1 West obviously represent domestic areas with household and workshop activities like milling and bread baking, the character of SAV1 East changed in Phase B of the site. Contemporaneous with the erection of the town wall, the stone temple and the representative buildings in the southern part including the large magazines, SAV1 East was constructed according to the orthogonal layout of the southern part and was obviously associated with the temple and storage facilities connected with the so-called *Ꜣnw*.[492] SAV1 East can be regarded as part of the official/administrative Sai closely con-

[491] Cf. Budka 2015b; Budka 2017f.

[492] On these *jnw*, the so-called tributes from Nubia, see Morkot 1991; Morkot 1995; Smith 2003a, 70–73 with further references; cf. also Fiandra 2002 for the administrative procedures at storehouses in Egypt and Nubia.



at sector SAV1 Northeast, 2016 season

nected with the main function of an Egyptian temple town, whereas the western and northern sectors have more of a domestic character connected with crafts, household activities, stabling and possibly dwelling.

3.5 Sector SAV1 Northeast

One of the main questions about the setting of the New Kingdom town of Sai was the position of its eastern town enclosure. It was assumed that this part of the former city wall had collapsed into the Nile.[493] Geological surveys of the sandstone cliff by AcrossBorders allowed a modification of this assessment, evaluating severe erosion in this part of the island as highly unlikely (see above, Chapter 2.2.1). It was suggested that the eastern perimeter wall was located further towards the west and might be traceable after all above the sandstone cliff along the eastern side of the island. In this respect, "negative linear anomalies" visible on the geophysics survey map from 2011 and tentatively identified as a possible extension of the north-south street, Rue NS1 of Azim[494] were of interest. In 2016, a 15 × 3m test trench labelled Trench 1 of site SAV1 Northeast was opened by AcrossBorders above these anomalies on the slight slope of the east side close to the presumed northeastern corner of the town (see Fig. 3 and Fig. 48).

Excavation work at SAV1 Northeast was conducted with a group of workmen according to the stratigraphical excavation technique applied at SAV1 East and SAV1 West. Unsurprisingly, the surface layers were found as very much disturbed and mixed. However, already on the surface the percentage of 18th Dynasty pottery was notable and compared well to SAV1 East. The deposits were very sandy and the steep slope of the site towards the east made excavation challenging.

Between some pits with sandy backfilling along the western edge of the trench, a few bricks were documented which were still in situ (Fig. 48). The brickwork faded towards the west. The central part of Trench 1 was dominated by a gravel surface and a thin mud horizon, possibly some kind of floor or surface preparation. Fragmented bricks in this area were difficult to interpret and could belong to a later phase or maybe a tower-like structure.

A steep slope was noted towards the west of Trench 1; its surface had similar properties as the glacis-like structure excavated at SAV1 West. The deposits at the bottom of the trench, along its western edge,

493 Geus 2004a, 115, fig. 89, based on the reconstruction by Azim 1975, 94, pl. 2.
494 Crabb and Hay 2011, 16; on this street, see most recently Adenstedt 2016, 32.

were dominated by a massive amount of pottery sherds, indicating that waste and debris has accumulated throughout the ages in this part of the island.

Although only scarce remains of brickwork were found, it is safe to assume that Trench 1 yielded the remains of the eastern city wall of Sai. The reconstruction of the eastern side of the town walls with a width of *c*. 4.3m was possible and would thus correspond to the previously unearthed parts of the town enclosure. Associated pottery suggests a dating of the remains in SAV1 Northeast to the mid-18th Dynasty (Thutmoside). Based on this new discovery, the east-west extension of the New Kingdom town measured only 118–120m.[495]

3.6 Urban planning and building phases

Despite of clear evidence of urban planning, there are several different sectors within the town, which contrast regarding their layout and dating[496] and will be presented in the following.

The Egyptian temple town of Sai can now be safely reconstructed as taking up a width of *c*. 120m, with traces of the eastern town wall located in sector SAV1 Northeast. Of the fortification walls surrounding the town, remains on the north and south sides were known prior to AcrossBorders fieldwork.[497] With the newly discovered brickwork at SAV1 Northeast, an interpretation of the steep cliff at the northeastern corner of the town, site 8-B-522, as Pharaonic landing place (or one of the landing places) seems likely.[498]

Urban planning and orthogonal layout of the New Kingdom town of Sai is evident in the southern part and can also be traced in SAV1 East. However, a comparison of all excavated parts of the town area nicely illustrates that there are considerable differences between the individual sectors. Although this may partly be explained by a slight variance in dating, it seems to be a distinct feature of the site. Sai Island can, therefore, be taken as another example for an Egyptian walled town in which real developments may differ significantly from theoretical urban planning. A dissonance of houses from "standard types" was also recorded at the neighbouring site of Amara West and was in general probably actually common in Egyptian towns.[499] Sectors SAV1 North and SAV1 West of Sai particularly exemplify short-term buildings and complicated processes within one complex town area which was part of a very dynamic world with remarkable changes during the New Kingdom.[500]

The evolution of Sai Island in Pharaonic times and especially its development from the early 18th Dynasty to the Ramesside era can now be traced in its most important phases. As suggested by textual evidence and finds from the contemporaneous pyramid cemetery SAC5, Sai Island was the administrative centre of Upper Nubia (Kush) during the Thutmoside Period and the predecessor of Soleb and Amara West.[501] Sector SAV1 East seems to markedly illustrate the change of occupation with the long-term installation of the Egyptian administration on Sai after the defeat of the Kerma Kingdom by Thutmose III. Whereas in the early levels the sector has parallels with SAV1 North, probably associated with the role of a simple landing place, the character of the site changed in Thutmoside times. Building A and large-sized cellars testify a close connection to the stone temple and can only be explained by the function of the town itself as administrative headquarter of the Egyptian occupation in Kush.[502] For the understanding of the internal structure of the town, it is important that the remains at SAV1 East allow a reconstruction of the orthogonal layout known from the southern part of the town as extending further towards the north, beyond Temple A. As mentioned above, sectors SAV1 North and SAV1 West illustrate the dynamic elements within Egyptian town planning with slight alternations from standard plans of buildings.

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495 Adenstedt 2016, 24, fig. 7; see also Adenstedt 2018.
496 Budka 2015b; Budka 2017b.
497 Adenstedt 2018.
498 For the Christian use of the site, see Hafsaas-Tsakos and Tsakos 2012, 85–87. See also Chapter 2.5.
499 Spencer 2015, 201–202.
500 See Budka 2017f.
501 Minault-Gout and Thill 2012, 415, fn. 27; Budka 2013a, 78–87; Budka 2015b, 74–81; Budka 2015d, 57.
502 Budka 2017c, 80.

Fig. 49 Locations of micromorphological sampling at SAV1 West, 2015 season

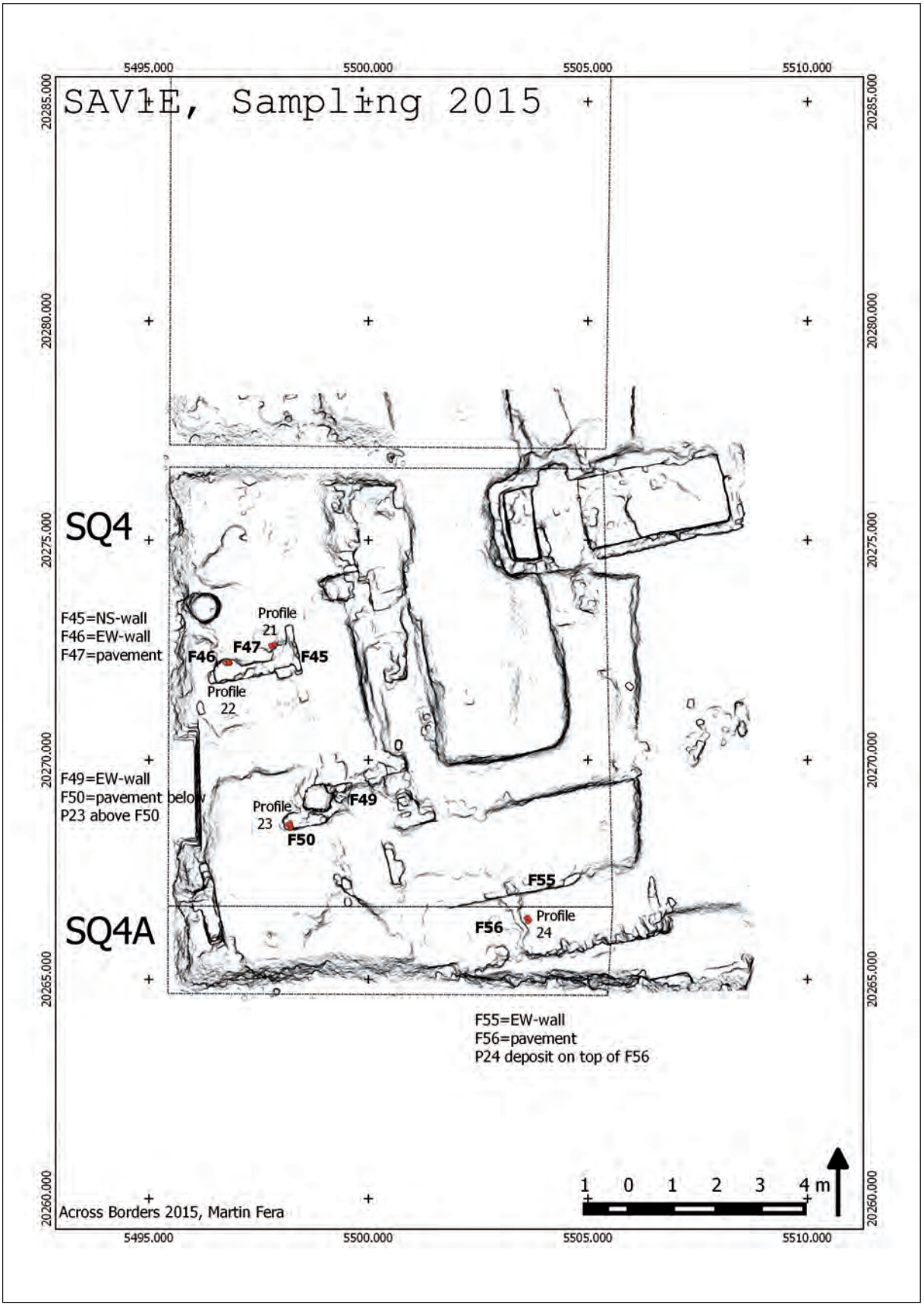

Fig. 50 Locations of micromorphological sampling at SAV1 East, 2015 season

3.7 Micromorphological sampling programme[503]

During the 2015 season a micromorphological sampling programme was implemented within the AcrossBorders project and developed further in 2016.

3.7.1 The 2015 sampling season: introduction

During the 2015 season sampling in the New Kingdom town focused on the 18th Dynasty occupation in SAV1 West (Fig. 49) and SAV1 East (Fig. 50).[504] The aim was to examine the formation processes of various cultural depositional sequences in selected contexts in order to investigate how daily life activities contributed to the creation and use of space in the town. One of the objectives was to detect and characterise traces of space use as indicators of social behaviour. The approach taken for the investigation of daily life activity is a micromorphological analysis of the formation processes of floors in buildings and street surfaces.[505] A total of 18 profiles were taken within all areas of excavation by Miranda Semple and Sayantani Neogi (9 profiles in SAV1 West; 4 in SAV1 East; 5 in SAV1 North).[506]

The sampling methodology began with careful cleaning of the contexts to be sampled. Martin Fera photographed and sketched the context at 1:5. A micromorphological description was completed for each profile based on macroscopic visual examination of each deposit or sequence of deposits, including the colour (Munsell), texture and structure[507] of the sediments and the presence of anthropogenic inclusions, pottery, bone and organics (charcoal). All significant architectural associations with the sedimentary contexts were carefully identified and recorded in order to link occupation phases with the cultural chronology. Samples were taken using plaster bandages and occasionally Kubiëna tins. A few well-compacted samples were carved as blocks, covered with plastic wrap and securely taped. Bulk samples were taken for each sample for geochemical testing e.g., EC, pH and P. Each sample was given a profile number and points were taken using a Leica Total Station to identify the precise location of each soil block within the contexts and the square.

The micromorphological sampling program implemented during the 2015 field season of the New Kingdom town on Sai provided an initial set of soil blocks for thin section manufacture and micromorphological analysis. The various contexts that were sampled had potential to shed fresh light on the organisation and use of space while elucidating some aspects of social practice within the community of 18th Dynasty Sai.

3.7.2 Results from 2015 samples taken in the 'wall street' of SAV1 West[508]

Five profiles (Profiles 11, 12, 14, 16 and 17) were taken at SAV1 West from the context of the street adjacent to the enclosure wall Feature 100, the so-called 'wall street'. The profiles are here described sequentially from the northernmost sampling location, Profile 11 to Profile 17 in the south (see Fig. 49). A total of thirteen block samples were taken to investigate the depositional contexts and associated features for this traffic route along the town wall in the New Kingdom town. Based on the archaeological record, Profiles 11, 12, 14 and 16 should be associated with New Kingdom activities, whereas Profile 17 clearly belongs to the re-use of the area in Post-New Kingdom times.

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503 This chapter is based on the field reports by Miranda Semple, Sayantani Neogi and Sean Taylor.
504 Report by Miranda Semple; see Semple 2015.
505 Matthews et al. 1997; Boivin 2000.
506 For an assessment of the samples from SAV1 North, see Budka 2017f, 173–174.
507 Bullock et al. 1985; Stoops 2003.
508 Based on the report by Miranda Semple; Semple 2018.

Methodology

In field, the block samples were removed from pedestals or sections by gentle carving and then wrapped in plaster bandages. The sampling contexts were photographed and the sampling locations recorded using a total station. Field descriptions of the sampling locations were completed including Munsell colour, macroscopic descriptions of the sedimentary context and any significant associated features or installations.

The samples were transported to the University of Cambridge and the sections were manufactured at the Thin Sectioning Facility of the McBurney Geoarchaeology Laboratory University of Cambridge by Tonko Rajkovaca, Chief Research Laboratory Technician (Geoarchaeology).

The thin sections were first examined at a scale of 1:1 and then analysed with petrographic microscopes at magnifications ranging from x4 to x400 using plane-polarised light (PPL), crossed-polarised light (XPL) and oblique incident light (OIL). Micromorphological descriptions are based on the internationally accepted terminology outlined in Peter Bullock et al. and George Stoops.[509] The interpretation of the thin sections was aided by the McBurney Laboratory reference collection.

Size Range for Mineral Grains Standard Range	
Silt	2 ≤20µm
Coarse silt	20–50µm
Very fine sand	50–100µm
Fine sand	100–200µm
Medium sand	200–500µm
Coarse sand	500–1000µm
Fine gravel	>2000µm
Relative Abundance	
Very Few	<5%
Few	5–15%
Common	15–30%
Frequent	30–35%

Tab. 11 Key to size classes, abundance and descriptive terms. After Stoops 2003, Tabs. 4.1 and 4.2

Thin section analysis

The analysis of the sediments that comprise Profiles 11, 12, 14, 16 and 17 identified a group of constituent materials that are present and shared by all the deposits, creating a series of common characteristics. These constituents are described first to avoid repetition in the descriptions.

The coarse fraction comprises approximately 15% to 30% of the total deposits with the coarse mineral component consisting of moderately to poorly sorted very fine to medium quartz sand with inclusions of coarse silt sized quartz sand (>25µm), traces of chert and limestone lithoclasts derived from the parent material (Tab. 11 for size classes of mineral grains).

The fine fraction includes any element ≤25µm, being a silty, sandy (coarse quartz silt) clay and organic punctuations. The coarse/fine related distribution is mainly enaulic with several examples of a porphyric-related distribution. The birefringence fabric is commonly weakly calcitic crystallitic.

The organic material consists mainly of plant remains including tissue and cell residues. Occasionally, well-preserved large tissue fragments (≤10.5mm) are present. Amorphous organic fine material is present in most profiles as is organic pigment. The organic material is predominantly humified with examples of desiccated remains. Semi-quantitative estimates for the organic material and the types present, in conjunction with the range of anthropogenic inclusions, contribute to the interpretation of the use of the 'wall street'.[510]

The deposits that comprise most of the profiles are throughout characterised by a similarity in coarse and fine mineral material indicating similar background processes of accumulation. Contributions of aeolian origin are predominately coarse quartz silt, very fine and fine quartz sand with additional inputs

[509] Bullock et al. 1985; Stoops 2003.
[510] Kaufman et al. 1985; Macphail 2010; Matthews 2010.

Aggregates	Shape	Inclusions	Colour
Type A – surface material of fine silt, sand and clay	Variable subangular to sub-rounded	Amorphous organic material, vegetal voids and punctuations, quartz sand, occasional small nodules of micrite or iron	Medium brown
Type B – fine silt and clay/ alluvial silt often laminar (crusting)	Sub-angular to sub-rounded commonly laminated	Coarse quartz silt, occasional punctuations, fine comminuted organic material	Pale brown to red-brown (iron rich)
Type C – organic-rich with biomineral inclusions	Sub-rounded to rounded	Cell residues, amorphous material, punctuations, phytoliths (articulated and disarticulated), coarse quartz silt to fine quartz sand, variable porosity	Yellow to dark brown (iron rich)
Type D – burnt aggregates to unidentifiable aggregates	Rounded to sub-rounded	Variable	Various

Tab. 12 Overview of characteristics of aggregates types

of organic material. Deposits exhibiting significant variation in microstructure, organisation and post-depositional alteration are discussed in each section or unit description.

Profile 11

This section consists of a highly disturbed sediment exhibiting a granular microstructure with zones of bioturbation and traces of vegetal voids. The coarse mineral component is dominated by randomly distributed unsorted quartz sand. The organic material (≤10%) includes a range of strongly humified material including tissue fragments (≤10.5mm in size) and elongated cell residues scattered in the groundmass. Anthropogenic inclusions are minimal, being traces of ash. Several Type A aggregates (aggregates of surface material) and Type B aggregates (fragments of fine, laminar silt) dot the groundmass (Tab. 12 and Pl. 57a).

Profile 11: deposition and formation processes

Profile 11 was taken within Feature 110, which represents the original New Kingdom use of the 'wall street' which was disturbed by later re-use and cutting. Through the thin section of the sample it became obvious that the depositional and post-depositional processes had been almost completely erased by random mechanical mixing. This is likely the result of the Ottoman excavation of the area, effectively reworking the sediment to produce a chaotic fabric.

Profile 12

Profile 12 is comprised of a sequence of six depositional units with partial capture of the basal deposit.

Section 12.1 consists of two units. Unit 12.1/1 is characterised by a vesicular to vughy microstructure with moderately sorted, medium quartz sand dominating the coarse mineral component. The organic material is limited (≤10%) and consists mainly of randomly scattered cell residues with occasional tissue residues and several Type C aggregates (rich in organic matter).

Unit 12.1/2, in contrast to 12.1/1, exhibits a granular to vughy microstructure with traces of vegetal voids. The coarse mineral component is mainly unsorted quartz sand. The abundance of organic material (≤30%) includes tissue fragments (≤20mm) and elongated cell residues with traces of silicified material. Anthropogenic inclusions consist of occasional fragments of mud brick (Pl. 57b) and charcoal. Several organic-rich Type C aggregates are also present in the groundmass.

Section 12.2 is a thick, disturbed deposit exhibiting a weakly separated granular microstructure with crumb domains and occasional vughs. The coarse mineral component is mainly unsorted quartz sand. Similar to 12.1/2, the deposit includes a range of organic material (≤20%) and randomly distributed tissue fragments (≤8mm) but is dominated by cell residues. Micritic infillings/coatings are preserved in the lower half of the section. Anthropogenic inclusions consist of fragments of abraded mud brick that include a vegetal temper not present in Unit 12.1/1; a large piece of bone (clearly visible in section) and Type C aggregates were also identified. Below the large bone fragment the deposit is relatively richer in organic cell residues and includes several well-preserved pockets of ash and fragments of charcoal (Pl. 57i).

Section 12.3 consists of a thick, disturbed deposit exhibiting a weakly separated granular microstructure with crumb domains and occasional vughs. The coarse mineral component is mainly unsorted quartz sand. The deposit includes a range of organic material (≤10%), traces of tissue residues and cell residues with amorphous fine material dominating the organic component. Micritic infillings/coatings are present throughout the section. In addition, several randomly oriented Type B aggregates dot the groundmass as well as Type C aggregates and fragments of mud brick (Pl. 57c).

Section 12.4 consists of two units. Unit 12.4/1 is a moderately disturbed deposit exhibiting a granular microstructure with extensive excremental domains and a diffuse lower boundary. The coarse mineral component is dominated by moderately sorted fine quartz sand. The organic material (≤20%) includes trace amounts of tissue fragments (≤1.5cm) with cell residues and amorphous organic material exhibiting various stages of humic decomposition. Disarticulated phytoliths and silicified material are present in small quantities within the groundmass. The anthropogenic inclusions comprise several clearly visible pottery fragments with a semi-horizontal orientation. Several Type B and Type C aggregates are randomly scattered in the groundmass.

Unit 12.4/2 consists of a granular to vughy microstructure including occasional random, coarse sized irregularly shaped vughs with a slightly undulating upper boundary. The coarse mineral component is dominated by moderately sorted fine quartz sand and the organic component (≤10%) includes tissues residues (≤1mm), cell residues and amorphous organic material. A few abraded Type B aggregates are scattered in the groundmass.

Profile 12: deposition and formation processes

Profile 12 was taken together with Profile 14 at Feature 112, layers of settlement stratification with clear multi-period use at the corner between mud brick walls and the 'wall street' (between Structures B and C). Within the deposits of Profile 12, a number of significant features were identified that indicate episodes of depositional and post-depositional alteration resulting from predominantly anthropogenic activity. These events characterise Profile 12 as a sequence of occupation deposits with one exception, Unit 12.1/1.

In contrast to the rest of the deposits in Profile 12, Unit 12.1/1 exhibits a compact structure with a relatively homogenous distribution of the coarse fraction with the void space being commonly vesicular. These characteristics indicate that the unit is an intentionally prepared plaster mix. The preparation of the soil mix by kneading, "pugging", results in vesicles and the inclusion of organic aggregates and traces of anthropogenic debris indicate a locally-sourced sediment, likely from the settlement itself.

For most of Profile 12, Units 12.1/2 to 12.4/1, the deposits are similar in microstructure presenting variations in the quantities of organic material, the quantity of anthropogenic inclusions and the occasional pedofeatures. The degree of bioturbation resulting in excremental zones indicates that initially, significantly, greater quantities of organic material were present than have been preserved. This is highlighted in Unit 12.4/1 in which extensive excremental zones emphasise the activity of soil fauna.

While organic material is present throughout Profile 12, larger quantities of particularly amorphous fine material are present in Unit 12.1/2, and in Section 12.2 greater amounts of cell residues (≤20%). Additionally, large tissue fragments (ranging from 20mm to 3cm) are randomly distributed in the groundmass. The preservation of large fragments and larger quantities of organic material sug-

gests rapid burial, delaying the humification process.[511] The anthropogenic material includes several pottery sherds (Unit 12.4/1) and a large piece of bone (Section 12.2) with trace amounts of charcoal (Unit 12.1/2), bone fragments and several pockets of ash (Section 12.2).

The main pedofeatures identified in Profile 12 are a range of aggregates and infillings/coatings. Features that indicate surface processes are ephemeral due to depositional and post-depositional anthropogenic disturbance, these include Type A aggregates of surface material (Pl. 57d) while Type B consists of fine laminar silt indicating fragments of surficial crusting, suggesting a disruption of weakly stable surfaces. Both types are the result of disruption and mechanical mixing. Type C aggregates are also present. These aggregates are commonly sub-rounded and rich in plant remains (Pl. 57e). Infillings and/or coatings of micrite are identified in Sections 12.2 and 12.3, indicating a post-depositional alteration of the sediments by pedogenic processes.

As proposed by the field archaeologists, the sequence that constitutes Profile 12 presents a series of occupation deposits that were intermittently disrupted and reworked. The upper deposits suggest a mechanical disturbance and tumble from eroding wall material present in 12.1 and 12.2 which are probably related to a late 18th Dynasty/Ramesside activities at SAV1 West. The lower half of the Profile, Sections 12.3 and 12.4, exhibit less disturbance with the incorporation of laminar crusts and surficial aggregates indicating weak surfaces that were disrupted by traffic through the street. The preservation of organic material suggests that airborne debris was continually being deposited in the street and buried. Domestic activity is indicated throughout the deposits by the anthropogenic debris. However, the limited quantities suggest incidental deposition rather than intentional discard. This corresponds to the function of the 'wall street' as a routeway at SAV1 West during the original phase of use of Structures B and C.

Profile 14

Profile 14 is comprised of a sequence of five depositional units, taken at Feature 112.

Section 14.1 consists of a thick sediment with a vughy to vesicular microstructure overlain by horizontal planar voids. The coarse mineral component exhibits a relatively homogenous distribution dominated by well sorted very fine quartz sand. Vegetal voids preserve traces of disarticulated phytoliths and exhibit a semi-horizontal orientation visible at the macroscale. The organic material (≤30%) includes desiccated plant remains (glumes/awns-inflorescence), fragments of organ and tissue residues (4–6.5mm), strongly humified amorphous organic material and punctuations. The anthropogenic inclusions are sparse, consisting of traces of decalcified ash and several Type C aggregates.

Section 14.2 is a highly disturbed sediment with a crumb microstructure and some welding of small aggregates. Occasional dense domains exhibit planar voids and randomly oriented vegetal voids. The coarse mineral component is randomly distributed and comprises of moderately sorted very fine and fine quartz sand. The organic material (≤20%) consists of tissue residues, amorphous fine material and punctuations. Anthropogenic inclusions are minimal, but varied, and include fragments of charcoal, traces of ash, unburnt bone (fish vertebra?) and a large piece of pottery. Occasional Type C aggregates dot the groundmass. These aggregates exhibit variation, a few with limited organic material and several that are organic-rich being embedded with phytoliths and faecal spherulites.

Section 14.3 Unit 14.3/1 exhibits a moderately disturbed sediment with a predominately granular microstructure and occasional vegetal voids. The lower boundary is clear but undulating. Moderately sorted randomly distributed fine and medium quartz sand is the main coarse mineral component. Clearly visible at the macroscale is a biogallery that extends into the earliest unit (14.3/3). The organic material (≤10%) includes moderately to strongly humified elongated strands, tissue and cell residues with amorphous fine material scattered through the unit. The organic material also exhibits strong birefringence. Anthropogenic inclusions are sparse, being traces of charcoal and bone fragments.

Unit 14.3/2 exhibits a moderately separated granular microstructure and occasional vegetal voids. The upper boundary is clear. The coarse mineral component consists of moderately sorted randomly

[511] Babel 1975; Courty et al. 1989.

distributed fine quartz sand. The organic material (≤10%) includes moderately to strongly humified strands as well as elongated silicified strands of tissue and cell residues with amorphous fine material scattered through the unit. Traces of anthropogenic inclusions include charcoal and bone fragments.

Unit 14.3/3, in contrast to the two upper units, exhibits a weakly developed sub-angular blocky microstructure with traces of vegetal voids and an undulating but clear upper boundary. The coarse mineral component is mainly moderately sorted fine quartz sand and the organic material (≤5%) consists of traces of tissue and cell residues with strongly humified amorphous organic material. No anthropogenic inclusions were identified.

Profile 14: deposition and formation processes

Within the deposits a number of significant features were identified that indicate episodes of depositional and post-depositional alteration, mainly the result of anthropogenic activities and comparable to Profile 12.

Section 14.1 presents a stark contrast to Sections 14.2 and 14.3. The vughy to vesicular microstructure in conjunction with horizontal planar voids and the relatively homogenous distribution of the coarse fraction with the mineral component dominated by coarse silt-sized quartz sand suggests an intentional collection and processing of locally-sourced sediment. The organic inclusion suggests temper used to manufacture a plaster mix.

Section 14.2 is a highly disturbed occupation deposit exhibiting a chaotic mix of infill and anthropogenic debris. The debris is domestic in nature: pottery, ash, charcoal, bone and Type C aggregates. Of these aggregates several are composed of organic material and phytoliths embedded with faecal spherulites, indicating herbivore dung (Pl. 57f). In other Type C aggregates the organic material exhibits varying degrees of decomposition or desiccation, little or no silt and an absence of faecal spherulites, indicating possible fragments of human coprolite.[512] The biogalleries indicate soil fauna activity and the welding of small aggregates suggests a reforming sediment by heavy reworking.[513]

Section 14.3 Of the three units identified in Section 14.3, Unit 14.3/1 is similar to Section 14.2 with the unit exhibiting three significant differences, those being that the unit exhibits less disturbance. The blunt ended, elongated strands of organic material exhibit strong birefringence and there is a reduction in the total organic inclusions. Further, the lower boundary is clearly defined. The elongated organics indicate that once deposited the material was quickly buried, reducing breakage, while the clear boundary suggests a rapid infilling on a compacted surface.

Unit 14.3/2 is similar to 14.3/1 with several exceptions in regards of the quantity of organic material and anthropogenic inclusions. The inclusions within the deposit are sparse. However, the vegetal voids present an overall horizontal orientation, indicating minimal disturbance once deposited prior to decomposition.

In Unit 14.3/3 there is a sharp contrast to the overlying units, exhibiting a weakly developed blocky microstructure. The organic material is minimal, being mainly amorphous fine organics, and there is an absence of anthropogenic debris. The lack of organics and anthropogenic debris in conjunction with the compaction of the sediment suggests a non-cultural deposit of natural infill.

As the context of Profile 14 is the street adjacent to the wall of a structure, the sequence suggests a series of episodes that indicate various changes in activities and/or space use (see above, Features 112 and 116). The sediment of the latest section (14.1) exhibits many of the characteristics of a mud plaster mix. The vughs and vesicles are characteristic of pugging during plaster preparation. At the base of the unit the vegetal voids exhibit a general horizontal orientation, however above these vegetal voids the upper voids exhibit a sub-horizontal orientation, indicating plastering with a sweeping motion suggesting an installation. Subsequent mechanical compaction resulted in planar voids creating cracks.

Below this unit is a highly disturbed occupation deposit (Section 14.2), consisting of reworked sediment rich in cultural debris. Beneath this disturbance is a series of units (Section 14.3) that indicate rapid infilling with natural inputs and deposition of minimal quantities of cultural debris which frequently char-

512 Shillito et al. 2011a, Figure 4, Images C, E and F.
513 Mermut and Jongerius 1980.

acterise occupation deposits. However, in the earliest deposit (Unit 14.3/3) there is an absence of cultural debris, indicating an aggrading surface.

Profile 16

Profile 16 consists of two deposits and was taken right next to Profile 14.

Section 16.1 exhibits a granular microstructure with occasional dense domains and generally horizontal vegetal voids. The coarse mineral component consists of moderately sorted randomly distributed medium quartz sand. The organic material includes horizontally oriented, elongated fragments of tissue residues (≤5mm) with moderately humified cell residues and amorphous fine material. Articulated and disarticulated phytoliths are occasionally embedded with faecal spherulites and one or two pieces of charcoal are present. The anthropogenic inclusions are sparse, being traces of bone, several Type A and Type C aggregates embedded with faecal spherules, all scattered in the groundmass.

Section 16.2 consists of a granular to vughy microstructure with dense domains exhibiting planar voids. The coarse mineral component is dominated by moderately sorted very fine quartz sand. Horizontally oriented, elongated stands of tissue residue (≤1mm) together with cell residues and amorphous organic material comprise the organic component. Traces of disarticulated phytoliths and silicified material (Pl. 57h) and occasional Type A aggregates dot the groundmass.

Profile 16: deposition and formation processes

Within the deposit several features were identified that indicate depositional and post-depositional alteration resulting from anthropogenic events. The similarities for Sections 16.1 and 16.2 indicate a rapid infilling with inclusions of anthropogenic debris, resulting in an occupation deposit. However, contrasts in microstructure, coarse mineral component and size of organic fragments provide indicators of difference in the post-depositional processes. In Section 16.1 the deposit is disturbed and mainly granular with a randomly sized and sorted coarse mineral component, mainly quartz sand, while Section 16.2 exhibits less disturbance, vughy domains and incipient planar voids with moderate sorting of very fine quartz sand. These contrasts in structure and quartz sand suggest the re-deposition of sediment towards the edge of the street against the wall (Feature 116). The size variation in elongated organic material, (≤5mm and ≤1mm) indicates a fragmentation of the organics and a probable re-deposition of the smaller fragments from the central area of the street to the area against the wall.

Overall, the variation in these two sections indicates that Profile 16 is an occupation deposit consisting of infilling with inclusions of anthropogenic debris. The size reduction in organics and the inclusion of very fine quartz sand at the edge of the street suggests a repetitive deposition while disruption near the centre of the street and re-deposition towards the wall results in smaller organic fragments and very fine quartz sand being transported likely by feet as people walked along the street. Furthermore, the inclusion of Type A aggregates (aggregates of surface material) and the Type C aggregates, mainly herbivore dung exhibiting various stages of decay (Pl. 57g) near the centre of the street (scattered in Section 16.1), suggest an ongoing disruption of a moderately compacted but weakly stable surface, effecting a mixing which results in disturbance.

Profile 17

Profile 17 consists of three sections and is the southernmost sample within the 'wall street'.

Section 17.1 is a disrupted sediment exhibiting a complex microstructure of crumb to granular domains and large sub-angular blocky peds with reduced void space. The coarse mineral component consists of randomly distributed unsorted very fine to medium quartz sand. The organic material is limited but varied in type, being organ residues (≤2mm), traces of tissue and cell residues and amorphous fine material. Traces of articulated phytoliths are dotted in the groundmass. Anthropogenic inclusions consist of traces of bone, mud brick or plaster fragments and several abraded pottery sherds with traces of fragmented Type A aggregates rich in organic material all scattered in the groundmass.

Section 17.2 is a highly disturbed sediment with a crumb to granular microstructure. The coarse mineral component consists of randomly distributed unsorted fine to medium quartz sand. The organic material is limited to long strands of cell residues (≤2.6mm) and amorphous fine material as well as traces of disarticulated phytoliths. Anthropogenic inclusions are sparse, being traces of charcoal and several pockets of ash. Fragmented Type A aggregates rich in organic material are scattered in the groundmass.

Section 17.3 is also a highly disturbed sediment with a weakly separated granular microstructure with domains exhibiting a crumb structure. The coarse mineral component consists of randomly distributed unsorted very fine to medium quartz sand. Several biogalleries are clearly identifiable in the section. The organic material includes lenses of strand-like, strongly birefringent, horizontally oriented cells and tissue residues. Humified amorphous fine material and punctuations are randomly distributed throughout the section. The anthropogenic debris consists of two pottery sherds with different fabrics and traces of bone (fish?). Fragmented Type A aggregates embedded with organic material dot the groundmass.

Profile 17: deposition and formation processes

Within the deposit, which belongs to Feature 119 and is of clear Post-New Kingdom date, a number of features were identified that indicate depositional and post-depositional alterations resulting from anthropogenic episodes. The three deposits show varying degrees of disturbance with Sections 17.1 and 17.2 exhibiting extensive reworking. All three deposits include fragments of pottery of varying fabrics with the larger sherds in Section 17.1 being worn and abraded. Sections 17.2 and 17.3 include Type A organic-rich aggregates, some of which suggest fragmentation, indicating a disruption of weakly stable surfaces. The main contrasts are found in the partially disturbed Section 17.3 with the inclusion of horizontally oriented lenses of stranded organics and Type A aggregates.

These three deposits exhibit an ongoing cycle of deposition, disruption and reworking with Profiles 17.1 and 17.2 likely the result of the Ottoman/recent excavation in the area, while Section 17.3 retains some remnants of the original surface sediment and anthropogenic inclusions.

Summary and conclusion

As the scale of sampling within the 'wall street' at SAV1 West was restricted and stratigraphic control was partly incomplete, the range of inferences allowed by the sedimentary evidence is limited. However, two inter-mixed cycles of continuous natural and cultural deposition, accumulation and post-depositional alteration formed weakly stable surfaces in the street. Such surfaces are comparable with non-constructed floors frequently occurring in streets and open spaces at Amara West.[514] The post-depositional cycle of the 'wall street' samples from SAV1 West included mineral weathering, occasional dissolution and reprecipitation of carbonates, and humification or desiccation of organic matter in the form of plant material.

The human impact included the large-scale Ottoman excavation that erased much of the depositional history in several areas of the street while the less disturbed deposits present a different type of impact: the moderate compaction of exposed surfaces by trampling and the re-deposition of debris in the kick zone. The debris is domestic in nature including potential crop processing waste, fuel debris, such as charcoal and ash, with pottery sherds, fragments of herbivore dung and possible omnivore coprolites marking incidental deposition.[515] The quantities and range indicate casual discard with much of the organic debris being likely airborne and the balance being accidentally deposited, carried on the soles of feet or sandals of the 18th Dynasty occupants.[516] All in all, the 'wall street' at SAV1 West experienced a number of uses and changes of its use as space within the New Kingdom town of Sai.

514 See Dalton 2017, 360.

515 Typical debris for informal surfaces, see Dalton 2017, 383.

516 Bare adult and infant footprints at Amara West testify that within houses, shoes or sandals were also taken off; see Dalton 2017, 361. Within streets like the 'wall street' at SAV1 West footwear may have been worn more often, but this remains hypothetical.

3.7.3 Results from other 2015 samples from SAV1 West[517]

The three samples taken at SAV1 West outside of the 'wall street' in 2015 (Fig. 49) were processed by Taylor.[518] The profiles are described here sequentially from the northernmost sampling location, Profile 18, to Profile 13 in the south. All samples are associated with the 18th Dynasty use of SAV1 West and the domestic architecture from the inner part of the town east of the 'wall street'.

Profile 18

This profile was sampled in two blocks (Profile 18.1 and 18.2), but only Profile 18.1 was processed. Sample Profile 18.1 was collected from Square 1, SU 707 within Feature 116, thus from the inner, southwestern corner of Structure C. The excavator had described it as "mainly thin deposits with the uppermost deposit very thick". The sample was described to have "sequences of deposits with uppermost thick grey-white layer, then alternating thicker/thinner layers". The Munsell colour for these grey-white layers is 7.5YR4/2 and the texture is silt sand clay. The profile was expected to show ash/charcoal. The charcoal was sampled from Profile 18 by Frits Heinrich as botanical sample (CH4, see Chapter 5.1).

The thin section exhibits channel and spongy microstructures. It is a predominantly fine sediment with a c/f50µm ratio of 20:80. It shows evidence for sedimentation. The finer organic rich banded fabrics are overlaid with sand lenses. It has abundant pseudomorphs within the matrix, although less porous (20–25%) than the last sample. As well as organic fines there is abundant fine charcoal. There is evidence for physical and biological turbation as there are both fabric pedofeatures of disrupted organic rich crust and channel infillings of sand. The organic component is mainly charcoal, roots and tissue fragments and fine material which is highly degraded. Mineral grains are mostly quartz with few rock fragments including limestones. There are small bone fragments which are highly altered. The fabric has pedofeatures of re-precipitated CaCO3 stained with iron. Apart from in the micritic fabrics, birefringence is undifferentiated. There are also fabric pedofeatures within zones of fine material and with crack microstructure.

Interpretation of Profile 18.1

The channel and spongy microstructures have developed through physical and biological turbation.[519] The characteristic features of this horizon from SU 707 as part of Feature 116 are extensive soil fauna activity but not to such an extent that bioturbation destroys evidence for sedimentation expressed as horizontally banded sedimentary facies.[520] There has been the wholesale incorporation of organic matter into this horizon and it has experienced pronounced alteration due to chemical and biological diagenesis.[521] The undifferentiated b-fabrics indicate how much organic matter there is in this archaeological context.[522] There is evidence for the addition of well-sorted sand mineral grains with a few rock fragments including limestones. These have either blown in as aeolian additions or have been incorporated through the breakdown of alluvial sediments. There is ample evidence for anthropogenic residues. The textural pedofeatures of re-crystallised sparitic CaCO3 within carbonate nodules (Pl. 58a) are suggestive of the amount of ash derived from the burning of wood. That at last some of this sediment is derived from weather building material which in itself has come from an alluvial context is suggestive of the highly organic and well-sorted groundmass (Pl. 58b). The crack microstructures have developed because of the large quantity of riverine clays present in such material.[523] There are many bone fragments

517 Based on the report by Sean Taylor and Sayantani Neogi; see Neogi and Taylor 2016b.
518 As team member of the AcrossBorders project, at the McBurney Geoarchaeological Laboratory; see above, Chapter 3.7.2, also in terms of methodology.
519 Stoops et al. 2010.
520 Brewer 1972.
521 Babel 1975.
522 Stoops 2007.
523 Smith and Rogers 1999.

and a high proportion of charcoal (Pl. 58c). These and the presence of pseudomorphs are characteristic of midden type deposits where the main input are domestic organic residues (Pl. 58d).[524]

Taken from the stratigraphic remains within the inner corner of Feature 116, an interpretation of the upper sample, Profile 18.1, as midden deposit corresponds well to the archaeological context. The unprocessed lower Profile 18.2 would have included floor levels within Feature 116.

Profile 19

This profile was sampled in two blocks (Profile 19.1 and 19.2). Sample Profile 19.1 was collected from SQ1S, SU 716, associated with deposits below Feature 118. During excavation it was described as a series of deposits underlying the mud brick Wall Feature 118 – thus, the deposit predates Feature 118 and no associated mud brick structure or wall was found. The sample was labelled to have "silty sand clay deposits with ashy pockets". The Munsell colour for this is 7.5YR5/3 brown and the texture is silt sand clay. It was expected to show ash/charcoal.

Sample Profile 19.1 is very similar in properties to Profile 18.1. It is more heterogenous, with large carbonate rock fragments (<1cm). This thin section shows clear evidence for sedimentation and has aggregates of mud brick (<500µm) within the groundmass. Textural pedofeatures of striated b-fabrics are associated with these aggregates. The microstructure is complex, comprising intergrain-microaggregate and platy microstructure with compound packing voids being the dominant void. In common with the other thin sections, there is abundant organic matter (10–300µm) of humified plant tissue, bone (250–1500µm) and charcoal (250–500µm). The most common pedofeatures are CaCO3 fabric pedofeatures exhibiting crystallitic bi-fabrics, iron nodules (<300µm), passage features and infillings. The c/f50µm is 20:80. Mineral grains are mostly quartz.

Interpretation of Profile 19.1

In many respects, the interpretation of this thin section corresponds to the one of other samples from SAV1 West. There is plenty of evidence for residues of a domestic nature.[525] This can be exemplified by the many large fragments of weathered bone (Pl. 59a and Pl. 59b). The micritic fabrics have developed as a combination of the diagenesis of wood ash[526] and bone[527] but also carbonate rocks.[528] The localised platy microstructures are indicative of alluvial material that has entered this sedimentary context through allochthonous aggregates of mud brick.[529] There is stratigraphy which is preserved with horizontal bands of organic rich micro-facies and exhibiting a parallel referred distribution pattern (Pl. 59c). Within this aggrading anthropogenic matrix are to be found large fragments of charcoal (Pl. 59d), proxies for domestic refuse.[530]

All in all, the thin section analysis corresponds to the original archaeological interpretation: Profile 19.1 represents accumulations of domestic refuse on which Wall Feature 118 was built. Similar building techniques can also be observed at SAV1 North.[531] Since Feature 118 is probably of late 18th Dynasty or even Ramesside date, Profile 19.1 is likely to represent remains of the main occupation phase of SAV1 West (Phase B, associated with the use and discard of Structure A).

Sample Profile 19.2 was collected from SQ1S, SU 715 including parts of Feature 120. It is thus clearly from an earlier context than Profile 19.1 and should attest the early phase of Structure A in the early/mid

524 Ostericher 2015.
525 Milek and Roberts 2013.
526 Karkanas et al. 2004; Karkanas et al. 2007.
527 Hedges 2002.
528 Bathurst 1975.
529 French 1984.
530 Simpson et al. 2006.
531 Cf. Doyen 2017, 67.

18th Dynasty. The Munsell colour for the sample is 7.5YR4/3 brown and the texture is silt sand clay. It was expected to show ash/charcoal. Although the structure seemed similar to Profile 19.1, it was hoped that it showed differences because of the distinct phasing between the samples.

Indeed, this thin section has considerably different properties to the others. It is apedal with a pronounced channel and platy microstructure, and much less porous (20%). The main voids are channels (100–200µm), chambers (100–200µm), planes (50–100µm) and few vughs. There are coatings and hypo-coatings of CaCO3 on the channels. The fine fabric is almost entirely composed of 'flakes' of humified organic matter (2–100µm) and extremely well-sorted quartz mineral grains. The fine fabric of the groundmass is undifferentiated. It is very brown and clearly is derived from organic matter and fragments of charcoal. There is CaCO3 within the matrix. Common fabric pedofeatures are accumulations of CaCO3, associated with strong crystallitic b-fabric and are distributed throughout the groundmass.

Interpretation of Profile 19.2

This thin section collected from SU 715 and associated with Feature 120 exhibits pronounced characteristics of a sedimentary environment. There are extremely well-sorted minerals, silt-sized and fine sand and, together with the humified organic matter, are completely alluvial in nature. The bulk density and sorting indicate that this is derived from river sediments (Pl. 60).[532] As too, is the platy microstructure.

All in all, Profile 19.2 can be interpreted as supporting the archaeological phasing of Structure A as the oldest building at SAV1 West. Other than Wall Feature 118, Wall Feature 120 as northern perimeter of Structure A sits on alluvial sediments and thus belongs to the earliest building phase.

Profile 13

Sample Profile 13 was collected from Feature 122 in Square 1S and comprised the SUs 681, 682 (ashy layer), and 683. Feature 122 is located within the presumed courtyard of Structure A (see Chapter 3.3.2) and consists of a partially preserved series of deposits which can be safely dated to the 18th Dynasty and the early building phase at SAV1 West. The Munsell colour for different layers of Profile 13 were described as Layer 1 7.5YR5/3, Layer 2 7.5YR4/1 and Layer 3 7.5YR5/3; all of these layers are of "silt-sand". The sample was expected to include ash and charcoal, which was sampled from SU 682 by Heinrich as botanical sample (CH3, see Chapter 5.1).

This thin section can be characterised as very porous (50%) and very sandy. There is abundant charcoal, bone fragments and humified organic matter (300–500µm). Many of the larger fragments of plant tissues are well-preserved but the major portion of the organic fraction is highly degraded and humified fines (2–50µm). Many of these organic residues are horizontally bedded, elongated 'fibres' (<250µm). The groundmass has a high proportion of organics and the dominant pedofeature are textural, most notably passage features. Within the micromass are fragments of crusts which are composed of very fine organics and to a lesser extent fine silt. Many of these sedimentary crusts appear as stacked horizontal dark bands, because of the high volume of micro-charcoal charcoal and organics with their matrix. These bands commonly alternate with sand lenses. The sand is medium, fine and silt-sized (10–200µm) and relatively well-sorted.

The thin section exhibits an apedal fabric and the structure is defined as intergrain-microaggregate microstructure. The vast majority of voids are compound packing voids. The c/f50µm ratio is 30:70. There are occasional rock fragments which include quartz, gravels, limestones and mudstones.

Interpretation of Profile 13

This thin section (Pl. 61) is predominantly biologically degraded and homogenised organics that have incorporated windblown material.[533] It has a complex microstructure. Voids are predominantly planes,

532 Miall 2014.
533 Muhs 2013.

vughs and compound packing voids. Many of the plant tissues are well-preserved within a porous organic groundmass and are almost certainly domestic residues accumulated within archaeological deposits. The horizontally bedded organic fragments and crusts of the in wash of windblown sand and silts and water are notable. The fine component is silt-sized mineral grains, fragmented organic matter and clay-sized organic residues. Within a porous organic groundmass are well-preserved lignin-rich plant tissues. Soil fauna are the prime movers in the breakdown of organic matter[534] and have developed passage features in the sample. Passage features with their characteristic crescent-like pattern mark the movement of these animals through the soil.[535] Also, the loose continuous and discontinuous infillings of groundmass material which fill many of the channels are indicative of the activities of soil animals. Clusters of spheroidal and ellipsoidal excrements are located in channels, adjacent to humified and iron replaced plant tissue. The activities of these soil fauna, however, are insufficient to obliterate evidence for sedimentation.[536] This implies that the sedimentation progressed rather quickly, preserving the stratigraphy.

All in all, Profile 13 corresponds to the archaeological interpretation of Feature 120 as remains of domestic deposits within Structure A, presumably covering several phases of use and being of typical occupational character.

3.7.4 Results from 2015 samples from SAV1 East[537]

Four samples were collected at SAV1 East in 2015 and processed by Taylor (Profiles 21, 22, 23 and 24) (Fig. 50).[538] They are presented here according to their location in Square 4 from north to south (Profiles 21, 22, 23) and in Square 4A (Profile 24).

Profile 21

Sample Profile 21 was collected from Square 4 of SAV1E above the pavement Feature 47 and associated with Feature 46. It was interpreted as cultural deposit/debris under a wall dating to the 18th Dynasty. The context is a thin deposit of sand silt clay sediment overlying a sandy silt pebble deposit with a Munsell Colour of 7.5YR3/3 and the texture is sand silt.

The thin section generally has a fine, compact composition and appears homogeneous without magnification. It has a porphyric related distribution. However, under magnification, the microstructure is complex, with zones being spongy, platy and channel microstructures. There are sharp boundaries between horizontally bedded microfacies. The voids are channels (70–700µm), chambers (<600µm), planes (100–200µm) and vughs and there are many compound and complex packing voids. It is moderately porous (20–50%). The micromass comprises very fine material of brown fines which are organic residues. There are abundant horizontally bedded pseudomorphs which have residual lignified organic matter remaining in the voids (50–70µm). There are fragments of charcoal and similar material that may be alternatively humified organics together with rounded aggregates stained with a similar organic pigment. The c/f50µm ratio is 70:30.

The dominant characteristic of the thin section is that of organic fine material comprising clay and silt-sized humified fragments (50–80µm). There are larger root fragments often associated with channels (250µm) and pseudomorphs (50–70µm). In addition, there are abundant well-sorted mineral grains of silt and sand-sized particles of quartz (10–130µm). These are all angular in shape. There are crystalline pedofeatures of CaCO3 in the form of nodules with superimposition of iron compounds (2000–2500µm). Many of the rock fragments have clay-enriched fabrics, such as mudstones, which give the

534 Darwin 1881.
535 Gerasimova and Lebedeva-Verba 2010.
536 Stein 1983.
537 Based on the report by Sean Taylor and Sayantani Neogi; see Neogi and Taylor 2015.
538 For the methodology, see above, Chapter 3.7.2.

impression of being textural pedofeatures. Fabric pedofeatures are iron accumulations (1000–1500µm). The micromass is humified brown with undifferentiated b-fabric.

Interpretation of Profile 21

This thin section (Pl. 62) shows clear sedimentation of alluvial and predominantly organic material with anthropogenic components such as ash and charcoal. This is consistent with the field report suggesting that this was a surface deposit of debris, located under a wall dating to the 18th Dynasty. The groundmass is generally compact with abundant CaCO3, almost certainly derived from the input of ash as a result of domestic activities. Many of the ashy fabrics are stained with humic compound derived from the breakdown of organic matter.

The thin section shows sharp boundaries between horizontally bedded microfacies. Some of these, however, have been affected by post depositional bioturbation through the action of flora and fauna. This has led to the development of complex microstructures reflecting different genetic pathways of the soil properties. The localised spongy microstructures are characteristic of these processes. There are also horizontally bedded pseudo-morphs representing completely decayed organic matter. A component of the organic matter has been transformed into humic compounds which have been able to move within the sediment, ultimately coalescing into concentrations known as redoximorphic nodules. Despite the dry conditions of Sudan, moist hydrological conditions must pertain for these processes to take place. The CaCO3 has similarly been affected by post-depositional processes controlled ultimately by groundwater and forming fabric pedofeatures comprising accumulation of calcium carbonate derived from wood ash often stained with humic compounds.

The variations with the fabric are usually a function of sedimentary and post-depositional processes. There are relatively dense zones, all with horizontally bedded pseudo-morphs. And yet there is a great variation with contrasting fabrics of highly porous fabrics comprising humified and fragmented organic plant tissues with pores consisting of complex packing voids. These are yet again evidence for the persistent action of soil fauna adapted to these predominantly dry conditions. Microbes have been responsible for the total destruction of organic matter and its transformation to undifferentiated brown amorphous compounds. Bioturbation processes have not completely erased evidence for the sedimentary nature of some of the fabrics. The evidence for well-sorted rounded quartz grains is characteristic of alluvial environments, but they have subsequently been subject to anthopogenic and diagenetic transformations. There is the persistent presence of larger rock clasts, most notably mudstones which also derive from a fluvial origin.

Profile 22

Sample Profile 22 comes from the uppermost deposit underlying an 18th Dynasty wall located in Square 4 (Feature 46). The context is silt sand, loose and soft. The Munsell Colour is 7.5YR 3/1 and the texture is silt sand with a few pebbles.

The thin section exhibits a heterogeneous fabric. It has sedimentary properties. The lower part of the thin section expresses distinct sedimentation with light and dark horizontally bedded micro-facies. The colour difference between these is due to the degree of organic content and humic pigmentation. Near the top there are large aggregates (1500–2500µm), rounded and darker in colour (more organic in nature) within a lighter structure.

The overall microstructure is complex, comprising platy and channel microstructures. It is porous (40%) with a heterogeneous assemblage of abundant sand and fine silts, mainly quartz (10–100µm) but other mineral species too. Voids are mainly chambers (<500µm). The c/f50µm ratio is 20:80. The b-fabric is undifferentiated and crystallitic. There are very large accumulations of CaCO3 within the organic rich sediments as well as abundant wood charcoals (2000–3000µm) exhibiting well-preserved transverse sections with well-preserved internal cellular structures (100µm). A spatial relationship exists between the CaCO3 rich fabrics and the location of the charcoals. Abundant small bone fragments (<100µm) are distributed throughout the groundmass. In addition to the large quantities of melanised plant tissue (<600µm)

comprising a range of sizes, there are pseudomorphs indicating the transformation of much of the organic component to humic compounds seen in the brown fine fraction of the micromass. Fragments of residual plant tissue are present in many of the pseudomorphs (100–150µm). These are often genetically related to the amorphous and fabric pedofeatures of iron concentrations within the groundmass.

Interpretation of Profile 22

The heterogeneous fabric and sedimentary properties indicate that this thin section (Pl. 63) represents accumulations of anthropogenic and natural residues in Square 4. The large aggregates are weathered mud brick that have been fragmented and transported into this sedimentary environment. As such, they may be safely regarded as allochthonous components of the matrix. The fabrics of these aggregates are composed of highly humified and fine organic matter which has been obtained from alluvial deposits of the Nile. Their platy microstructure and planar voids are defining characteristics of alluvium. In addition, the mineral components of quartz grains and humified fragmented organic matter are well-sorted providing further evidence of their alluvial origin. Within the lower portion of the thin section, horizontally bedded micro-facies indicate that sedimentation has been the dominant process. The colour difference between these is due to the degree of organic content and humic pigmentation which changes over time. The contribution of anthropogenic agency is clearly to be seen. A heterogeneous assemblage of sand and fine silts and rounded aggregates within an organic-rich environment is indicative of human residues. The organic component, which has been subject to diagenetic biological decay, accounts for the undifferentiated b-fabrics when observed in XPL. Since these are also crystallitic, they reflect the very large accumulations of CaCO3 within the organic-rich sediments due to the input of wood ash.[539] Genetically related to these properties are the abundant wood charcoals. They are clearly derived from trees as they exhibit well-preserved transverse sections, maybe from the most common tree on Sai (see Chapter 5.1), the Nile acacia.

The platy and channel microstructures reflect not only sedimentary processes but post-depositional influence of biological processes as well. The large quantities of melanised plant tissue and pseudomorphs are suggestive of the transformation of much of the organic component to humic compounds. The amorphous and fabric pedofeatures of iron concentrations within the groundmass reflect the mobility of organo-mineral components, most notably iron, when the hydrological conditions are suitable. The fine humic compounds associated with the undifferentiated brown matrix are indicative of the effect of microbial decay. In addition, biological activity is indicated by the platy structures commonly associated with passage features attributed to soil fauna. The organic matter has, however, not entirely been rendered to humic compounds. There are abundant well-preserved tissue fragments, which have been resistant to decay because of their lignin-rich cells. The porous fabric comprising mainly humified organic matter and sub-angular mineral grains associated with aeolian processes of sedimentation reflect post-depositional processes relating to bioturbation. There are many small bone fragments distributed throughout the groundmass interpreted by the authors of the input of domestic residues. The organic and ashy properties within the matrix are suggestive of post-depositional decay and diagenesis. The close spatial relationship between the CaCO3-rich fabrics and charcoals and the dominantly crystallitic b-fabric indicates that this thin section has a high degree of calcium carbonate derived from wood ash.

Profile 23

Sample Profile 23 collected from Square 4 was taken from Pavement Feature 50, within an anthropogenic debris underlying the preserved end of Wall Feature 49. The context is sand silt with pebbles. The Munsell Colour is 7.5YR4/2 and the texture is sand silt with pebbles. The thin section is predominantly fine and organic. The latter is mainly humified plant tissue (5–1000µm) which pervades the whole thin section. It has channel microstructure and, in some places, spongy microstructure.

[539] Canti 2003.

The matrix can be characterised with components comprising charcoal (50–100µm), pottery (250–500µm) and rounded and sub-rounded aggregates of organic stained fabric (100–300µm) and gravels. The potsherds have been tempered with quartz, mica and organic material (typical Nile silt ware). The fine fabric comprises highly birefringent b-fabric associated with 2:1 sheet silicate clays. The coarse component of these aggregates is poorly sorted quartz mineral grains (10–200µm) and large amounts of mica. As with the previous sample (Profile 22), there is ample evidence for sedimentation, although the mineral grains are rather less sorted, ranging from fine silts to medium sands. The entire thin section is quite porous (30%). The brown micromass has a speckled birefringence when observed in XPL. The c/f50µm ratio is 20:80. Amorphous pedofeatures of dendritic iron oxide nodules are found throughout the matrix.

Interpretation of Profile 23

The predominantly fine and organic nature of this sediment above Floor Feature 50 reflects the origin for the material which is Nile alluvial muds.[540] The highly birefringent b-fabric is due to the 2:1 sheet silicate clays that are present. The coarse component is poorly sorted quartz mineral grains (Pl. 64). This has entered the system through the weathering and transformation of manufactured mud brick to sediments with properties not that different from the locations where this material was procured. This material can be characterised as a dense fabric of poorly sorted mineral grains and highly humified organic matter. It has a darker colour and relatively high organic content consistent with an alluvium.[541] The dark brown colour of the structure reflects the accumulation of humic compounds, indicative of melanisation, as are the organic punctuations observed throughout the groundmass.[542] Bioturbation has been a dominant process[543] which has in places produced a porous spongy microstructure. In places there is evidence of microstratigraphy due to the in wash of material, but in general biological processes have obscured this evidence.

There is plenty of anthropogenic material that has been incorporated within these archaeological contexts. Domestic refuse is reflected by the presence of charcoal, pottery and rounded and sub-rounded aggregates of mud brick. The potsherds and possibly the mud brick had been tempered with quartz, mica and organic matter which have been subject to biological decay. There is a high proportion of wood ash which is reflected in the micrite crystals observed through the matrix. Micrite is a form of calcium carbonate which has been re-precipitated through particular hydrological soil conditions. These latter conditions have been the controlling factor in the development of the amorphous pedofeatures of dendritic iron oxide nodules which are found throughout the matrix. It can be speculated that when soil moisture was sufficient, plant tissues could be rendered into fine organic residues by the resident microbial communities and larger soil fauna would have been able to decrease the bulk density by creating complex packing voids.

Profile 24

Sample Profile 24, taken from Square 4A from the top of Floor Feature 56, is sedimentary in nature with a channel microstructure. It is a heterogeneous fabric consisting of organic matter ranging in preservation from tissue fragments (<500µm) to highly melanised organic residues (<10µm) associated with brown colours. The course fraction comprises poorly sorted medium sands and there are large potsherds (2–20mm) and sub-rounded aggregates of mud brick (100–250µm). The entire fabric is a heterogeneous mixture of fine sand-sized mineral grains to larger gravels (predominant mineral), some mica and gravel-sized limestone clasts. The c/f50µm ratio is 60:40 and although this is a courser matrix it is quite porous, with pores mainly channels, chambers (400–600µm) and planes. Towards the bottom of the thin section there are large fragments of humified plant tissues. Adjacent to these are abundant pseudomorphs. The fine fraction is a fine organic iron-stained fabric and appears as a brown clay. The CaCO3 accumulations

[540] Hennekam et al. 2014.
[541] Buol et al. 2011.
[542] Schaetzl and Anderson 2005.
[543] Davidson 2002; Gabet et al. 2003; Lavelle et al. 2006; Wilkinson et al. 2009.

derived from ash give this thin section a weakly crystallitic b-fabric.[544] The dominant pedofeatures are the amorphous dendritic iron nodules (1000µm).

Interpretation of Profile 24

This is a heterogeneous fabric consisting of organic matter ranging in preservation from tissue fragments to highly melanised organic residues associated with brown colours. The thin section (Pl. 65) has sedimentary properties through the in wash of allochthonous mineral and organic materials. The channel microstructure has developed as a result of the complete decay of organic tissues with the creation of pseudomorphic fabrics.[545] Chambers have developed as a result of soil fauna and the planes are associated with the cracks that develop in clay rich sediments as a result of shrinking and swelling due to hydrological conditions. The heterogeneous-sized organic matter has differential preservation due to the variation of the lignin content and water content. That this sediment has been affected by water is confirmed by the presence of dendritic iron nodules within a fabric derived from alluvium.[546] There is a significant anthropogenic component. This is expressed micromorphologically with the heterogeneous fabric of calcium carbonate mixed with domestic residues. There are large potsherds, suggestive of rubbish disposal and the rounded aggregates of mud brick associated with fine organics show the process of brick disintegration due to weathering.[547] This material is virtually indistinguishable from alluvial deposits.

3.7.5 The 2016 sampling season: introduction[548]

A total of twenty block samples (soil/sediment) were collected during the course of the geoarchaeological survey in the New Kingdom town (Fig. 51). Intact soil blocks were extracted from the archaeological deposits and wrapped with cling-film in order to maintain the internal relationships between all components. In addition, two plaster samples from Tomb 26 were analysed (see Tab. 13; see Chapter 4.6).

Within the town area, sampling focused on SAV1 East in 2016 (Fig. 52). Some of the samples were taken to better understand the complex stratigraphy of the New Kingdom settlement. Others were taken to investigate the precise nature of the deposit, e.g. in Feature 15. A priority was to characterise the anthropogenic sediments in order to comprehend the use of the structures during the New Kingdom.

3.7.5.1 Results from thin section analysis

The following results based on thin section analysis of the 2016 samples are of preliminary character.[549] The only sample from SAV1 West is described first; the samples from SAV1 East follow according to contexts.

SAV1 West

Only one micromorphological sample was taken in 2016 at SAV1 West (Fig. 53). Sample 63 (SM 04) was collected in Square 1S from the east-west lane just north of Feature 123 (Structure F). Under the petrographic microscope (Pl. 66), it compares to samples from SAV1 East, especially SM 03, which is a pavement below the schist floor. The sample represents a highly organic sediment with aggregates and mud bricks with stone fragments and quartzite rock. There are bone fragments and abundant phytoliths which are horizontally orientated. Humified plant tissues are present as are rounded mudstone fragments. A lot of bioturbation is also reflected in the pelitic microstructure. All in all, the sample compares

544 Durand et al. 2010.
545 Stoops et al. 2010.
546 Vepraskas and Lindbo 2012.
547 Adderley et al. 2010.
548 Based on the report by Sean Taylor; see Neogi and Taylor 2016a; Neogi and Taylor 2016b.
549 Based on some notes by Sean Taylor.

quite well with other samples from SAV1 West within the 'wall street', especially Profiles 12 and 14 (see above, Chapter 3.7.2). Thus, Sample 63 confirms that similar deposits accumulated on the east-west corridor like on the street along the enclosure wall, testifying to the occupational use and domestic refuse on top of informal street surfaces at SAV1 West.

SAV1 East

19 block samples were collected from clear 18th Dynasty contexts at SAV1 East in 2016 (Fig. 52). All of the samples exhibit strong organic components as will be outlined in the following. Three samples were taken below/from schist pavements (SM 01, SM 03 and SM 08). One sample was taken from a mud brick wall and adjacent floor (SM 09). The area with the baking plate was also sampled (SM 02). Connected with this sample are profiles taken in the nearby storage pit, Feature 76 (SM 06 and SM 10). The similar storage pit Feature 75 was also sampled (SM 11) as was the small storage bin Feature 14 (SM 12). Finally, the deposit within the large cellar Feature 15 was also investigated by means of a block sample.

Schist pavement foundations/deposits

Sample SM 01 from Square 4C, Feature 66 below Feature 73, comprises three thin sections. Thin section 56 (SM 01 [A], Pl. 67) is very fine material and organic in nature, including especially humified plant tissue. The structure is vughy, iron oxide nodules are present as well as mud bricks pseudomorphs. It is a highly organic sample which is sedimentary in nature.

Sample No	Micromorph number	Type	Location	Northing	Easting
56	SM 01 (A)	Soil	SAV1 East, SQ4C	20°44.243′	20°44.243′
57	SM 01 (B)	Soil	SAV1 East, SQ4C	20°44.243′	20°44.243
58	SM 01 (C)	Soil	SAV1 East, SQ4C	20°44.243′	20°44.243
59	SM 02 (A)	Soil	SAV1 East, SQ4C	20°44.245′	30°19.904′
60	SM 02 (B)	Soil	SAV1 East, SQ4C	20°44.245′	30°19.904′
61	SM 03 (A)	Soil	SAV1 East, SQ4B1	20°44.248′	30°19.903′
62	SM 03 (B)	Soil	SAV1 East, SQ4B1	20°44.248′	30°19.903′
63	SM 04	Soil	SAV1 West, SQ1 South	20°44.244′	30°19.868′
64	SM 05	Mortar	Southern wall, south of SAF5, south of M1, west of southern gate	20°44.191′	30°19.912′
65	SM 06	Soil	SAV1 East, SQ4C, Feature 76		
66	SM 07 (A)	Soil	SAV1 East, Feature 15		
67	SM 07 (B)	Soil	SAV1 East, Feature 15		
68	SM 07 (C)	Soil	SAV1 East, Feature 15		
69	SM 08	Soil	SAV1 East, SQ4B1, Feature 69	20°44.249′	30°19.902′
70	SM 09	Soil	SAV1 East, SQ4C, Feature 64/63	20°44.244′	30°19.903′
71	SM 10	Soil	SAV1 East, SQ4C, Feature 76	20°44.244′	30°19.904′
72	SM 11	Soil	SAV1 East, SQ4, Feature 75	20°44.246′	30°19.907′
73	SM 12	Soil	SAV1 East, SQ2, Feature 14	20°44.246′	30°19.917′
74	SM 13	Mortar	Tomb 26, Feature 2 (SU 104)		
75	SM 14	Mortar	Tomb 26, Feature 2 (SU 105)		
76	SM 15	Soil	From palaeo Nile alluvium (30–40cm)	20°44.173′	30°19.555′
77	SM 16	Soil	From palaeo Nile alluvium (70–80cm)	20°44.173′	30°19.555′

Tab. 13 Micromorphological samples from the 2016 season analysed with thin section

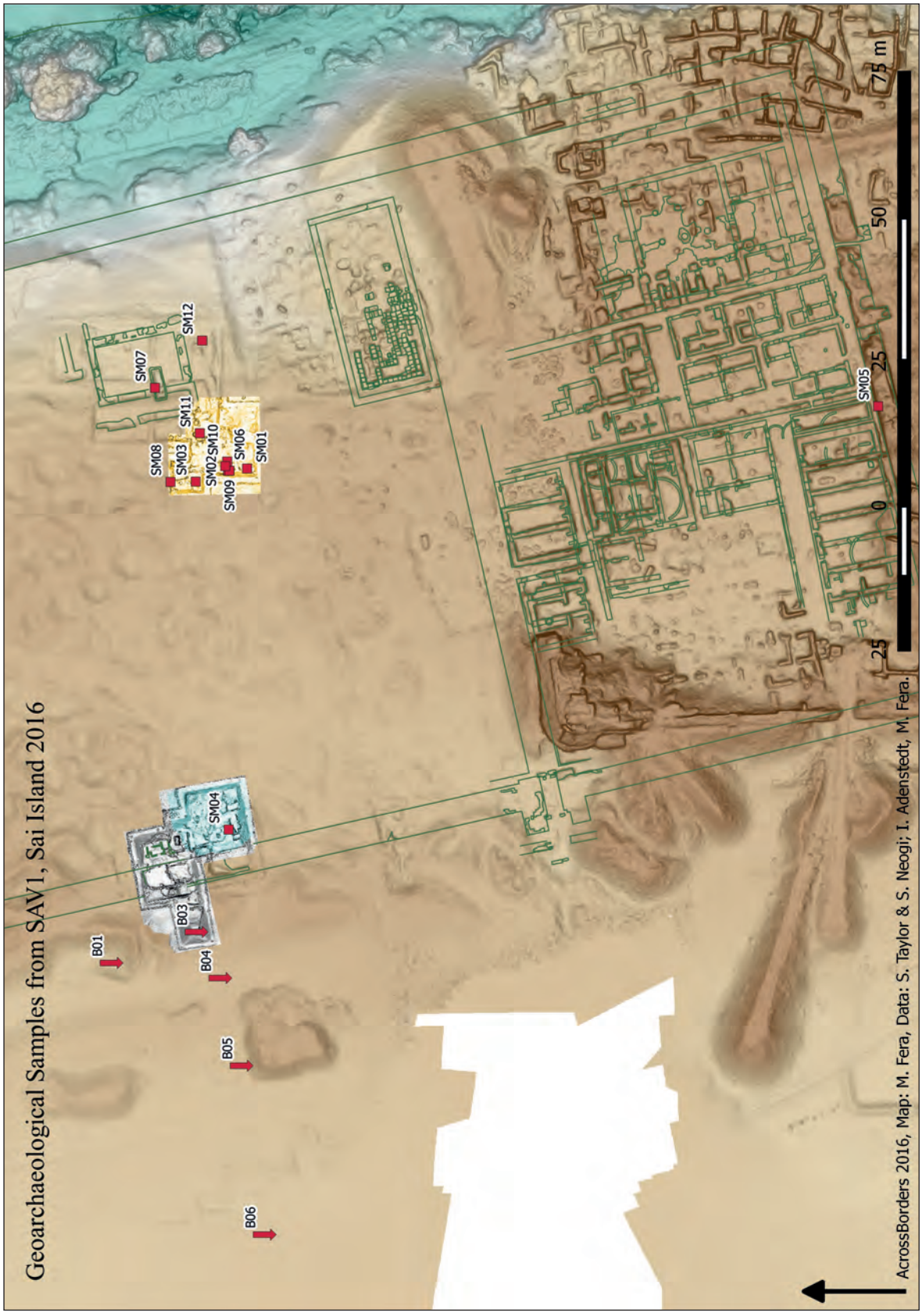

Fig. 51 Overview of locations of geoarchaeological sampling at the New Kingdom town, 2016 season

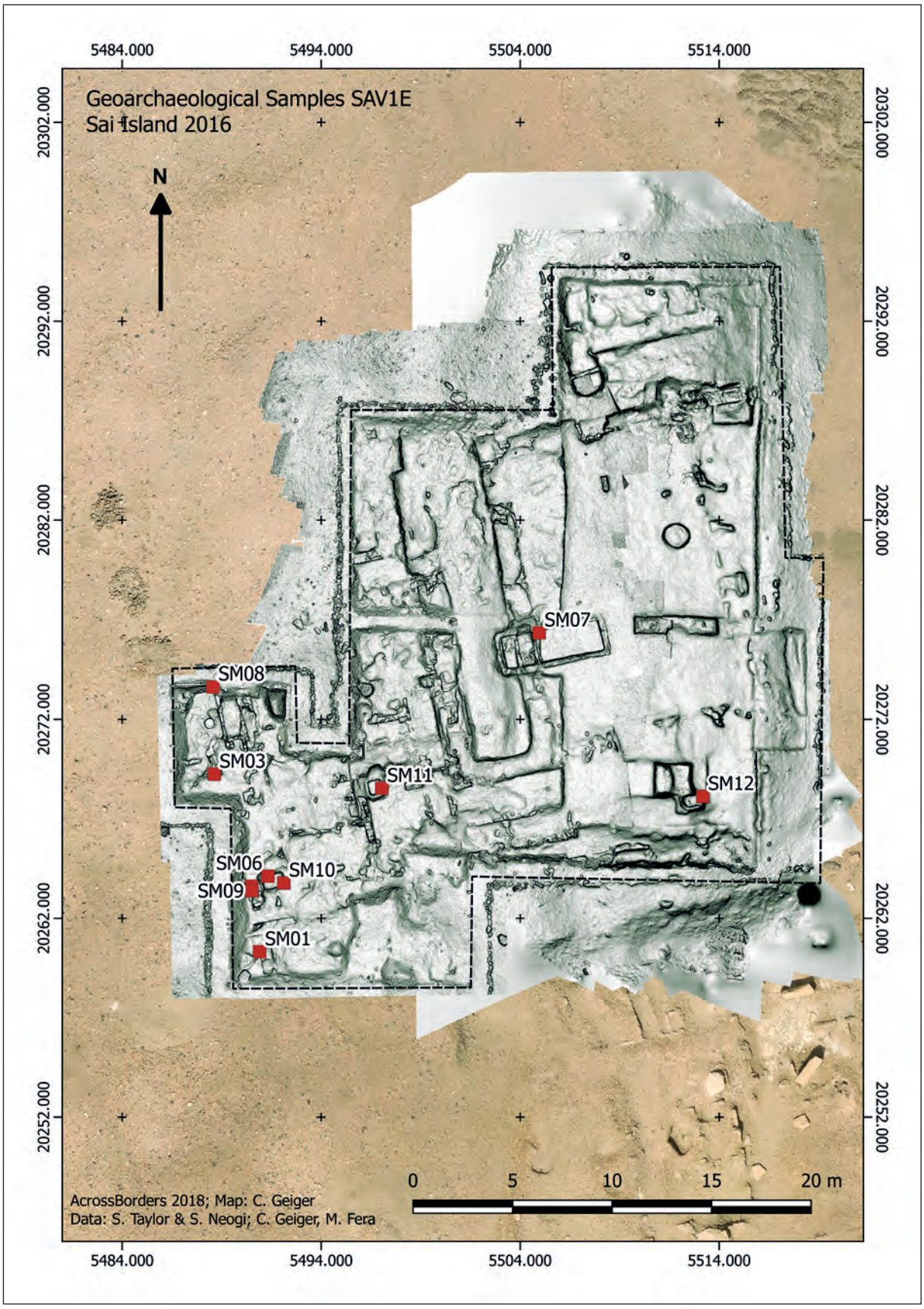

Fig. 52 Locations of micromorphological sampling at SAV1 East, 2016 season

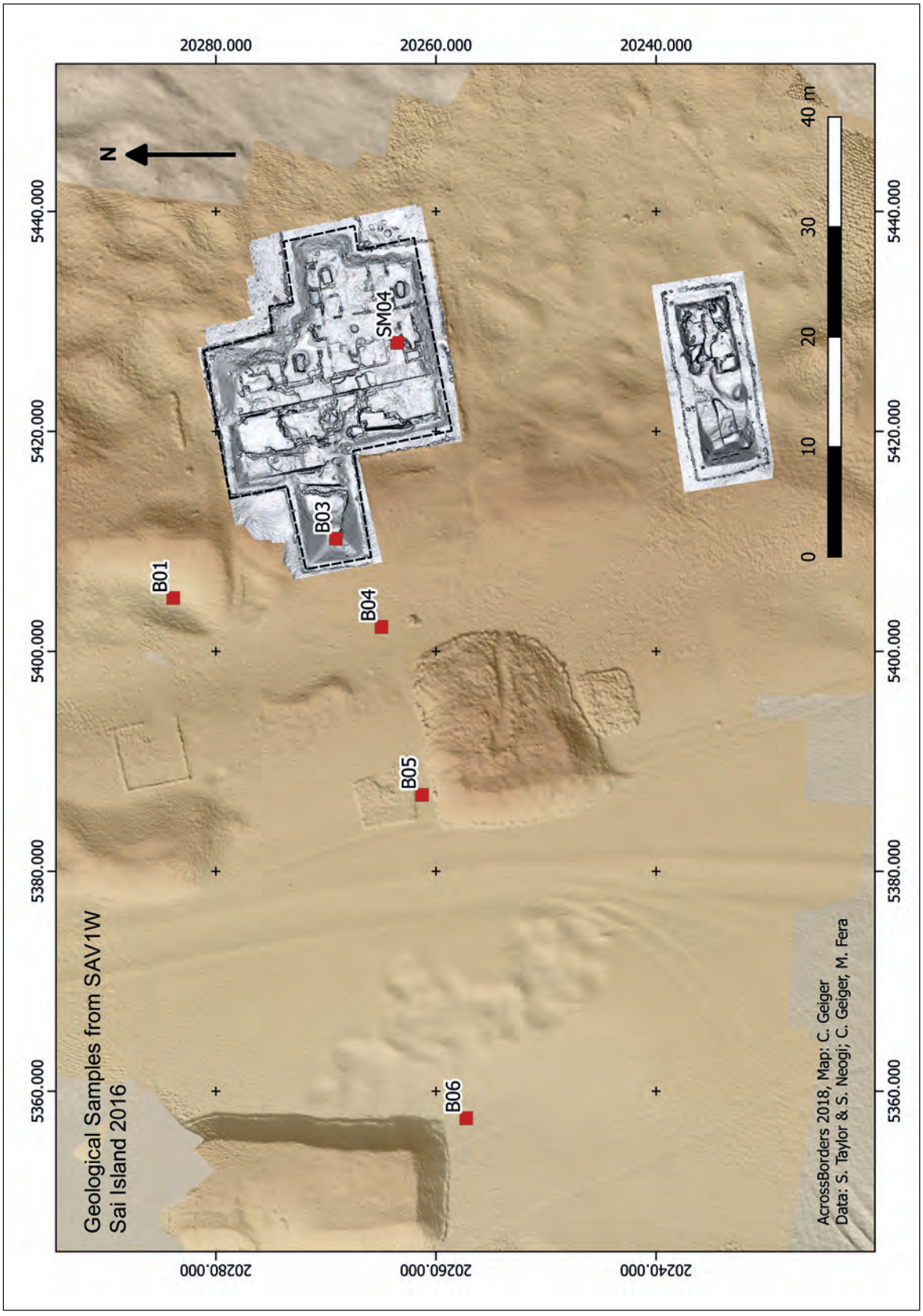

Fig. 53 Locations of geoarchaeological sampling at SAV1 West, 2016 season

Thin section 57 (SM 01 [B], Pl. 68) shows lots of vughs and pseudomorphs of plant tissue. It is also a highly organic sample with very fine material and some nodules of calcium carbonate. The ashy fabric shows very fine remains of highly humified organic matter which infilled the vughs and channels.

Thin section 58 (SM 01 [C], Pl. 69) shows very large clasts up to 1cm of rounded mud brick. Similar to the other samples from SM 01, it is highly organic with lots of phytoliths, humified plant tissue and also abundant bone and charcoal fragments within the aggregates. This is likely to be a midden near a degraded mud brick building. The thin section analysis thus confirms the observation during excavation that the foundation of this schist pavement seems to have two phases. The lowest part was obviously set just above degraded structures or an abandoned area where garbage had accumulated. Since Feature 66 is associated with the mid-18th Dynasty Feature 73, this also confirms the general phasing at SAV1 East.

Sample SM 03 comprises two thin sections and was taken from Floor Feature 72 below the schist pavement in SQ4B1. Thin section 61 (SM 03[A]) is very similar to Thin section 56 with its platy microstructure showing it is sedimentary in nature. It is highly organic and comprises very fine bones, mud bricks, rounded bone and charcoal and there are dung fragments entirely composed of humified organics and phytoliths. There are also a lot of large potsherd fragments.

Thin section 62 (SM 03[B]) has again a platy microstructure with lots of humified organic matter. The very fine plant tissue includes pseudomorphs, smashed mud bricks and some tissue remains that are larger in size than 1cm. It is highly organic and humified and contains calcium carbonate as well as large fragments of mud brick. All in all, Floor Feature 72 seems to correspond nicely to Feature 66 with degraded mud bricks and large amounts of organics, implying that midden deposits from earlier times were incorporated.

SM 08 is the last sample from a schist pavement (Feature 69). Thin section 69 was described as smashed mud bricks composed of pseudomorphs in various states of preservation. It is very organic and compares well to the other two profiles.

Mud brick wall/floors

Mud brick wall Feature 64 and Floor Feature 63 were sampled with SM 09 (Thin section 70, Pl. 70). It is finely organic with clasts of mud brick and a platy microstructure, exhibiting a lot of bioturbation. Pellety fragments are very much churned over humified plant tissue; lots of mud bricks and plant tissue are present as well as little charcoal and bits of bone. The sample looks sedimentary in nature, but with heavy bioturbation. Lots of phytoliths are present.

Activity areas and storage installations

The sample from the baking area Feature 64 (SM 02) comprises two thin sections. Thin section 59 (SM 02[A], Pl. 71) has lots of organic matter and is of fine material. Vughs and channel clasts of mud brick plant tissue remains are most poorly preserved; smashed mud brick with pseudomorphs of plant tissues were noted. All in all, it is a fine organic matter which is sedimentary in nature and included accumulated mud bricks.

Thin section 60 (SM 02[B], Pl. 72) is organic in nature. There are fragments of mud bricks, tissue fragments and probably humified charcoal. The bioturbational features are bow-like. There are lots of plant tissue and organic matter. Definite fragments of mud bricks and charcoal were noted. As interpretation of this section the use of lots of plants debris can be proposed, which is consistent with the interpretation of the area as baking zone.[550]

From the storage pit next to the baking area, Feature 76, two profiles were taken. SM 06 (Thin section 65) comprises sedimentary crusts which are not in situ but have been redeposited. Lots of fragments of all sizes of mud bricks were recognized, being illustrative of the coating of the pit, Feature 76. Lots of quartz particles are included which are homogenously organised. Fine calium carbonate nodules with

[550] For similar evidence from cooking areas at Amara West, see Dalton 2017, 383.

amorphous stains are present. Towards the top of the thin section there is the aggregation of material in the form of sedimentary crusts – this is again very well in line with the coating of this storage pit.

The second sample from Feature 76, SM 10 or Thin section 71 shows huge quartzite clasts with channels and vughs and nodules of micrites. Some superimposition of iron oxide can be seen as well as the mixture of fine material with lots of micrites and some pseudomorphs. Plant tissues are present and the sample is very micritic in nature.

The nearby and very similar storage pit Feature 75 yielded SM 11 or Thin section 72. This sample is very fine and organic with lots of pseudomorphs. Large chambers suggest that there has been some bioturbation. Lots of mud brick fragments were recognised, again fitting to the coating of a pit like Feature 75. Infilled channels of the sample show very many pseudomorphs which have an angular shape resembling stem plants. Very fine organics are present as are lots of phytoliths and highly humified abundant charcoal. The quartzite mineral component derives from fine, well-sorted sand.

From the smaller storage bin, Feature 14, a sample was taken (SM 12, Thin section 73) as well. It shows again a complex microstructure and the channels are mostly filled with plant tissue in various stages of preservation. The sample is homogenous. Part of its micromass is micritic in nature with iron oxide and well-preserved dendritic tissue .

Deposits within the largest cellar at SAV1 East, Feature 15, were also sampled. SM 07 derived from the deposit against Wall Feature 44 in the western part of the cellar (see Fig. 52) and represents the lowest filling of Feature 15. The sample comprises three thin sections. Thin section 66 (SM 07 [A]) is very fine and organic, full of charcoal, quartzite rock sand and gravels with mud brick clasts. It is sedimentary in nature with lots of pseudomorphs and also full of phytoliths with areas which have been bioturbated. The sample is full of large pseudomorphs; essentially it is organic in nature.

The microstructure of Thin section 67 (SM 07 [B]) is complex. There are lots of channels and vughs with platy microstructure. The sample is composed of fine organic matter and is mostly fine grained; there are mud brick fragments of various sizes, most of them are very humified. Plant tissues in the form of pseudomorphs are present. There are bones, charcoal and fragments of mud brick, corresponding to the archaeological interpretation of this deposit.

Finally, Thin section 68 (SM 07 [C]) is highly bioturbated and shows very large fragments of charcoal, fragments of mud brick and bone. It is highly calcareous. All in all, the thin sections from Feature 15 support the archaeological interpretation of the deposit of this cellar as an organic-rich layer with many bone fragments, charcoal, ash and other plant tissues.

3.7.6 Conclusive remarks about the micromorphological sampling programme at SAV1 East and SAV1 West

The micromorphological sampling within the AcrossBorders project at sectors SAV1 East and SAV1 West aimed to illustrate aspects of the organisation and use of space and potentially some facets of social practice within the community of 18th Dynasty Sai. Thus, a special focus was laid on 18th Dynasty contexts and here in particular on floors and deposits associated with walls. The big advantage of the micromorphological method is that formation processes can be assessed on the micro scale, including post-depositional processes which often remain unclear during excavation. Natural and cultural deposition, diverse accumulation and various post-depositional alterations could be investigated with the samples from SAV1 East and SAV1 West.

Especially significant for understanding aspects of the use of space within the New Kingdom town of Sai were the samples from the 'wall street'. Thin section analysis clearly showed that this street was used as traffic route during some time of the 18th Dynasty and only at a later stage also as midden area. The original street levels seem to be informal surfaces rather than constructed ones and this corresponds well to findings at Amara West.[551] Furthermore, the samples from the 'wall street' at SAV1 West nicely

[551] Cf. Dalton 2017, 360–361.

illustrated the significant Post-New Kingdom destruction activities and pitting, since these profiles were taken close to the enclosure wall which suffered a lot from later re-use and demolition.

One of the most important findings of the thin section analysis from soil samples taken within the town area of Sai is the importance of organic materials in the life of the 18th Dynasty occupants (see also Chapter 5.1). The samples collected from SAV1 East and West show that the sediments are composed of material that can be primarily characterised as waste of a domestic nature. Cooking is indicated by ashy fabrics and sediments rich in charcoal; in one case, Feature 64, baking is also attested. A large proportion of the component for the sediments of the samples analysed comes from lignified organics and humified amorphous residues. This shows the dominance of organic materials within both sectors. There are a number of scenarios for the origins of this organic matter, producing large quantities of phytoliths within archaeological deposits.[552] Food waste and the feeding and stabling of animals come to mind. Grain storage, threshing floors, remains of matting and bedding, roofing or thatch and bark and chaff-mud plaster are just a few of the possible scenarios and are all likely for the New Kingdom town of Sai.

In this respect, an important question is whether the accumulation of organic-rich sediment represents the use life of the buildings or whether the sediments are related to the post-depositional filling of the buildings with refuse. Bioturbational features, along with other elements, suggest in many cases post-depositional decomposition and reworking of the sediments by fauna.[553] It was, therefore, important to date these deposits and correlate the archaeological material such as pottery with the sampling areas and thin section profiles. In our case, most of the samples from SAV1 West and SAV1 East can be clearly associated with the use life of the respective sectors in the New Kingdom town. Profile 12 from SAV1 West is in this respect particularly important because it comprised various phases of use, including a degraded status of the 18th Dynasty buildings. It is well known from Egyptian settlements in Egypt and Nubia that during abandonment phases and/or reconstruction phases, older buildings were convenient places to deposit waste.[554]

To conclude, much potential for the functional analysis of complicated sites with multiple formation processes, like the New Kingdom town of Sai, lies in the implementation of a micromorphological sampling programme. This line of research should, therefore, be further strengthened in the future at settlement sites in Egypt and Nubia.[555]

3.8 Team members of field seasons

Funds for fieldwork on Sai from 2013 to 2017 were granted to Julia Budka by the European Research Council (ERC Starting Grant no. 313668) and the Austrian Science Fund (FWF START project Y615-G19). Thus, the list of team members includes ERC as well as FWF collaborators.

2013

The 2013 mission of AcrossBorders on Sai Island was carried out from January 4 to March 8, 2013. Fieldwork with workmen under the supervision of Rais Imad Shorbagi Mohamed Farah was conducted from January 6 to February 14. From January 28 to February 14, 2013 the architectural survey in the southern part of the New Kingdom Town was realised. The inspector of NCAM of the 2013 season was Huda Magzoub.

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552 Cf. Albert and Weiner 2001.
553 Kooistra and Pulleman 2010.
554 Cf. Schiffer 1987. For waste management in Egyptian settlements, see, e.g., Shaw 2013; Arnold 2015.
555 As one of the best examples for a rich outcome, see the research at Amara West: Dalton 2017; Dalton and Ryan 2018.

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Jördis Vieth, Archaeologist, Humboldt University Berlin, Germany and Austrian Academy of Sciences, Austria, ERC project member

2014

The 2014 mission on Sai Island was carried out from December 31, 2013 to March 1, 2014. Fieldwork with workmen under the supervision of Rais Imad Shorbagi Mohamed Farah was conducted from January 4 to February 13. The inspector of NCAM of the 2014 season was Huda Magzoub.

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2015

The 2015 mission of AcrossBorders on Sai Island was carried out from December 31, 2014 to March 13, 2015. Fieldwork with workmen under the supervision of Rais Imad Shorbagi Mohamed Farah was conducted from January 3 to March 11. The inspector of NCAM of the 2015 season was Huda Magzoub.

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2016

The 2016 mission of AcrossBorders on Sai Island was carried out from December 31, 2015 to March 12, 2016. Fieldwork with workmen under the supervision of Hassan Dawd was carried out from January 2 to March 11. The inspector for NCAM in the 2016 season was Huda Magzoub. AcrossBorders also welcomed Roa Abdelaziz as trainee from NCAM (January 1 to January 24, 2016).

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2017

The 2017 mission of AcrossBorders on Sai Island was carried out from December 31, 2016 to March 11, 2017. Fieldwork with workmen under the supervision of Hassan Dawd was carried out from December 31 to January 26 and from February 18 to March 10. The inspector for NCAM in the 2017 season was Huda Magzoub.

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Chapter 4:
The material remains from the New Kingdom town

by Julia Budka

As was mentioned above, the excavations at SAV1 East and SAV1 West also yielded a large amount of Post-New Kingdom finds (Chapter 3). Especially in the upper levels a lot of mixed material, mostly medieval and Ottoman in date, but also some Post-Meroitic, Meroitic and Napatan finds, were found associated with New Kingdom material. In general, ceramics and finds from SAV1 East and SAV1 West cover a time span from the 18th Dynasty to Meroitic, Post-Meroitic and Christian periods, all the way to Ottoman and sub-recent times.[556] Many of the objects derive from stratigraphic units which represent disturbed contexts, debris layers and fillings.[557] These disturbances and the multi-period use of the site were the main challenges while excavating in the New Kingdom town of Sai.

Since the focus of the present volume (and of the AcrossBorders project) is the Pharaonic period on Sai, the objects post-dating the New Kingdom will not be discussed here in detail. The most common categories of finds of Post-New Kingdom date are the following: figurines and moulds, ceramics, ceramic window grilles, re-used sherds including tokens and game pieces, leather, glass and basketry. Some of these will be mentioned in the following and all of them are referred to in the find lists (see Appendix). For many objects the dating remains unclear (e.g. ring beads, figurines, stone tools).

Before starting with remarks on the New Kingdom material culture of Sai, some exceptional pieces from later times shall be mentioned. One particular noteworthy Post-New Kingdom find from SAV1 East falls into the category of games. It is a well preserved clay cubic dice (SAV1E 2771) which is just missing the corner between the sides '3' and '4' (Pl. 73).[558] In addition to the incised dots, each number has an additional decoration: a circle around the '1', lines connecting the dots of '2–5', and a fern pattern on '6'. Since cubic dices are well-attested in Roman times both in Egypt and in Sudan,[559] a Meroitic date for this piece would be the earliest possible one. Its context from SAV1 East (Square 4C) and especially the associated finds which comprise four fragments of ceramic window grilles (SAV1E 2754, 2764, 2765, 2766) and one glass fragment (SAV1E 2769) suggest, however, a medieval/Christian date. This would also correspond to stylistic differences between SAV1E 2771 and Meroitic dices from Sedeigna.[560] The mentioned window grilles are common finds at SAV1 East, presumably connected to medieval building activities (Pl. 74).[561] Glass vessels are less frequent and may already date to the Islamic period, as it is the case for the few pieces of glazed ware recorded from SAV1 East (see Appendix).[562] As another characteristic medieval object type horse and camel figurines may be mentioned (Pls. 75–76, see below).

The study of the New Kingdom finds from the Egyptian town of Sai has profited substantially from recent advances in the assessments of the material culture of New Kingdom sites in Nubia in the last

556 Corresponding to sector SAV1 North, see Budka 2016a, 49.

557 For the most common circumstances under which objects entered the archaeological record in settlements cf. Kemp and Stevens 2010b, 4–5.

558 Griffin and Gundlach 2016.

559 See Voogt, Francigny and Baas 2017, 29.

560 Voogt, Francigny and Baas 2017.

561 Such window grilles with circular or octagonal openings were frequently found at Christian sites in Nubia with architectural remains of a church, e.g. Old Dongola, Hambukol and Ghazali, see Eigner 2005, 98.

562 On glazed wares in medieval Nubia, cf. Adams 1986, vol. I, 59–60.

decade. Of particular relevance here are improvements based on both site-specific and comparative approaches which allowed tracing the complex entanglement of Nubian and Egyptian cultures visible in ceramics, tools and other objects.[563] These material remains testify to the complex nature of archaeological cultures during the New Kingdom in Nubia, therefore illustrating the dynamic settings, shifting identities and permeable borderlines between Egyptian and Nubian lifestyle in the area (see also Chapter 8).[564]

There are several indications of the most common objects for reconstructing activities within the town area of New Kingdom Sai. Activities like fishing and grinding have been already discussed for Egyptian sites in Nubia, also for Sai.[565] However, many aspects connected with production work in New Kingdom temple towns on the basis of the material culture still remain unclear. Information about the manufacture of faience, pottery and leather as well as activities like weaving and metal working is at present still quite limited.[566] The subject of gold exploitation in Nubia has been addressed by several missions working at New Kingdom sites in the last years and therefore still awaits an updated synthesis considering all new data.[567] Various scientific analyses contribute to the micro-archaeology of Egyptian sites in Nubia, including the study of pigments which also allow addressing questions on the macro level.[568]

4.1 Overview: Categories of materials

by Julia Budka

As already observed at other Egyptian towns in Nubia, e.g. Buhen[569] or Askut,[570] objects of Egyptian type dominate the material assemblage at Sai.[571] However, some site-specific aspects of the material remains from the town are also evident.[572] It is the purpose of this chapter to illustrate the most important categories used during the New Kingdom occupation of Sai, taking the sites SAV1 East and SAV1 West as case studies.[573] A detailed contextual analysis will be conducted for the material from the large cellars in SAV1 East (Features 15, 83 and 85).[574] Associations and specific percentages of object types from specific rooms were unfortunately not feasible,[575] but the Appendix offers the complete lists of finds to demonstrate the dominance of certain types of finds like pottery, bones, charcoal and stone tools within the excavations of AcrossBorders at Sai. Furthermore, small assemblages from well-stratified contexts at SAV1 West, like the silos Features 115, 151 and 152, will also be presented (Chapter 4.5).

4.1.1 Main categories of finds

A total of 4,812 objects were recorded in the database for SAV1 East and SAV1 West until 2017. Ten objects were registered for the test trench at SAV1 Northeast. In registration, the finds are labelled "SAV1E", "SAV1W" and "SAV1NE" and assigned a continuous number (starting from SAV1E 0001).

563 See, e.g., Spencer et al. 2017; Budka 2017g.
564 See Smith 2003a, 97 for Askut. Cf. Budka 2016c; 2018d.
565 Budka and Doyen 2013, 198–201 with references. For grinding as one of the main household activities, see Lang 2016.
566 See Spencer et al. 2017.
567 Klemm and Klemm 2013; 2017; Smith and Buzon 2018; see also Spencer et al. 2017, 30–33.
568 See Fulcher 2017; cf. also Budka 2018f, 16–17.
569 Millard 1979.
570 Smith 2003a, 101.
571 See the account based on the material from SAV1 North: Budka 2017j, 157–170.
572 See Smith 2003a, 97 for Askut. Cf. Budka 2016c.
573 Cf. the already published material with SAV1 North as a case study, Budka 2017e.
574 Budka forthcoming b.
575 For general aspects of the analysis of artefact distributions and assemblages in Egyptian houses, see most recently Spence 2015, 89–93 with further references.

This sequence is dependent on the chronology of excavation (with some exceptions) and does not distinguish between Pharaonic and Post-Pharaonic finds by number (see Appendix, section 1).

The variability of objects derived from the sectors excavated by AcrossBorders is comparable to the one found at sector SAV1 North.[576] Of particular interest is the reconstruction of the circumstances placing the objects into the archaeological record – whether they attest a primary function as in situ deposits, as primary refuse of activities or as evidence for other discard criteria.[577] Deliberate refuse of objects is often the case, occurring in several variants.[578]

All in all, the material from both SAV1 East and SAV1 West that can be safely dated to the New Kingdom, more precisely mostly to the 18th Dynasty, represents a typical assemblage as attested from other Egyptian New Kingdom settlements, both in Egypt (e.g. Elephantine, Memphis, Amarna) and in Nubia (e.g. Askut, Buhen, Quban). For some aspects, parallels to sites in Nubia are closer than to the Egyptian ones and will be specifically highlighted in the following (see also Chapter 8).

The six main categories established for finds from SAV1 East and SAV1 West follow a modified system as developed by Lisa Giddy for Memphis[579] which was already applied to the material remains from SAV1 North.[580]

A) Figurines and statuettes

Manufactured in clay and mud, figurines in both human and animal shapes are attested from SAV1 East and SAV1 West. Clearly Christian/medieval pieces are a number of horse figurines (moulded technique, Pl. 75)[581] as well as a small number of camel figurines[582] (Pl. 76). The 18th Dynasty material comprises both female figurines and various animal forms.[583] Especially noteworthy is a group of more than 20 female figurines in low-fired clay or mud, finding close parallels in both Egypt and Nubia.[584] Rudimentary figures in the shape of simple sticks with an incised or dotted area representing the pubic region, sometimes with dotted circles resembling breasts are of a common Egyptian-style, already well-attested at sector SAV1 North.[585] It is especially remarkable and will be discussed below (Chapter 4.3.2 and Chapter 8) that more rudimentary female figures were found at SAV1 West than at SAV1 East. These figurines can clearly be dated to the early to mid-18th Dynasty, both by the archaeological context and through numerous parallels.[586] No Ramesside mould-made bed figurines, which in general belong to the late 18th Dynasty or Ramesside era,[587] were found at SAV1 East or SAV1 West.[588] The so far only example from the New Kingdom town of Sai was discovered at SAV1 North.[589]

576 Budka 2017j.
577 Cf. Rosen 1989, 564.
578 Cf. Kemp and Stevens 2010b, 4–5.
579 Giddy 1999.
580 Budka and Doyen 2013, 184; Budka 2017j.
581 On comparable terracotta horse figurines from Ptolemaic and Roman Egypt, see Boutantin 2014, 162–216.
582 See Boutantin 2014, 292–321 for camel terracotta from Ptolemaic and Roman Egypt.
583 Cf. the corpus of figurines from Amarna, Kemp and Stevens 2010b, 217–230.
584 Doyen 2016, 133–157.
585 For a typology of the figurines from SAV1 North, see Doyen 2016, 133–157; cf. also Stevens 2017 (Amara West).
586 See Kopp 2005a, 89, note 291 with further parallels from domestic contexts. The examples from Amarna (Stevens 2006, 89–91, figs. II.3.10, II.3.11) date to the late 18th Dynasty. For a summary of the figurines from SAV1 North, see Doyen 2016, 134–144; cf. also Budka 2017j, 158–159, fig. 85.
587 Cf. Kopp 2005a, 89 for stratified examples from Elephantine (oldest examples from the late 18th–19th Dynasties; but more common in the 20th–21st Dynasties); for Memphis, see Giddy 1999, 31 (mid-18th–20th Dynasties); for Medinet Habu, see Teeter 2010, 41–48 (all from the Third Intermediate Period). Interestingly, no mould-made bed figurines are reported from the Ramesside site of Amara West, see Stevens 2017.
588 Cf. Elephantine (Kopp 2005a, 88–90); Amarna (Stevens 2006, 85–91, figs. II.3.7, II.3.10–11); Memphis (Giddy 1999, 28–31, pls. 8–12); Askut (Smith 2003a, 131–133). One piece was found at SAV1 North, see Doyen 2016, 144–145, fig. 15.
589 Budka and Doyen 2013, 183–188; Budka 2017j.

Among the hand-modelled animal figurines of poorly fired clay[590] are several quadrupeds, of which it is unclear whether they represent rams, sheep, dogs or horses.[591] The clay figurines of bulls might fall into a well-attested Nubian tradition of cattle representations.[592] One remarkable dog representation (SAV1W 0764) was found at SAV1 West, but can most likely be interpreted as an applique to a pottery vessel, not as a figurine (see Chapter 4.3.2).[593] Another exceptional find from the AcrossBorders excavation is SAV1W 1574, a model boat in clay (Chapter 4.3.2).

B) Personal adornment

Beads are attested in various shapes (disc/ring, conical, drum-, barrel- and tube-shaped) and in a range of materials (faience and other materials, including clay and bone, Fig. 54).[594] An unusual piece is SAV1E 2957 which is a small barrel-shaped bead in bronze (Fig. 54). Some examples are quite large and of irregular shape (Fig. 55), possibly representing pendants which also occur in clearer shapes and also in diverse materials (Fig. 56). At present, all of the beads seem to be Egyptian in style.[595] Also of Egyptian type are other elements of personal adornment, like bracelets and finger rings. Four fragments of stone bracelets were found at SAV1 West (SAV1W 0093, SAV1W 0729, SAV1W 1276 and SAV1W 1697), none at SAV1 East. However, an arched faience object from SAV1 East might represent a bracelet (SAV1E 2967, Fig. 57). One faience finger ring was found by AcrossBorders – SAV1E 2882, a light green faience ring bezel, with a wedjat-eye as the central element (Fig. 57, Pl. 77, see Chapter 4.3.1). SAV1E 2729 is the fragment of a blue faience ring, which is likely to represent an earring (Fig. 57, Pl. 78).[596]

Scarabs are in general scarce within the New Kingdom town of Sai.[597] Only one scarab was found at SAV1 East (SAV1E 1595) and one frog-scaraboid at SAV1 West (SAV1W 0527, Chapter 4.3). A faience frog amulet was also found at SAV1 East (SAV1E 0294; Chapter 4.3.1). Two steatite cowroids were unearthed at SAV1 West (SAV1W 0723 and SAV1W 1736, Chapter 4.3.2).

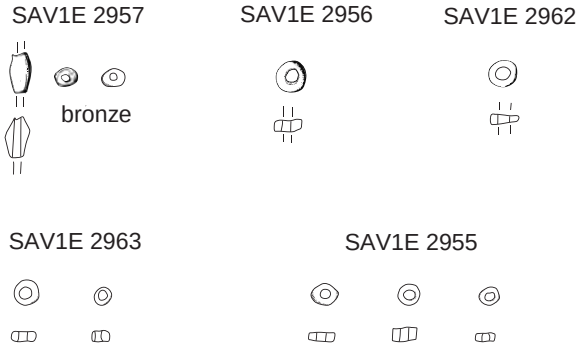

Fig. 54 Faience ring beads and one bronze bead from SAV1 East. Scale 1:1

C) Household items

Stands and supports appear within the New Kingdom town of Sai primarily as pottery vessels and are very common (see Chapter 4.2). Basin-like installations are present as well, both in clay and stone. Fragments of stone basins were only unearthed at SAV1 West and probably represent installations within

590 Cf. Giddy 1999, 307–315, pls. 68–70. See also some figurines from Buhen, Millard 1979, 146–148, pl. 52.

591 Cf. Stevens 2006, 61, 110.

592 Cf. cattle representations from Quban: Emery and Kirwan 1935, Fig. 33 and Askut: Smith 2003a, 132, fig. 5.32. At Amarna, over 70 figurines were unidentifiable, but might have included cows (Stevens 2006, 110). For animal figurines from Kerma, including cattle, see Bonnet 1990, 133–134.

593 For dog-like animal figurines from Amarna, see Stevens 2006, 103.

594 Cf. the types of beads recovered from New Kingdom tombs on Sai at cemetery SAC5, see Minault-Gout and Thill 2012, vol. 2, pls. 123–116. For cylindrical pottery beads, see Giddy 1999, pl. 25. See also the rich repertoire of beads from Amarna, including fancy shapes: Kemp and Stevens 2010b, 107–119.

595 Cf. Smith 2003a, 106–110 who differentiated a Nubian from the Egyptian-style for the personal adornments at Askut. For a selection of Egyptian beads from New Kingdom funerary contexts in Nubia with parallels for SAV1 North, see Williams 1992, 123–130, fig. 17.

596 Cf. similar shapes in different materials from SAC5, Minault-Gout and Thill 2012, vol. 2, pl. 121.

597 Four scarabs were found at SAV1 North, see Budka 2017j, 159–160.

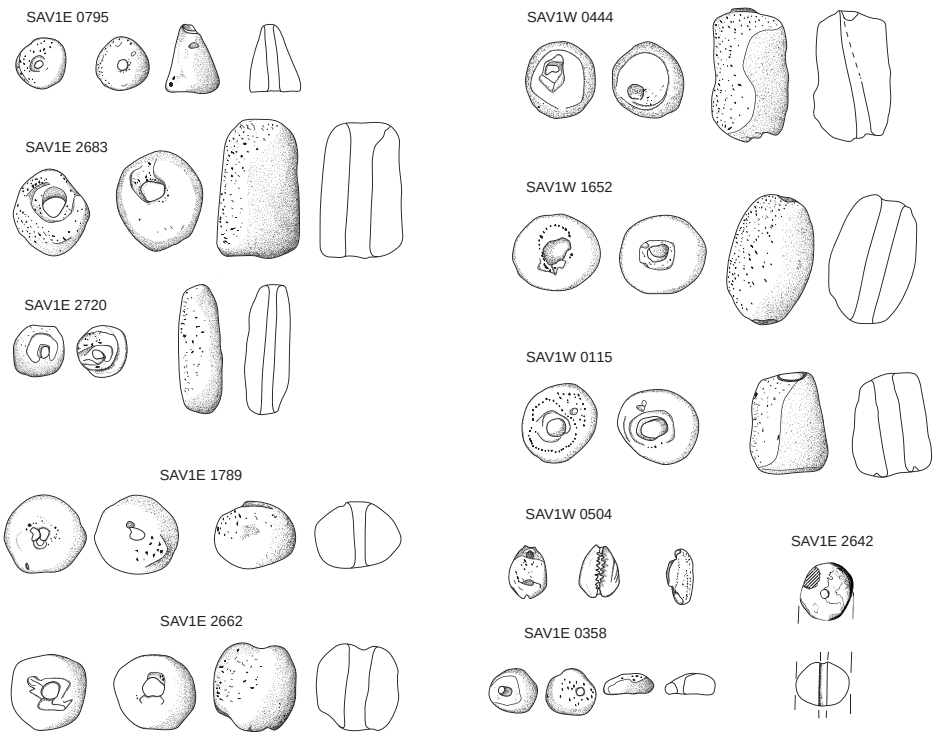

Fig. 55 Various types of beads from the New Kingdom town of Sai. Scale 1:2

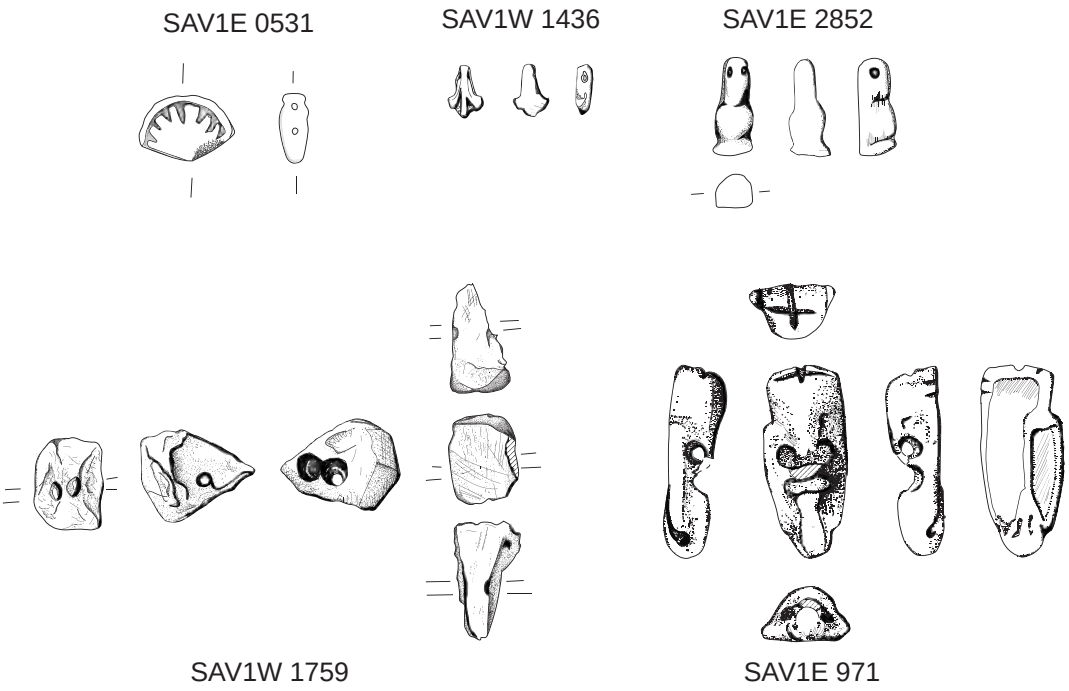

Fig. 56 Pendants from the New Kingdom town of Sai. Scale 1:1

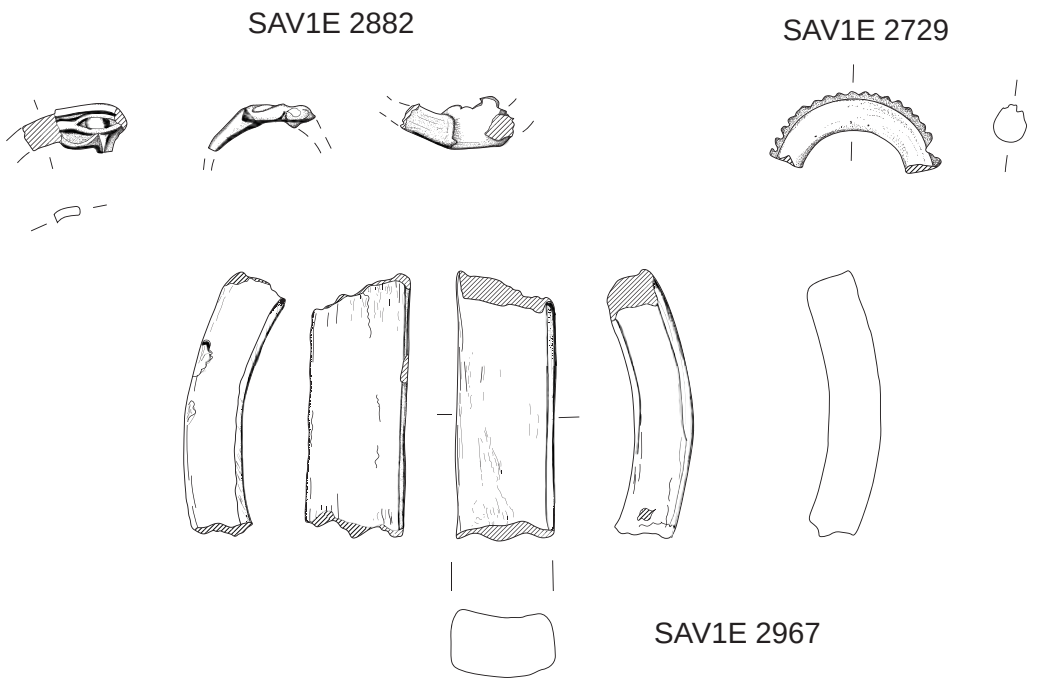

Fig. 57 Personal adornment from the New Kingdom town of Sai. Scale 1:1

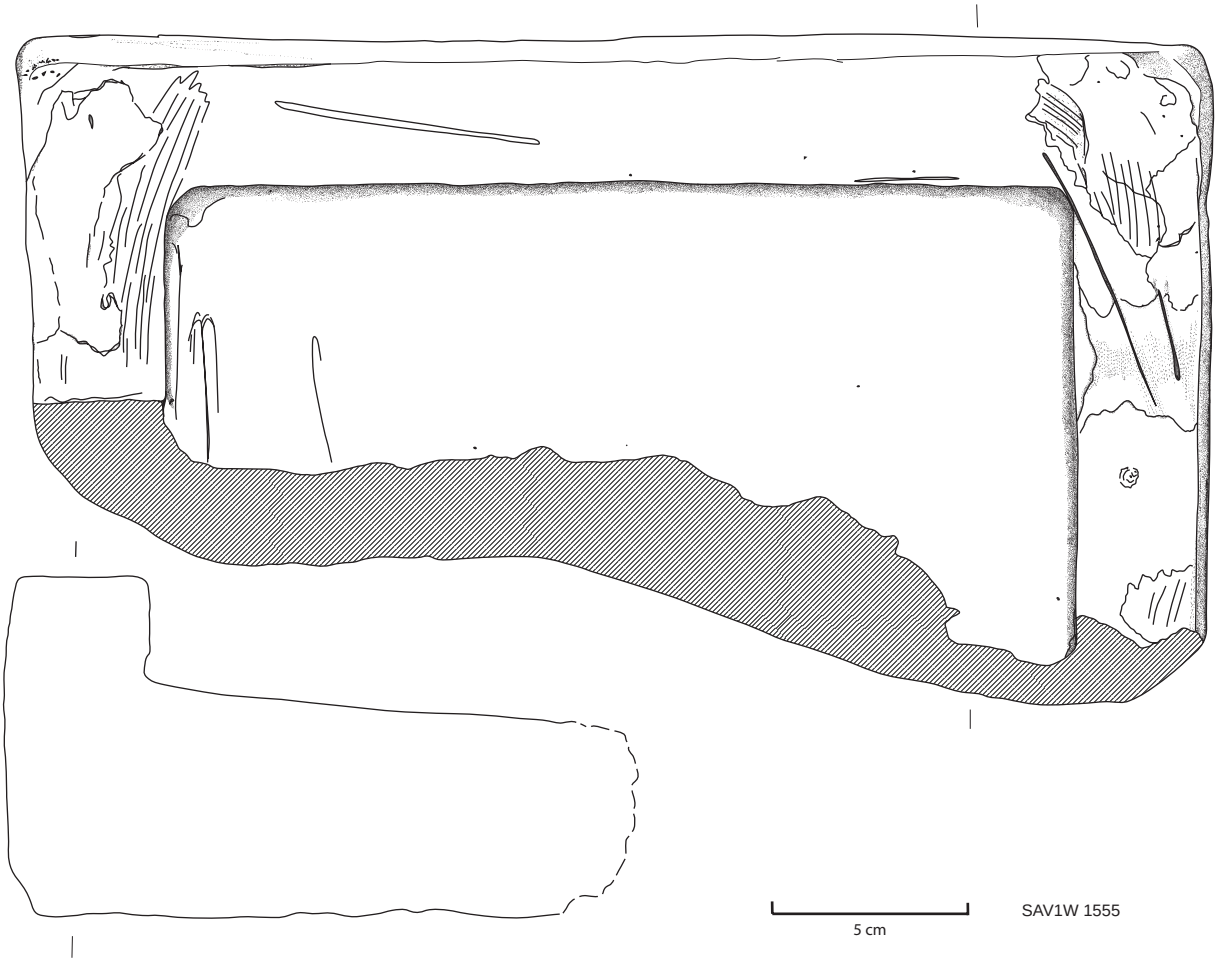

Fig. 58 SAV1W 1555, stone basin

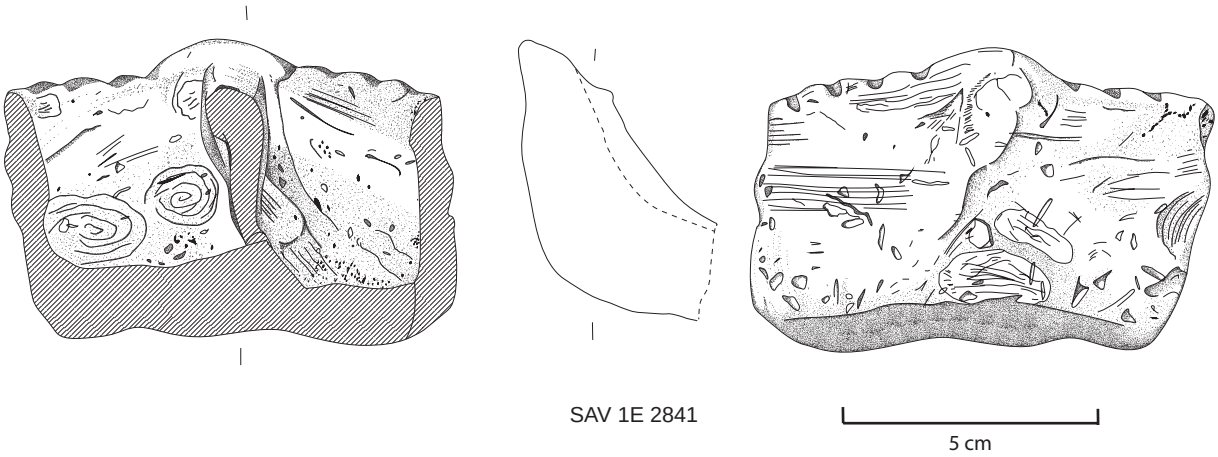

Fig. 59 SAV1E 2841, pottery basin with application

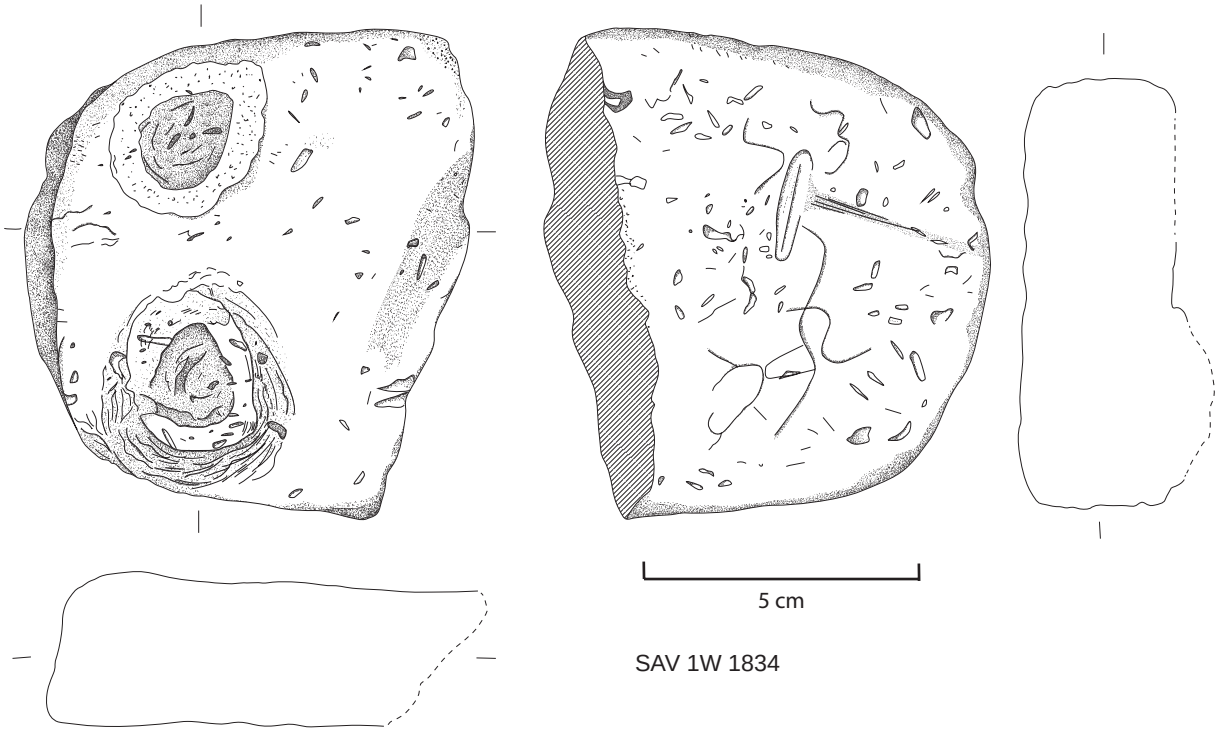

Fig. 60 SAV1W 1834, clay model table

the 18th Dynasty structures (SAV1W 1555, Fig. 58 and SAV1W 1798).[598] Fragments of basins of unfired clay which were found at SAV1 West remain unclear in function and dating (e.g. SAV1W 1001, SAV1W 1002, SAV1W 1004 and SAV1W 1318). At SAV1 East one basin in fired clay was recorded (SAV1E 2347).[599]

SAV1E 2841 is an unusual piece (Fig. 59). It is the corner fragment of a pottery basin, with remains of an applique on the interior. The applique is placed at a 45 degree angle to the corner and would have run diagonally through the basin. A series of decorative notches was carved into the top edge. All of the corners are somewhat rounded and the base is not quite flat. Both the interior and the exterior are burnt.

[598] For similar basins from the stone village at Amarna, thought to represent containers for liquids, see Stevens 2012, 225–229.
[599] Cf. basins of burnt clay from SAV1 North, Budka 2017j, 160, fig. 86.

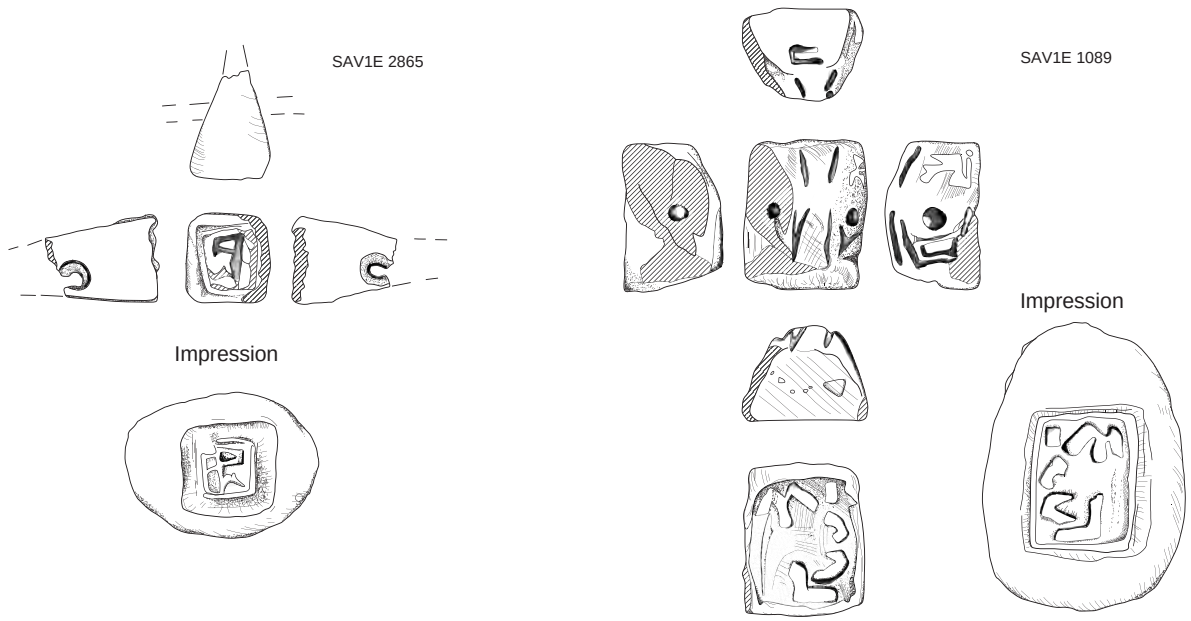

Fig. 61 SAV1E 1089 and SAV1E 2865, seals or seal-amulets. Scale 1:1

SAV1E 2841 might be related to the so-called cobra bowls, well-attested at Amarna, Memphis and Egyptian fortresses situated at the northeastern and northwestern borders of Egypt.[600]

SAV1W 1834 (Fig. 60) is the fragment of another unclear pottery object belonging to the category of household items. This object is possibly part of a small model table. On the presumed lower side only the connection point for two protruding legs remain. Spots of red paint are traceable on all surfaces.

Some pieces of large, tubular-shaped ovens were found at both sectors of Sai, but unfortunately come from fills rather than closed contexts and, therefore, remain open in their dating. The ovens are circular in diameter and are made of coarse, low fired Nile silt ware.[601] In general, kilns from New Kingdom sites in Nubia were only reported from Amara West, Askut and Buhen.[602] At Sai, no kilns have so far been documented. The oven fragments registered by AcrossBorders possibly derive from bread ovens, but remain unclear in their date.

Mud stoppers for various vessels were recorded and are mostly of the common conical type or hemispherical.[603] The best preserved stoppers were found in Feature 15.[604] The Egyptian practice of using stamped jar stoppers, mostly for wine jars, is confirmed for Sai by one piece from SAV1 North[605] and one example from SAV1 West (SAV1W 1614). Unfortunately, the stamp of this piece from SAV1 West is broken and worn and not readable. No other examples were unearthed at SAV1 West and no stamped stoppers were found at SAV1 East. This scarcity of stamped stoppers at Sai raises some questions since other Egyptian sites in Nubia have yielded large numbers of such objects.[606]

Sealings and seal impressions were found predominantly at SAV1 East in Feature 15 which can be interpreted as seals for boxes, chests and very often bags.[607] Sealings were rare at SAV1 West (see Chap-

600 See most recently Szpakowska 2015 with references.
601 For examples of this type of ovens, see Elephantine (in situ evidence) and South Abydos (Budka 2006, 114 with references for Elephantine).
602 See Spencer 2017, 345–346 with references.
603 Cf., e.g., Seiler 2005, 118–119, fig. 58. See also the corpus from Amarna, Kemp and Stevens 2010b, 25–34.
604 Budka forthcoming b.
605 Budka 2017j, 160–161, fig. 87.
606 See in particular Buhen: Millard 1979, 137.
607 Budka forthcoming b.

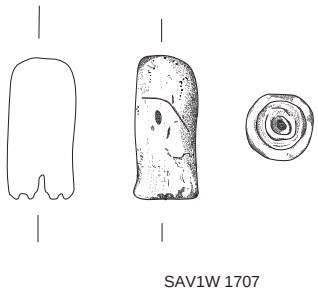

Fig. 62 SAV1W 1707, stamp. Scale 1:1

ter 4.3.2), but the seemingly sporadic occurrence at Sai might also be related to excavation techniques.[608] Two stamp seals (or seal-amulets, see Chapter 4.3.1) were found at SAV1 East (SAV1E 1089 and SAV1E 2865, Fig. 61) and imply that sealing was probably a common practice at New Kingdom Sai. Another stamp of unclear function was found at SAV1 West (SAV1W 1707, Fig. 62).

D) Tools and instruments

The largest group of tools from all sectors in the New Kingdom town is those made of stone and comprises weights, querns, grinders, hammer stones, pounders and pestles, polishers and burnishers. A considerable number of possible whetstones and finally miscellaneous and/or multifunctional stone tools are also present (see

Number of Object	Area Location	SU	Type of Object	Material
SAV1W 0232	SQ1, adj. to Feature 100 f. E 3–5m E-W / 0–5m N-S	501	Net weight	Clay, fired
SAV1E 0002	SQ1	–	Net weight	Clay, fired
SAV1E 0119	SQ1A, ~ 8m to E above Feature 3		Net weight	Clay, fired
SAV1W 1267	SQ1S	704	Net weight	Clay, fired
SAV1W 1475	SQ1S	652	Net weight	Clay, fired
SAV1W 1476	SQ1S	638	Net weight	Clay, fired
SAV1W 1477	SQ1S	638	Net weight	Clay, fired
SAV1W 0054	SQ1SE	809	Net weight	Clay, fired
SAV1E 0608	SQ4B	319	Net weight	Clay, fired
SAV1W 1575	SQ1SE	834	Net weight	Clay, fired
SAV1W 1576	SQ1SE	834	Net weight	Clay, fired
SAV1W 1630	SQ1S	852	Net weight	Clay, fired
SAV1W 1665	SQ1S	861	Net weight	Clay, fired
SAV1W 1666	SQ1SE	863	Net weight	Clay, fired
SAV1E 2818	SQ4B1	414	Net weight	Clay, fired
SAV1E 2833	SQ4C	421	Net weight	Clay, fired
SAV1E 2899	SQ4, Feature 15, W of Feature 44	1331	Net weight	Clay, fired
SAV1E 2646	SQ4D	1434	Net weight	Clay, fired
SAV1W 1754	SQ1SE	916	Net weight	Clay, fired
SAV1W 1786	SQ1	931	Net weight	Clay, fired
SAV1W 1753	SQ1SE-E	916	Net weight	Clay, fired
SAV1W 0411	SQ1	549	Net weight	Re-used pottery
SAV1W 0496	SQ1	565	Net weight	Re-used pottery
SAV1W 0739	SQ1S	628	Net weight	Re-used pottery
SAV1W 1679	SQ1SE/SQ1S	862	Net weight	Re-used pottery
SAV1E 2068	SQ4+4A, 0,7–5m W-E/ 10.3–12m N-S	227	Net weight	Re-used pottery
SAV1E 2110	SQ4A, 9.6m WE/1.8m NS	234	Net weight, oblong in shape	Re-used pottery
SAV1W 1541	SQ1SE	803	Net weight	Stone (sandstone)

Tab. 14 Net weights from SAV1 East and SAV1 West

[608] Within the muddy/silty material of the New Kingdom town, seal impressions were only found during AcrossBorders excavations by means of sieving. This technique was not used at SAV1 North where also no seal impressions were found, see Budka 2017j, 165.

Fig. 63 Model net weight from SAV1 West (SAV1W 1753). Scale 1:1

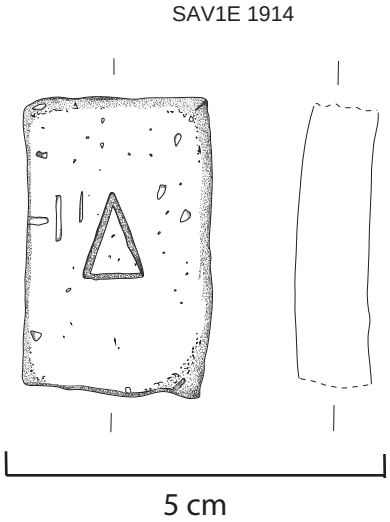

Fig. 64 SAV1E 1914, Christian token (re-used sherd)

Chapter 4.4).[609] Another category of tools is the cosmetic instruments of typical Egyptian types, especially small palettes, grinders/pestles and dishes.[610]

A total of 80 objects were classified as weights, many of which are made of baked clay or re-used pottery sherds (27 objects, Tab. 14). Most common are clay axe head types, which were interpreted as net weights at Elephantine (21 pieces of Cornelius von Pilgrim's Type A, Pl. 79).[611] This is also the most likely classification for the pieces from SAV1 East and SAV1 West, although at other sites such items have been labelled as loom weights or as multi-functional devices.[612] At Sai, von Pilgrim's Type A is sometimes also attested in very small scale (Fig. 63). SAV1W 1753 represents a complete example of such a miniature weight (27 × 22 × 12mm), indicating that these objects maybe also had a symbolic meaning (Pl. 80).

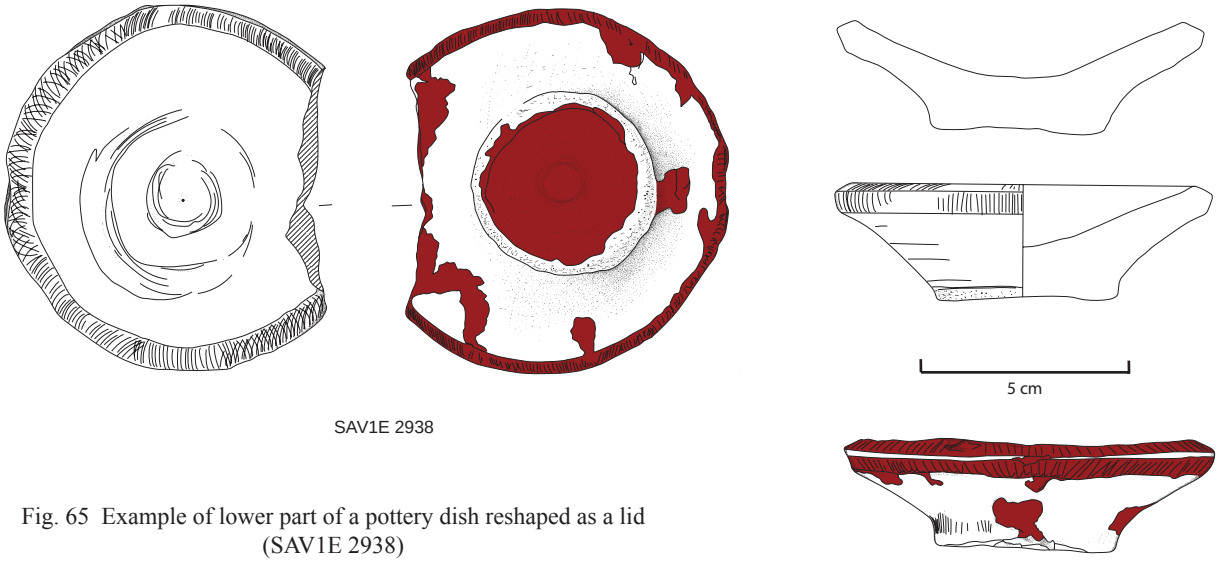

Fig. 65 Example of lower part of a pottery dish reshaped as a lid (SAV1E 2938)

609 Cf. Giddy 1999, pls. 39–50; Prell 2011, passim.
610 Cf. finds from SAV1 North, Budka 2017j, 162–163, fig. 89.
611 von Pilgrim 1996, 275–276, fig. 120.
612 E.g. Millard 1979, 127 and pl. 103; Giddy 1999, 193. For loom weights, which are different in shape, see e.g. Kemp and Vogelsang-Eastwood 2001, 392–403.

Possible net weights in stone are rare, though one example is SAV1W 1541 (Pl. 81).[613] Von Pilgrim's Type C net weight is represented at SAV1 East and SAV1 West by only five pieces of re-cut pottery sherds (four pieces from SAV1 West, one piece from SAV1 East, Tab. 14).[614] SAV1W 0411 and SAV1W 0496 (Pl. 82) are both made from body sherds from large Marl clay *zir* vessels, which have a good hardness and are also much heavier than Nile clay wares. As already noted for SAV1 North, where similar quantities were found, this small number of Type C net weights contrasts to sites in Egypt where such weights are very common.[615] The preference on Sai for the clay axe head type might indicate a centralised organisation for the distribution of these objects, rather than *ad hoc* production like Type C. A similar situation at Askut was interpreted by Stuart T. Smith as reflecting a "centralized system of food production."[616] On the other hand, those net weights probably made at Sai from suitable potsherds like SAV1W 0411 and SAV1W 0496 exhibit a clear knowledge of, and probably also experience in, producing these devices.

Among the weights, three possible loom weights were classified. One piece, SAV1E 0331, is made of pottery and as a surface find remains unclear regarding its dating. SAV1E 1285 is a circular sandstone weight of possible New Kingdom origin (Pl. 83). One sandstone weight from SAV1 West, SAV1W 0600, was maybe made for a loom. It is roughly tear-shaped and in the upper part a horizontal circumferential groove was incised.

Of the 615 artefacts classified as re-used pottery sherds, most were probably used as scrapers (see Figs. 101–102). The total number of re-used sherds from both SAV1 East and SAV1 West includes 248 pieces from the 18th Dynasty, one Ramesside sherd, three New Kingdom pieces and 181 Post-New Kingdom sherds as well as 150 Christian/medieval ones (e.g. SAV1E 1914, Fig. 64). 33 re-cut sherds remain unclear in dating, due to weathering or size. Thus, only 41% of the re-used sherds from AcrossBorders excavations are actually of New Kingdom date. This category of finds is, therefore, one of the object types which illustrates well the Post-New Kingdom use of the site. However, with almost 250 objects, re-used pottery can be regarded as a quite prominent factor of the object assemblage at Sai.

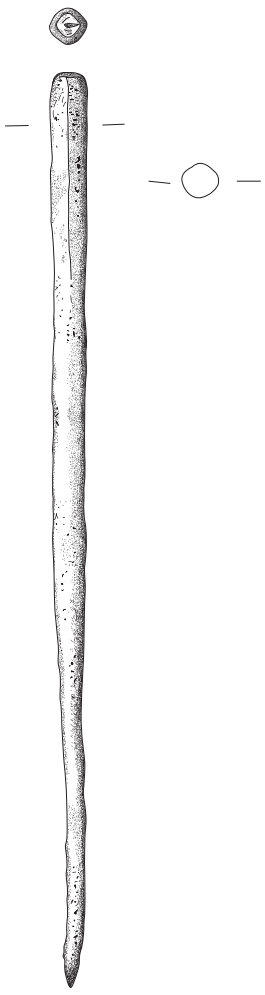

Fig. 66 SAV1W 0965, bronze needle. Scale 1:1

Re-cut pot sherds are in general common tools with multiple functions at New Kingdom domestic sites, attesting to material-saving recycling processes within Pharaonic culture (e.g. at Qantir,[617] Elephantine[618] and Amarna[619]). Such a re-use of ceramics is also attested in Nubian cultures, e.g. for cosmetic palettes.[620] Six to ten examples of the 248 18th Dynasty re-cut sherds from SAV1 East and SAV1 West are made from Nubian wares (seven from SAV1 East,[621] three from SAV1 West). This amount of

613 Cf. one piece from SAV1 North, Budka and Doyen 2013, 186, fig. 15.5.
614 von Pilgrim 1996, 278, fig. 121.
615 von Pilgrim 1996, 279, fig. 123.
616 Smith 2003a, 101. According to the Nauri decree, fishing rights in Nubia were owned by temples, see Morkot 1995, 177, and restricted access to fishing devices could correspond to this.
617 Raedler 2007; Prell 2011, 92.
618 Cf. Kopp 2005b; see also Budka 2010b.
619 Stevens 2012, 295–338.
620 See Williams 1993, 45 with note 49.
621 This number includes four pieces of unclear date (SAV1E 2259, 2619, 2620 and 2638). Only three pieces are clearly datable to the 18th Dynasty (SAV1E 0346, 1028 and 2653).

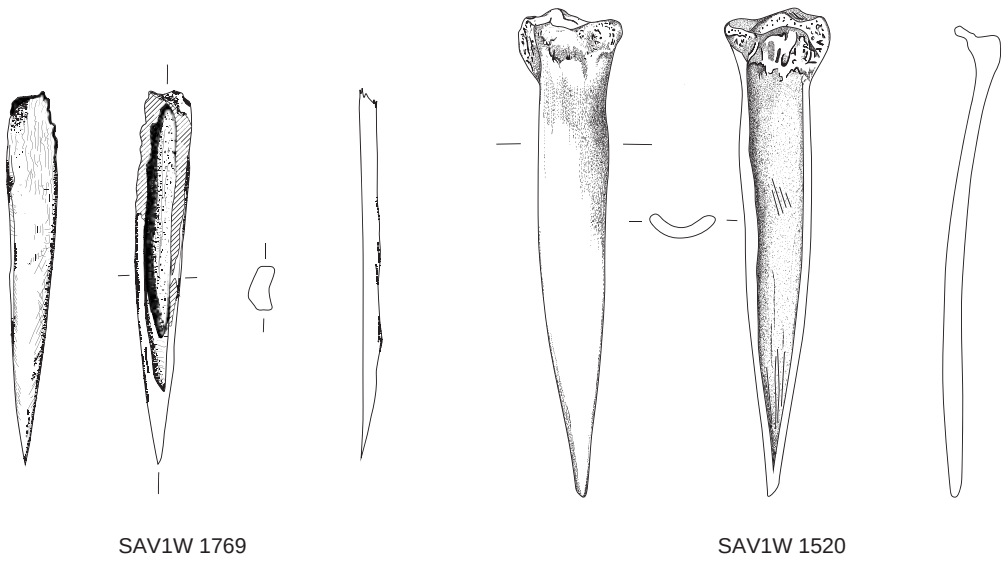

Fig. 67 SAV1W 1520 and SAV1W 1769, bone tools. Scale 1:1

c. 4% more or less equals the general quantities of Nubian sherds within the 18th Dynasty pottery (see Chapter 4.2).

In addition to authentic tools like scrapers, further re-shaping of ceramics is notable at all sectors of the New Kingdom town of Sai for the production of lids.[622] As is commonly known from Egypt, especially the lower parts of dishes and plates were sometimes re-cut to be used as lids or covers (Fig. 65). This tradition is well traceable at SAV1 East and SAV1 West.

Metal tools are rare within the corpus of finds from the New Kingdom town. A singular piece is the well-preserved bronze needle/pin from SAV1 West (SAV1W 0965, Fig. 66). Further tools were manufactured from bone – two very nicely worked piercing tools were found at SAV1 West (SAV1W 1520 and SAV1W 1769, Fig. 67).

E) Non-ceramic vessels

A small number of stone (28) and faience (77) vessels were excavated in fragmented condition at SAV1 West and SAV1 East, comparing closely to the material found at SAV1 North.[623] The stone vessels comprise only three fragments in calcite; the majority belongs to large bowls or mortars made of quartzite or granite (see Fig. 112). 12 fragments were found at SAV1 East, 16 at SAV1 West. Within the group of faience vessels, several fragments represent Nun (or marsh) bowls (30 from SAV1 West, 18 from SAV1 East, see Chapter 4.3.2, Fig. 113).[624] Such Nun bowls attest to the Egyptian tradition of these vessels connected to regeneration in the domestic context of the New Kingdom town of Sai.[625] Among 25 faience vessels from SAV1 East, 22 fragments are of 18th Dynasty date. A total of 52 pieces of faience vessels were found at SAV1 West and all seem to date to the 18th Dynasty. All in all, the number and state of preservation of the faience vessels is much better at SAV1 West than in the eastern sector.[626]

[622] See Budka 2017j, 164, pl. 45.
[623] Budka 2017j.
[624] One fragment of a Nun bowl was also found at SAV1 Northeast.
[625] See Tschorn 2017. For the domestic context of marsh bowls, cf. also Giddy 1999, 267; Stevens 2006, 178–180. For Nun bowls in New Kingdom tombs in Nubia, see e.g. Williams 1992, 131.
[626] See Tschorn 2017, 437.

F) Models, games and unidentified pieces

A total of 98 pieces were registered as token/gaming pieces (56 at SAV1 East, 40 at SAV1 West and two at SAV1 Northeast). This group comprises both New Kingdom and Post-New Kingdom pieces; 79 tokens are re-used sherds, 12 are made in stone and seven in mud/unfired clay. The cubic dice SAV1E 2771 mentioned above (see Pl. 73) is also included here.

The numerous small tokens or pottery discs are common at New Kingdom sites, but their precise function remains unclear.[627] Of special interest within the group of tokens/gaming pieces are miniature balls (Pl. 84). These spherical objects occur in sandstone and limestone both at SAV1 East and SAV1 West and find close parallels at Elephantine and other New Kingdom settlements in Egypt.[628] Similar balls were also found in unfired clay (SAV1E 1038, 2601, 2602 and SAV1W 1427, 1592, Pl. 84).[629] Such miniature clay balls are well known from SAV1 North[630] and find exact parallels at Egyptian sites like Amarna. Although these balls could represent actual gaming pieces, it is also possible that they are related to the ritual of the first haircut.[631]

Contextualising the main categories of finds

The object assemblage from the New Kingdom town of Sai is closely comparable to those from other Egyptian New Kingdom settlements like Elephantine and Amarna, but also to Askut, Buhen and Amara West. The most common New Kingdom objects found at SAV1 East and SAV1 West allow reconstructing some activities, for example weaving, fishing and grinding corn.[632] Stone tools were found in very large quantities, especially pounders and grindstones (see Chapter 4.4). The numerous schist plates from SAV1 East noted in the find lists (Appendix) derive from the architecture at the site, i.e., from stone pavements (Chapter 3.2). An interesting aspect that should be emphasised related to the location of Sai in Upper Nubia, and which was already stressed on the basis of finds from SAV1 North, is the scarcity of textual evidence within the categories of small finds which is now confirmed based on the finds from SAV1 East and SAV1 West.[633] Jar dockets are extremely rare,[634] as are traces of sealing practices with the exception of Feature 15.[635] Despite of these findings, the actual importance of written culture at Sai remains problematic to evaluate (see Chapter 8).[636]

Another aspect of the material culture from the New Kingdom town of Sai in contrast to contemporaneous sites in Egypt is that moulds for small faience objects are missing.[637] One may conclude that, dissimilar to the main residential sites in Egypt like Memphis and Amarna, no faience production was carried out in the New Kingdom town of Sai. In general, the number of faience objects/vessels found in

627 Cf. Giddy 1999, pls. 72–73.

628 Large amounts of small limestone balls were recently unearthed at House 55, Elephantine (unpublished material, processed within the AcrossBorders project, publication in preparation). For balls from Amarna, see Stevens 2012, 232–233.

629 Cf. a large number of model balls from Amarna, Stevens 2006, 112–115.

630 Budka 2017j, 165, fig. 92.

631 See Arnst 2006. Cf. also Budka 2017g, 439, fig. 9.

632 Budka and Doyen 2013, 198–201.

633 See Budka 2017j, 165.

634 Budka and Doyen 2013, 198–199. Cf. also the small amount of dockets (two) from the complete material of The Scandinavian Joint Expedition to Sudanese Nubia (both from the cemetery of Fadrus, site 185), see Holthoer 1977, 58, 82.

635 Cf. Giddy 1999, 54–76, pls. 15–17, 64. Smith 2003a, 113 proposed a direct link between this phenomenon and changing organisational patterns of Egyptian control, in contrast to the Middle Kingdom and the Second Intermediate Period.

636 Cf. the assessment of written culture at Amara West, where several ostraca with literary texts of Middle Egyptian classics were found: Parkinson and Spencer 2017.

637 For faience moulds common at Egyptian sites, see Giddy 1999, 243–250, pls. 53–54 with diverse parallels.

the various sectors is rather restricted.[638] However, the presence of faience beads, including 'double ring beads', may attest to a local bead production on a small scale.[639]

In terms of quantities, the categories of finds and materials resemble standard settlement types (see Appendix) and besides the proper objects include much botanical remains, animal bones and charcoal. The large quantities of pottery from both sectors, SAV1 East and SAV1 West, is remarkable and attests to the long occupation phase of the New Kingdom town of Sai (Chapter 4.2). After the ceramics, macrolithics and stone tools are the second largest category of finds (see Chapter 4.4).

4.2 Pottery: Corpus of types and vessels

by Julia Budka

4.2.1 General remarks

Considerable amounts of ceramic material were unearthed during excavations at SAV1 East and SAV1 West. This rich ceramic material finds ready parallels not only in other Egyptian foundations of Lower and Upper Nubia,[640] but also at various New Kingdom sites in Egypt,[641] especially Elephantine,[642] Abydos,[643] Deir el-Ballas[644] and Thebes/Karnak.[645] However, similar to the small finds and tools, a local component of site-specific features is present on Sai.[646] Hybrid types are of particular relevance to illustrate two-way-influences of the Nubian and Egyptian pottery traditions at the site (see below and Chapter 8).[647]

Excavation at SAV1 East and SAV1 West yielded substantial amounts of pottery on a daily basis, attesting not only to the use of the structures in the areas during the New Kingdom, but also to the abandonment phase and the later history of the site, especially in Meroitic, Post-Meroitic and Christian times (see Chapter 3).[648] The sherds arrived from the field at the dig house in large baskets, arranged according to their archaeological context (site, square, stratigraphical unit). The contents of each basket were then separated into the categories of diagnostic and undiagnostic sherds; rim and base sherds, handles and decorated/painted sherds were regarded as diagnostics. The first step was to separate the Pharaonic and Post-Pharaonic material.[649] On an average, 40–60 % of the diagnostic material was of New Kingdom date.

In general, several classes of Post-New Kingdom ceramics were documented. Post-Meroitic or X-Group wares are well-attested by cups and goblets of the red ware.[650] Transitional types and early Christian ceramics are quite common (Adam's Group N.III), including black rims or black painted lines on

638 See Tschorn 2017.

639 As suggested for SAV1 North, see Budka 2017j, 166. For the manufacture of faience beads, see Nicholson 2007, 141–144. Note, however, the statement of Kemp and Stevens 2010b, 108 about manufacturing errors of beads found at Grid 12 at Amarna: "some 'rejects' could slip into a patch of beads acquired from elsewhere".

640 Cf. Holthoer 1977, passim. See also Miellé 2012, 173–187.

641 Cf. Budka 2011, 23–33.

642 Seiler 1999, 204–224; Budka 2005a, 90–116; Budka 2010a, 350–352.

643 Cf. Budka 2006, 83–120.

644 Bourriau 1990, 15–22 and 54–65 [figs.].

645 Jacquet-Gordon 2012, 2 vols.

646 See Budka 2011, 23–33; Budka 2016a; Budka 2017g; Budka 2018g.

647 Budka 2018g, 109 and 112.

648 Cf. Miellé 2012, 173.

649 Cf. Budka 2011, 24. This system of recording was slightly modified in 2016: From this season onwards, sherd yards were set up close to SAV1 East and SAV1 West where the sorting into New Kingdom and Post-New Kingdom material took place as well as the differentiating between diagnostic and non-diagnostic sherds (see Tab. 16). Only selected, relevant diagnostics to be recorded in more detail were still brought to the dig house.

650 See Group N.II, X-Group red ware by Adams 1986, vol. I, 51; vol. II, 458–473, cups and goblets, fig. 265, footed bowls, fig. 268. For Post-Meroitic ceramics from Sai, see Siguoirt 2012, 237–246.

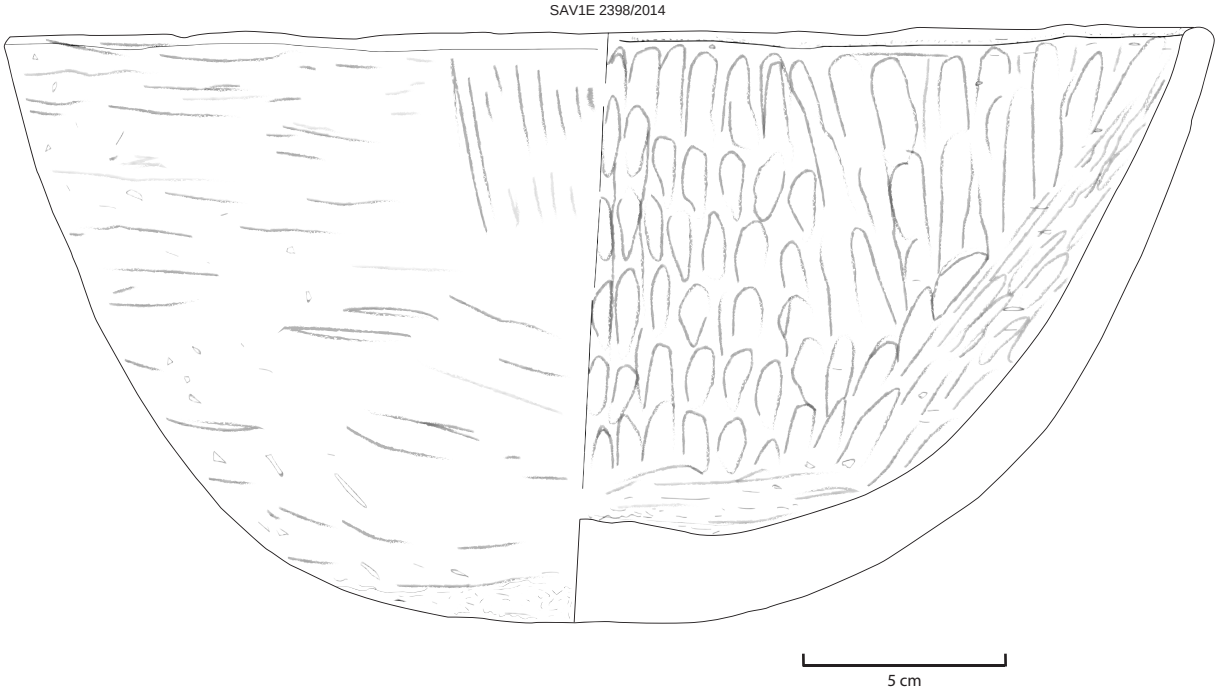

Fig. 68 SAV1E 2398/2014 Ottoman/Late bowl, handmade

red slip and stamped impressions on cups and bowls.[651] Similar vessels of the transitional phase had already been documented by André Vila in the near neighbourhood of Sai, at sites in the area of Amara East.[652] Painted Post-New Kingdom fine wares (Pl. 85) from the site of the New Kingdom town of Sai mostly belong to the Classical Christian period.[653] Besides the wheel-made wares, also hand-made Nubian Christian pottery is present.[654] *Qadus* water jars are well represented at both SAV1 East and SAV1 West and difficult to assign to a specific period within the medieval and/or post-medieval age. Coarse unslipped sherds and fragments of heavy, hand-made utility ware can be associated with a very late medieval or Ottoman date.[655] An almost complete large red burnished bowl of this period was recovered in SU 105 at SAV1 East (SAV1E 2398/2014, Fig. 68). It is a very thick-walled bowl with a direct rim and rounded base with prominent traces of burnishing inside.[656]

The New Kingdom ceramics were subsequently documented according to wares and vessel type. The typology established for the ceramic material (Tab. 15) follows the one used for SAV1 North and is organised along the lines of the pottery corpus from Amarna as published by Pamela Rose.[657] Broad shape groups like dishes, necked jars and pot stands constitute the main categories of vessels, designated by two letters, e.g. DP for dishes/plates. Within these shape groups, form classes are labelled by a numeral, e.g. DP 1 for a simple dish. The individual types are designated with a further number separated from the form class by a point, e.g. DP 1.1. If possible, the diagnostics of each basket are recorded according to

651 Group N.III. Early Christian by Adams 1986, vol. I, 52; vol. II, 473–485, see especially bowls and footed bowls as well as jars.

652 Vila 1977, figs. 45, 65 and passim.

653 Group N.IV Classical Christian by Adams 1986, vol. I, 52–53; vol. II, 485–495, cups, bowls and vases.

654 See especially Adams 1986, vol. I, 47–49; vol. II, 420–423: Early Christian Ware D.II, mostly *Qadus* jars, cups, bowls, *doka* bowls jars and storage jars.

655 Cf. Adams' Wares H4, H5 and also H6 and H7 of Class D. III, Adams 1986, vol. II, 426–432; see also Edwards and Soghayroun el-Zein 2012, 189, 202–206, figs. 7.29–31.

656 Cf. Edwards and Soghayroun el-Zein 2012, 206, fig. 7.31, no. 6.

657 Rose 2007. See already Budka 2017i for the material from SAV1 North.

OPEN FORMS
Dishes/Plates = DP
DP 1: Simple, direct rim DP 2: Simple, modelled rim DP 3: Simple, upturned rim (direct) DP 4: Simple, direct rim internally thickened DP 5: Simple, modelled rim with flange (ledge) DP 6: Simple, everted rim (direct) DP 7: Complex, direct rim DP 8: Complex, modelled rim DP 9: Complex, outer lip DP 10: Complex, inwardly-sloped upper wall DP 11: Modelled contour (wavy rims)
Bowls = BO
BO 1: Simple, direct rim BO 2: Simple, modelled rim BO 3: Simple, outer lip/everted rim BO 4: Complex, direct rim BO 5: Complex, modelled rim BO 6: Complex, outer lip BO 7: Complex, inwardly-sloped upper wall
Flowerpot = FP
FP 0: Modelled rim FP 1: Modelled rim, hole in base FP 2: Modelled rim, without hole FP 3: Direct rim, hole in base FP 4: Direct rim, without hole
Beakers (deep open forms) = BK
BK 1: Tall beaker with direct rim BK 1.1: rounded base BK 1.2: cut/trimmed base BK 1.3: flat base BK 2: Beaker with inflected contour, direct/everted rim
CLOSED FORMS
Carinated Vessel = CV (squat)
CV 1: Vessel with carination, modelled rim CV1.1: short-necked CV1.2: broad-necked CV 1.3: narrow-necked CV 2: Vessel with carination, outer lip CV 3: Vessel with carination, outer lip and handles
Slender Jars = Jar ordinary = JO
JO 1: Slender jars, simple contour, externally thickened rim JO 1.1 Ovoid jar with rounded base JO 1.2 Drop-shaped jar with rounded base JO 2: Slender jars, everted rim JO 3: Slender jar with internally rolled rims (crucibles) JO 4: Slender jar with externally rolled rims (crucibles) JO 5: Slender jar, composite contour, direct rim
Necked jars = NJ
NJ 1: Necked jars, externally thickened rim NJ 2: Necked slender jar, composite contour, modelled rim NJ 3: Necked slender jar, composite contour, direct rim NJ 4: Slender jar, out-flared neck, direct rim NJ 5: Ovoid necked-jar, rounded base
Beer jar = BJ
BJ 0: base with hole BJ 00: base without hole BJ 1: Hole-mouthed BJ 2: Short-necked slender jar, composite contour, direct rim

Funnel-necked jars = FU
FU 1: Biconical vessels, short-medium neck, direct rim FU 2: Complex contour, tall neck, modelled rim
Zir = ZI
ZI 1: Composite, long wide neck, modelled rim
Storage jar = ST
Tall jars = TJ
TJ 1: Tall jars, hole-mouth TJ 2: Tall jar, simple, modelled rim TJ 3: Tall jar, simple, everted rim TJ 4: Tall necked jar, inflected contour, externally thickened rim TJ 5: Tall short-necked jar, bag-shaped, modelled rim
Globular jar = GJ
GJ 1: Globular jar, short flaring neck with direct rim GJ 2: Globular jar, short flaring neck with modelled rim GJ 3: Globular jar, vertical neck with modelled rim GJ4: Globular jar, vertical neck, direct rim
Ovoid meat jars = MJ
Handeled vessels/amphorae = AO
Pilgrim flask = PF
Miniature vessels = MV
OTHERS/FUNCTIONAL
Cooking pots = CP
Pot-stands = S stands
SB = Biconical
SB 1: Low ring stands of biconical form SB 2: Medium ring stands of biconical form SB 3: Tall ring stands of biconical form
ST = Transitional
ST 1: Low ring stands ST 2: Medium ring stands ST 3: Tall stand
SU = Tubular
SU 1: Low ring stands SU 2: Medium ring stands SU 3: Tall stand of tubular form
SO = Tall stand with bowl/offering bowl
Lids = LL
Stoppers = LS
Fire dogs = FD
Funnels = FN
Spinning bowls = SB
Fish bowls = FB
HANDMADE
Bread tray = BT
Bread mould = BM
Various

Tab. 15 Typology of main categories of pottery vessels from Sai, New Kingdom town

SAV1E					
	Total	**NK total**	**Post-NK**	**NK-Post-NK ratio****	**Comment**
2013	32199	13872	18327	43–57%	
2014	77827	19098	58729	25–75%	
2015	29555	4401	25154	15–85%	only surface layers processed, incl. SU 205
2016*	14643	6528	8115	45–55%	630 baskets
2017*	1872	1210	662	65–35%	incomplete data from 87 baskets only
Total	156096	45109	110987		
SAV1W					
	Total	**NK total**	**Post-NK**	**NK-Post-NK ratio****	**Comment**
2014	24456	13941	10515	57–43%	
2015	18935	9878	9057	52–48%	
2016*	11745	9818	1927	84–16%	430 baskets
2017*	9995	8804	1191	88–12%	218 baskets
Total	**65131**	**42441**	**22690**		

* Total numbers in years 2016 and 2017 are lower because only diagnostics were counted; see number of baskets processed.
** The New Kingdom to Post-New Kingdom ratio refers primarily to the counted diagnostics; the majority of body sherds are of New Kingdom date and would change these statistics.

Tab. 16 Statistics of pottery processed at SAV1 East and SAV1 West

their form class or at least within their shape groups. In contrast, all body sherds are counted according to their ware and broad shape group only.

While processing, selected sherds of the New Kingdom were sorted out for drawing, to enlarge the site-specific corpus. Pottery sherds and vessels that were designated for this detailed analysis are labelled as "P" = "Pottery" and numbered continuously, separated with SAV1 West and SAV1 East according to sector. Complete profiles, complete vessels, decorated or otherwise important pieces were recorded with an individual P-number. In the case of fragments and less important pieces, they were labelled as find assemblages (e.g. SAV1W P012.1–4 coming from SU 507 at SAV1 West).

Coming from both SAV1 East and SAV1 West, a total of 221,227 sherds were looked at, sorted and recorded between 2013 and 2017.[658] Amongst these sherds, 87,550 were diagnostics from the New Kingdom (40%). The remaining 133,677 sherds (60%) are comprised of Post-Pharaonic material, with Christian sherds in the clear majority, followed by X-Group/Post-Meroitic material and a few Meroitic and Napatan pieces. Tab. 16 gives an overview of the basic ceramic statistics from SAV1 East and SAV1 West. In general, the amount of New Kingdom diagnostic sherds was always higher at SAV1 West because of the less mixed layers below the upper strata. Especially during the 2016 and 2017 seasons most of the pottery excavated at this sector was of 18th Dynasty date. The situation at SAV1 East was slightly different and more complicated, even in the lowest strata (see Chapter 3.2).

In addition, 135 baskets of pottery were processed from the test trench at SAV1 Northeast (Chapter 3.5). The upper levels at this trench were dominated by Post-New Kingdom material, accounting to up to 98% of the material. Only in the lower levels, the ones associated with the documented brickwork at the site, more 18th Dynasty pottery was found, *c.* 80% as an average.

[658] These numbers are of a preliminary character. A more complete statistical analysis will be published elsewhere: Budka forthcoming a.

4.2.2 Corpus of fabrics

In the following, basic information in order to understand the common outlines of the pottery corpus will be given.[659] A detailed study, including the petrographic information on the fabrics used for the New Kingdom pottery from sectors SAV1 East and SAV1 West will be published elsewhere.[660] In general, a site-specific fabric corpus was established for the New Kingdom town of Sai, which closely resembles the Egyptian material from the New Kingdom town of Elephantine,[661] but also includes local fabrics for Egyptian vessels as well as for Nubian wares.[662] This site-specific fabric corpus was already presented for the pottery from SAV1 North and comprises six large groups of fabrics:[663]

(1) Imported Nile clays from Egypt

(2) Locally produced Nile clays from Sai/Upper Nubia

(3) Nubian clays from Upper Nubia

(4) Imported Marl clays from Egypt

(5) Other imported wares (Oases, Levante, Cyprus)

(6) Imported Mixed clays from Egypt

In accordance with the 'Egyptological' understanding of 'pottery fabric' as "the finished product"[664] as defined in the classification of the Vienna System[665] all relevant technological features of the production technique are included in this assessment.[666] The locally produced Egyptian-style Nile clays are almost always wheel-thrown, whereas the indigenous Nubian tradition is hand-made (see below, Chapter 4.2.3).

The establishment of a site-specific classification of fabrics was essential for the analysis of the ceramics from SAV1 East and SAV1 West because of a development in the composition and nature of fabrics and wares within the pottery from New Kingdom Egypt, potentially providing dating criteria and other information.[667] The main fabric groups were identified from fresh breaks with the aid of a 1x10-magnification hand-lens. The designations employed for the groupings – especially for groups 1, 2 and 4 – are those used within the Vienna System,[668] with some minor alterations and additions.[669] In the following, only descriptions based on the macroscopic analysis of the fabrics are presented. Petrographic details based on optical microscopy and chemical analyses will be published elsewhere.[670] Provenance studies by Instrumental Neutron Activation Analysis (INAA) added important information on the exact nature of Nile clay wares.[671] This chemical characterisation method elucidated aspects of the regional pottery production,[672] revealing sub-groups for the Nile clay fabrics which correspond to (a) locally made Nubian-style vessels, (b) locally made Egyptian-style vessels and (c) imported Egyptian-style vessels.[673] One has to stress again that this differentiation also needs to take the production technique into

659 Budka (with an appendix by D'Ercole) 2018g.
660 Budka forthcoming a.
661 Budka 2005a, 91–95.
662 Cf. Budka forthcoming a (including a chapter on the petrography by D'Ercole).
663 Budka 2017i.
664 Nordström and Bourriau 1993, 162.
665 See Nordström and Bourriau 1993, 168–186.
666 The same approach is followed for the study of material from Amara West, cf. Spataro et al. 2015. For the general importance of the production techniques for ceramic analysis, see Miller 1985, 34–50.
667 For example, the sandy variant of Nile B2 (typical for the Ramesside period), the use of mixed clays and the distribution of Marl clays, cf. Aston 1992, 73.
668 Nordström and Bourriau 1993, 168–186.
669 Following a system established by the author for the New Kingdom pottery at Elephantine, see Budka 2005a, 91–95.
670 Budka forthcoming a.
671 See D'Ercole and Sterba 2018.
672 Cf. Carrano et al. 2009; Spataro et al. 2015; D'Ercole and Sterba 2018.
673 Budka 2015a, 50; Budka 2015b, 69; Budka 2017i; D'Ercole and Sterba 2018.

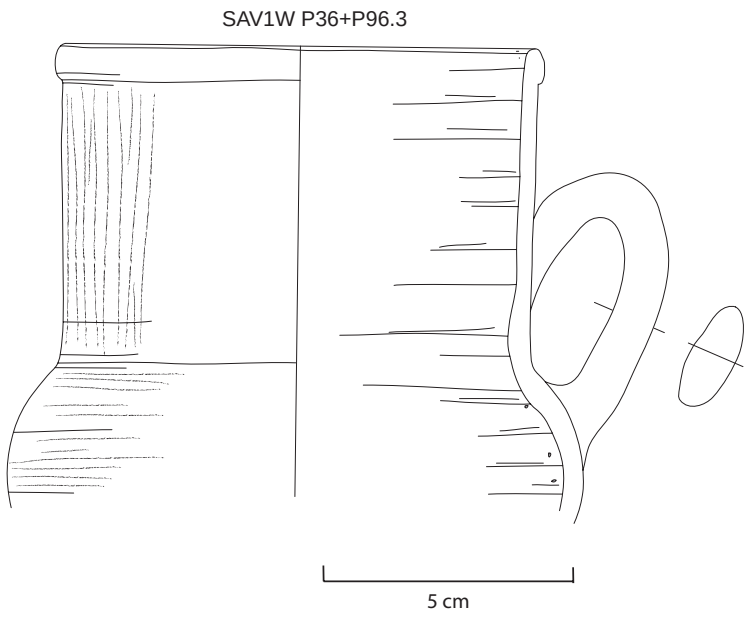

Fig. 69 SAV1W P36 and P96.3 – jug/mug in Marl D, SAV1 West. Late 18th Dynasty

account. From a macroscopic point of view only it is not always possible to distinguish imported Nile clays from Egypt and locally produced Nile variants.[674]

The following groups of the Vienna System are well-attested at Sai: Nile B2 (with a chaffy, local variant), Nile C, Nile D and Nile E.[675] The latter was used for cooking pots (e.g. SAV1E P 179) – its fabric can be classified as Upper Egyptian equivalent[676] of the typical Nile E,[677] originating from the Nile delta. The bread moulds from SAV1 East were made of a typical mixture of sandy mud, clay and organic temper, classified as 'bread mould clay' or Nile D4.[678]

Marl clays are less common than Nile clays in New Kingdom settlement pottery.[679] The rather small amount of Marl clays found at SAV1 East and SAV1 West compares well to the corpora from Elephantine[680] and Sesebi.[681] Furthermore, SAV1 West shows close parallels to SAV1 North, especially regarding painted Marl clay wares.[682] Interestingly, Marl C vessels which get less common in New Kingdom Egypt, but are among the most favourite Egyptian imports during the Kerma period,[683] are frequently found in early 18th Dynasty levels at both SAV1 East and SAV1 West.[684] They are restricted to large *zir* vessels.[685]

The following Marl clays have been identified in the material deriving from Sai: Marl A2, A4 (variants 1 and 2) and A3, Marl B, Marl C (variants 1 and 2), Marl D (variants 1 and 2) and Marl E. Within the material of the early 18th Dynasty, Marl A2 and Marl B were used most often.[686] From deposits datable to the late 18th Dynasty and the 19th Dynasty, Marl D appears in considerable quantities.[687] Besides fragments from amphorae, several small jugs and mugs are attested from SAV1 West (Fig. 69). Marl E was especially used for large thick-walled bread trays (so-called *Schaelbecken*, see below).[688]

674 See Rose 2018 for difficulties with the differentiation of Nile clay wares as local or imported.
675 See the comments on these fabrics based on material from SAV1 North: Budka 2017i, 122–123.
676 See Budka 2006, 84 (for a local variation at Abydos); Budka 2016c.
677 See Nordström and Bourriau 1993, 175.
678 Cf. Budka 2006, 84; Budka 2017i, 123.
679 See Budka 2017i, 124–125.
680 Budka 2005a, 93–94.
681 See Rose 2018, 137.
682 See Budka 2017i, 124–125.
683 See Bader 2001, passim; cf. Bourriau 2004, 3; Smith 2012, 392 and also Gratien 1986, 398–402 for Marl C vessels from Kerma tombs on Sai.
684 For a mid-18th Dynasty context in Egypt (Sedment) where a Marl C *zir* was found, see Bourriau and Schenck 2015. In general, the Marl C production seems to have faded out by the reign of Thutmose III which corresponds to the evidence on Sai.
685 Cf. Bader 2001.
686 See Budka 2017i, 124.
687 For Marl D, see Budka 2006, 84 with references; Ruffieux 2016, 516, fig. 11.5 (for an early piece from Dokki Gel). Cf. also Miellé 2016, 430.
688 See Bader 2001, 81–83; Budka 2017i, 125, fig. 53 with references to parallels from Memphis, Koptos, Deir el-Ballas and Abydos.

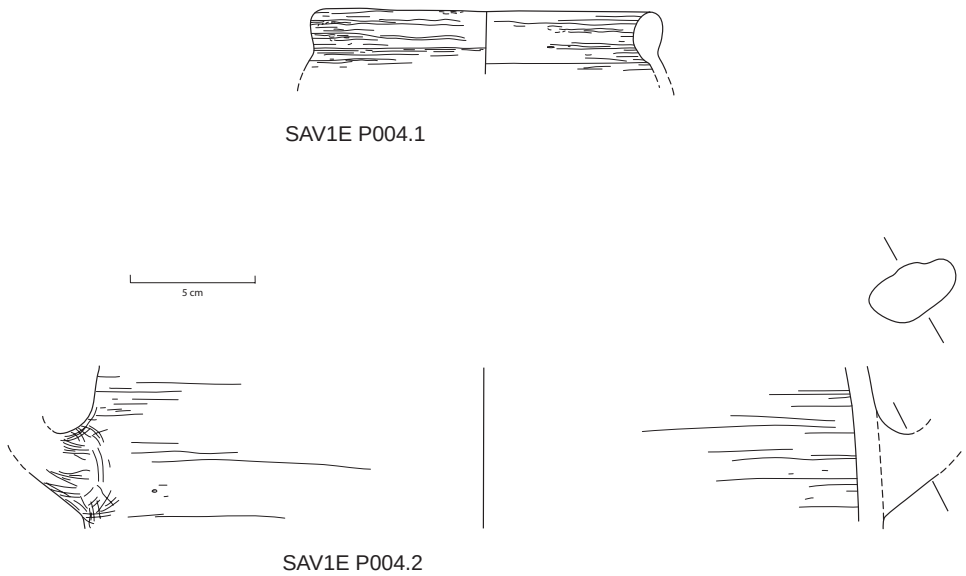

Fig. 70 Fragments of an amphora in Mix clay A (SAV1E P004.1+2)

Some imported pottery (Canaanite, Levantine and Cypriote) as well as a few sherds in Oases ware are confirmed from SAV1 East and SAV1 West.[689] Most common are Non-Egyptian amphorae from Syria/Canaan and here a fabric which is similar to Marl D with a dark grey or brownish matrix and abundant particles of limestone.[690] Another amphora fabric is homogenous with a reddish-yellow colour, numerous mineral inclusions and abundant limestone particles; this imported fabric corresponds to P11 at Saqqara and Memphis.[691]

Egyptian mixed clays are commonly associated with the late New Kingdom. Both variants as defined by David Aston, Mix clay A and B, are attested on Sai, but only in small numbers.[692] Both wares are commonly associated with Ramesside and Third Intermediate Period amphorae of which only small fragments have survived. The sherds SAV1E P004.1+2 belong to the same vessel, a Mix A yellowish burnished amphora, which was found as a small rim fragment and body part on the surface of Square 1 at SAV1 East (Fig. 70).

4.2.3 Production techniques

Both Egyptian (wheel-made) and Nubian (hand-made) pottery traditions are attested from Nubian New Kingdom sites and this also holds true for Sai Island.[693] At Sai, a Nubian component is traceable at all sectors recently excavated in the New Kingdom town (Fig. 71).[694] Hand-made cooking pots and storage vessels as well as some fine wares (black-topped cups and beakers) are attested in considerable numbers. The Nubian assemblage at Sai is comparable to findings at other Upper Nubian sites established in the early 18th Dynasty, such as Sesebi.[695] The Nubian pottery from SAV1 East and SAV1 West shows relations to the local Kerma corpus,[696] is as a rule hand-made and very often decorated with impressed and/

689 Comparing well with SAV1 North, see Budka 2017i, 125–126.
690 Well-attested at SAV1 North and Elephantine, see Budka 2017i, 125.
691 Nordström and Bourriau 1993, 185; Aston 2008, 40; Bourriau 2010, 31.
692 For two variants of Mix clays, see Aston 1999, 6. For rare examples of Ramesside amphorae in Mix clays at SAV1 North, see Budka 2017i, 126.
693 Cf. Smith 2003a, 43–53; Smith 2003b; Spencer 2014, 55; Budka 2017i, 126.
694 See Budka 2016a; Budka 2017i, 126.
695 Rose 2012. See also Budka 2017i.
696 See Gratien 1986, passim.

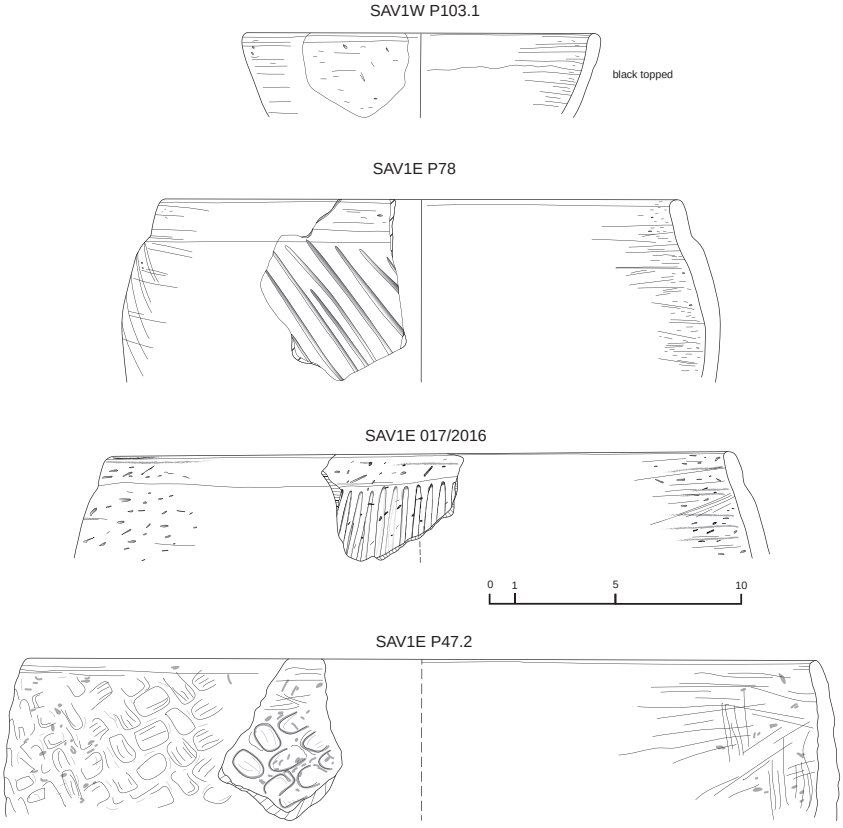

Fig. 71 Nubian hand-made vessels from SAV1 East and SAV1 West

or incised patterns. Nubian storage vessels are attested as rim fragments only, but find complete parallels in sector SAV1 North.[697]

The majority of the New Kingdom ceramics from both SAV1 East and SAV1 West is wheel-made pottery in Egyptian-style, produced in Egyptian Nile clays and imported to Upper Nubia[698] or locally produced with Nile clay variants. Most of the vessels were either wholly or partially made on a simple wheel. Small open forms were usually thrown on the wheel in one piece, whereas large storage vessels frequently show traces of joints where they were produced in more than one piece.[699] *Zir* vessels were usually made in sections with the coiling technique, while the rim was finished on the wheel (see Fig. 82).[700] Egyptian hand-made pottery is rare and the examples are restricted to bread plates and so-called *Schaelbecken* or bread trays (see Fig. 91).[701]

In some cases locally produced Nile clay pottery vessels were modelled on Egyptian types, but with a 'Nubian' influence in regards to the surface treatment, production technique or decoration (see below, Chapter 4.2.4 Hybrid vessels).[702] I have argued that this pottery can be regarded as evidence of "material entanglement,"[703] which recent studies have stressed as one of the main characteristics of New Kingdom Nubia.[704] Such hybrid pots may represent products of a temporary or local fashion, but they can also refer

697 Budka 2011, 27 (citing parallels from the local Kerma tombs, cf. Gratien 1986); Budka 2017i, 130–131, fig. 57.
698 For the import of Nile silt vessels, cf. Arnold 1993, 78, figs. 90B–C and Smith 2003a, 117. Cf. also Rose 2018.
699 For a concise summary of shaping techniques, see Holthoer 1977, 42–43.
700 Budka 2017i, 126.
701 See Budka 2017i, 126.
702 On hybridity cf. Stockhammer 2013; see also Budka 2018h.
703 Budka 2018d. See also Stockhammer 2012; Pappa 2013; Stockhammer 2013.
704 See van Pelt 2013; Smith 2014a; Spencer 2014; Binder 2017; Budka 2018d.

to the cultural identity of their users or materialise more complicated processes.[705] In any case, one has to keep in mind one important paradigm phrased like the following by Marwan Kraidy: "It is therefore imperative to situate every analysis of hybridity in a specific context where the conditions that shape hybridities are addressed."[706] For Sai, these hybrid pots seem to attest to a complex mixture of lifestyles during the New Kingdom which is well traceable in the pottery production (see below, Chapter 8).[707]

During the New Kingdom there is generally less clear evidence at Egyptian sites for kilns and potter's workshops than in Middle Kingdom Nubia.[708] Important evidence for local pottery production comes from wasters and unfired sherds at various sites.[709] Although the latter were also found in small numbers within the sectors of the New Kingdom town of Sai, no kilns or potter's workshop have been identified with certainty within the settlement area.[710]

4.2.4 Corpus of types and shapes

Since a detailed presentation of ceramics from SAV1 East and West (fabrics, wares, corpus and quantities) will be published elsewhere,[711] the following chapter presents an overview of the most important types, with a focus on early and mid-18th Dynasty contexts, providing ready parallels for the material from SAV1 North.[712] In general, small and medium-sized dishes, various plates, pot stands, storage vessels, cooking pots, beer jars, beakers and bread plates dominate the corpus of ceramic types from both sectors.[713] Bread moulds, bread trays and spinning bowls, as well as carinated Marl clay vessels, amphorae and decorated jars are also present (see Tab. 16). Within these types, certain differences between SAV1 East and SAV1 West can be observed.

Dishes and plates

This category of vessels comprises various types of dishes and larger plates.[714] Simple dishes with flat bases or ring bases are very common, often with a red rim (especially for the variants DP 3 and DP 6, Fig. 72). Black rim ware[715] and the Thutmoside red splash decoration[716] is also regularly found on dishes. In general, the most common ware within this shape group is red slipped and burnished inside (especially for DP 3 and DP 9). Carinated dishes with complex contours (especially DP 9) frequently show wavy incised or painted decoration, including triangles which are common for large carinated bowls (BO 6).[717]

DP 3, a dish with a simple, upturned rim, is a very common type which appears both with flat bases and ring bases (Figs. 72 and 73). Although uncoated surface treatments and red rims are attested, DP 3 vessels are very often red slipped and burnished inside. Here, a phenomenon already observed by Anne Seiler is noteworthy: early variants like SAV1E P007.2 (Fig. 73) illustrate that the bottom part of the ring base was left uncoated.[718] In later variants, the complete base is red slipped because

705 Miller 1985; Woolf 1998; Smith 2003b; Budka 2017g, 440.
706 Kraidy 2005, vi.
707 Cf. Budka 2017g; see also Garnett 2014, 62; Ruffieux 2016, 518–519, fig. 13.
708 For the recent discovery of a pottery kiln at Amara West: Garnett 2014, 62; Spencer, Stevens and Binder 2014, 19–20, 26.
709 Williams 1992, 24 (Serra); Smith 2003a, 117 (Askut); Edwards 2012, 78, fig. 3.33 (Tombos).
710 See, however, Hesse 1981; cf. Budka and Doyen 2013, 170 with discussion.
711 Budka forthcoming a.
712 Budka 2017i.
713 Very similar to SAV1 North, see Miellé 2012, 177 and Budka 2017i.
714 Cf. the corpus from the treasury of Thutmose I at Karnak: Jacquet-Gordon 2012, vol. 2, figs. 54–58.
715 The dating of the black rim has been discussed controversially; see, e.g., Bourriau and Schenck 2015, 182 with references; Budka 2016a, 52.
716 Cf. Aston 2006, 65–73.
717 See parallels from Sesebi: Spence et al. 2011, 37, fig. 5.
718 The archaeological context of this dish is not relevant for dating; it derives from Feature1, the surface layer, in the northeastern part of Square 1.

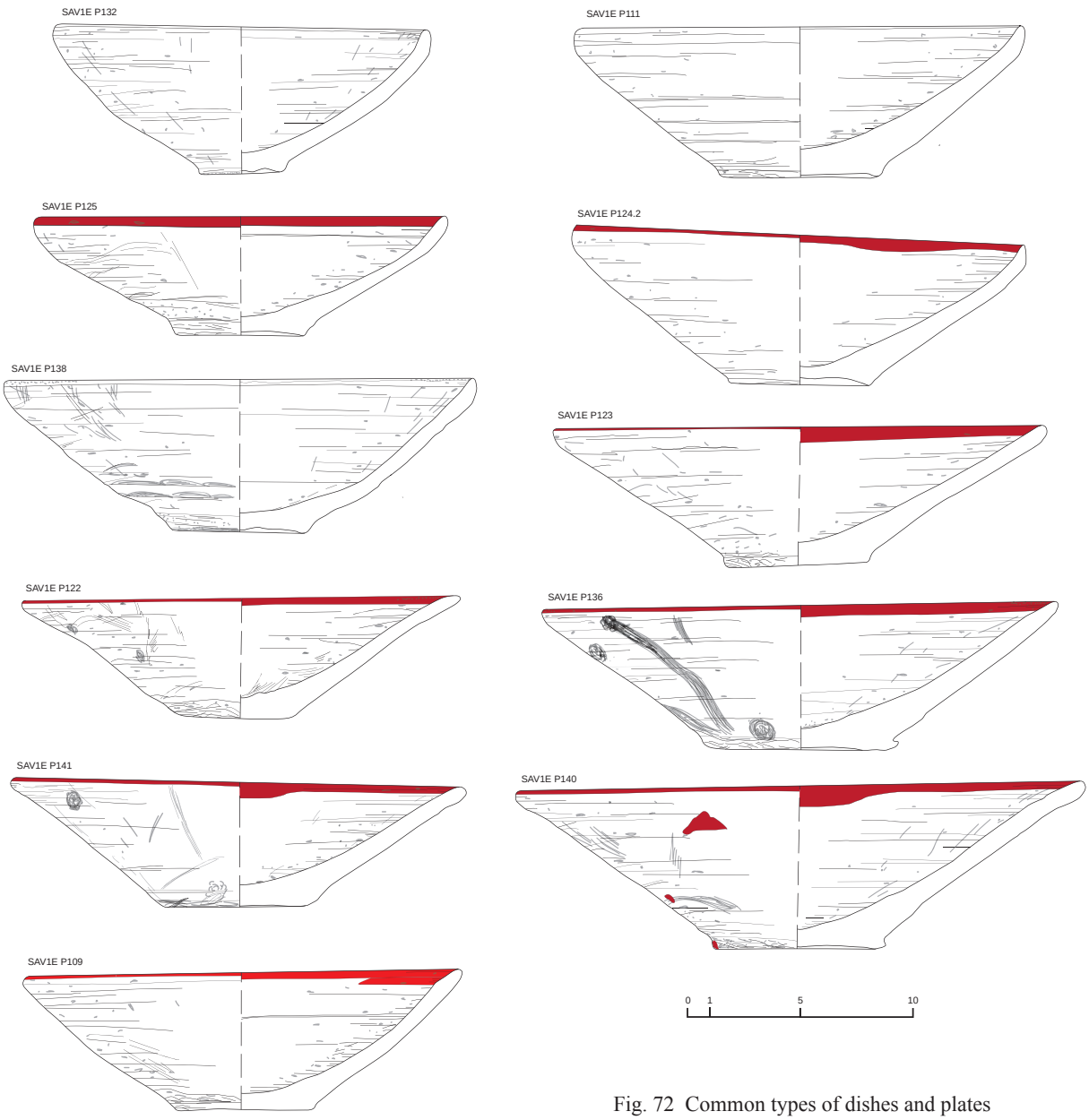

Fig. 72 Common types of dishes and plates

the complete dishes were dipped into the red wash.[719] In chronological terms, this difference in the surface treatment of the bases of dishes at Sai is significant: in Egypt, the transition is associated with the beginning of the New Kingdom.[720] At Sai, an overlap of traditions seems to have happened, combining the 'outdated' method of the Second Intermediate Period with the innovative technique of the 18th Dynasty. This might have been stimulated by either imports from Egypt and/or a local pottery production which was less up-to-date than the ones in the pottery production centres within Egypt proper (see below, DP 11).

Another significant dish type of the 18th Dynasty is DP 5 which is a large plate with a modelled rim with a flange or ledge. It is commonly made in chaffy Nile B2 or Nile C2 variants, always uncoated, and

719 Seiler 2005, 154.

720 Seiler 2005, 154. The corpus of pottery from Elephantine also supports this assessment (personal observation).

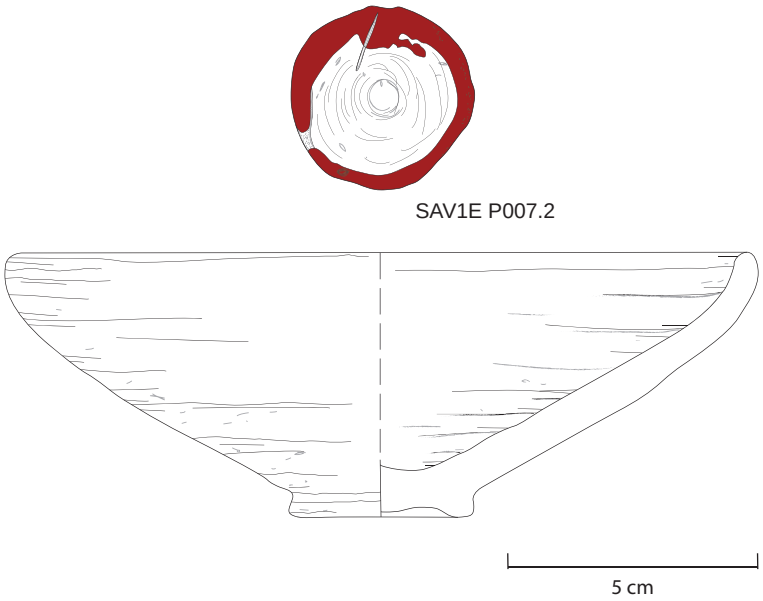

Fig. 73 Example of complete red washed DP 3 from SAV1 East with uncoated bottom of ringbase

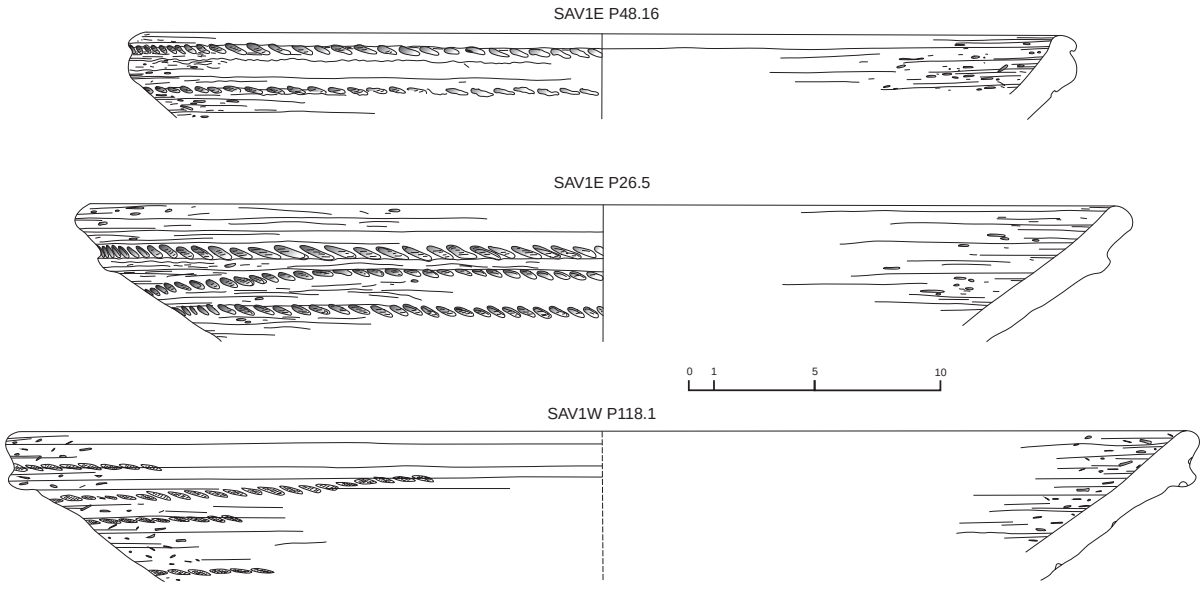

Fig. 74 Examples of type DP 5 plates

shows traces of sometimes very deep rope impressions (Fig. 74). DP 5 dishes have flat bases, cut from the slow wheel. In Egypt this type shows a significant morphological development from the 17th Dynasty to the 18th Dynasty,[721] and the variants in Nubia (like Askut, Sai and Dokki Gel)[722] all fall into the new type of the New Kingdom.[723] At both sectors, SAV1 East and SAV1 West, this type is well-attested in various variants, especially in diverse sizes.

721 Well-attested on Elephantine, especially for the material from House 55 (unpublished, courtesy of the author).

722 For Askut, see Smith 1995, 143, fig. 6.4, O. At SAV1 North, this type is attested from the earliest 18th Dynasty levels onwards, see Budka 2017i, 128. For Dokki Gel, see Ruffieux 2005, 268, no. 18.

723 See Jacquet-Gordon 2012, vol. 2, fig. 57.

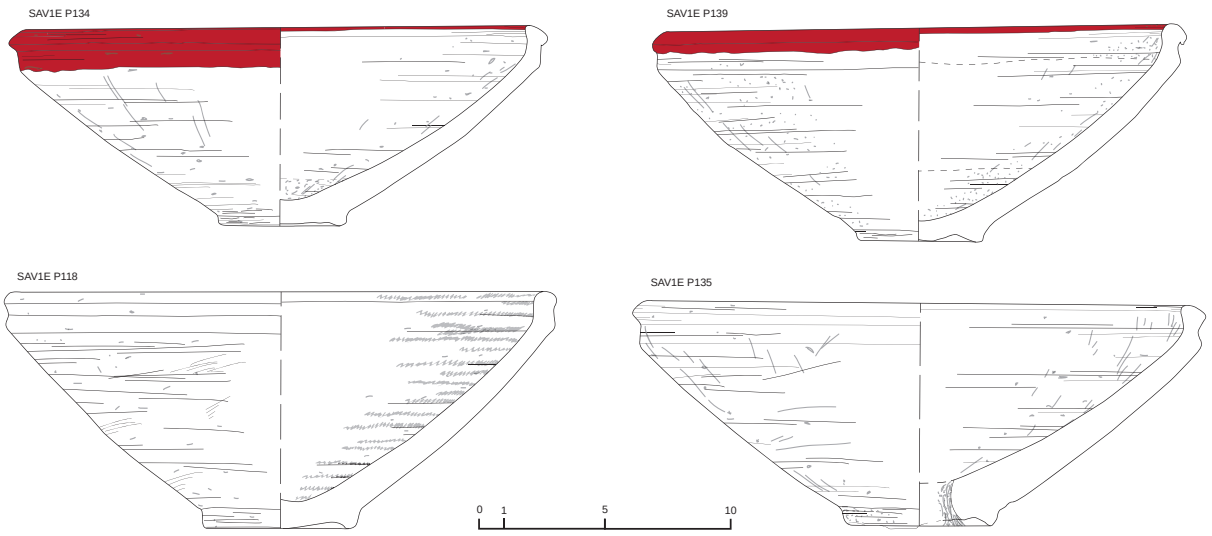

Fig. 75 Examples of type DP 9 dishes

DP 7 is a dish with a complex outline and a direct rim. This type is very common at Elephantine in 'Bauschicht' 10[724] and was also found in Thutmoside contexts at Thebes.[725] At Sai, the amount of DP 7 dishes is moderate. They are attested at both sectors with black rims and more often plain red slipped and burnished.[726]

More common than DP 7 at Sai is another variant of carinated dishes, DP 9 with an outer lip. The shape of the bases may vary, but most common are ring bases (Fig. 75). These vessels find close parallels at Elephantine, 'Bauschicht' 10 and are most often red slipped and burnished inside and outside until the carination.[727] Red rims are also well-attested; some complete dishes were found in Feature 15.[728] Painted examples, using geometric designs in black colour, are also confirmed from both sectors.[729]

A common and very specific type of carinated dish shows incised wavy lines and a finger-pinched or cut rim (DP 11, Fig. 76).[730] An almost complete example with incised decoration on the interior and exterior has survived from Feature 15 (SAV1E P129, Fig. 76). This large dish originally had a conical foot which is now lost. Carinated dishes like this example frequently show painted decoration in addition to the incised lines, finding parallels at Sesebi[731] and Askut.[732] Dishes of type DP 11 are regularly red washed, sometimes with additional white as decoration, and they often show vertical applications on the upper part of the vessel. This type, also known from SAV2[733] and SAV1 North[734] is commonly associated with the Second Intermediate Period pottery tradition with numerous attestations from Lower Egypt,[735]

724 See Seiler 1999, 2010, fig. 47.
725 Lilyquist 2003, figs. 62a–b, d.
726 Cf. Budka 2016a, fig. 1.
727 Seiler 1999, 212, fig. 48, Lilyquist 2003, fig. 62f.
728 Budka 2018d, 156, fig. 7.
729 Cf. Budka 2018d, 153–154, fig. 5 with examples from SAV1 North.
730 Budka 2018d, 153–154, fig. 5.
731 Spence et al. 2011, 37, fig. 5; Rose 2017, fig. 1.4; Rose 2018, fig. 1.
732 Smith 1995, fig. 6.14.
733 Hesse 1981, 29, class 93, fig. 18.
734 Budka 2011, 29–30 (as type DP 8.1 at SAV1 North).
735 E.g. Avaris/Tell el-Daba, 15th Dynasty, Aston 2004, no. 18; Aston and Bader 2009, fig. 4.32; Qau, Bourriau 2010, fig. 9.

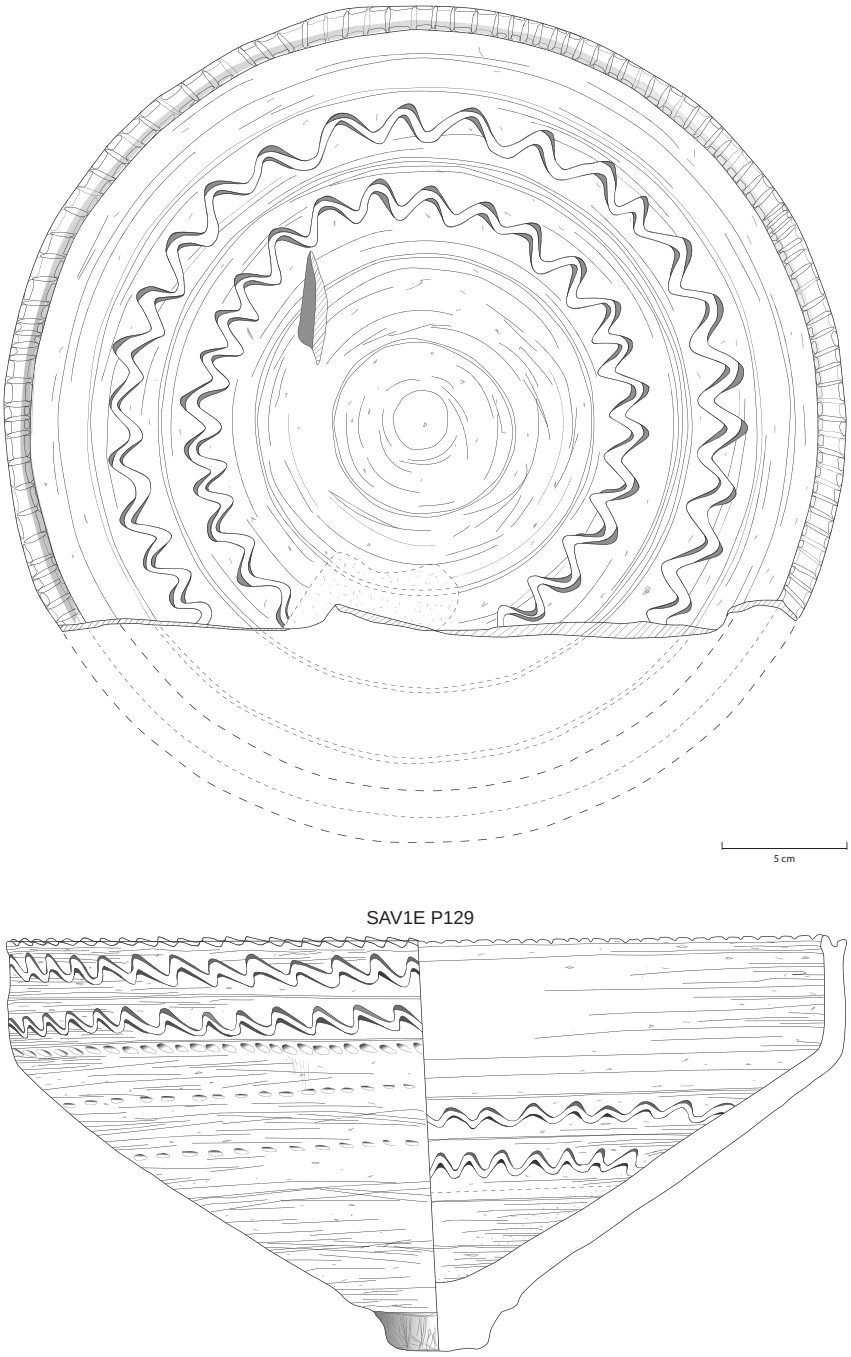

Fig. 76 Almost complete example of type DP 11 dish (from Feature 15)

Upper Egypt[736] and also Lower Nubia.[737] Finds at Elephantine[738] and at Sedment[739] illustrate, however, that this vessel type occurs in 18th Dynasty contexts as well, until the reign of Thutmose III. This cor-

[736] E.g. Abydos, Wegner 2007, figs. 123.78 and 128.149; Thebes, Seiler 2010, figs. 8.2–3, 17th Dynasty and in Marl variants at Deir el-Ballas, Bourriau 1990, fig. 4.3[20].

[737] Askut, dated as 13th Dynasty, Smith 1995, fig. 3.8; Smith 2003b, fig. 3.3, but probably later, see Knoblauch 2007.

[738] Budka 2018d, 160, fig. 12.7.

[739] Today at Brussels, Musées Royaux d'Art et d'Histoire, E. 5806.4, see Petrie and Brunton 1924, pl. 64; Franzmeier 2017, 1327–1328. Franzmeier gives as parallel a piece from Thebes: Seiler 2005, 144–145, fig. 64.4.

responds to the distribution of the type at Sai Island, where such dishes frequently appear together with material dating to Thutmose III/Amenhotep II.[740] Although they evoke the style of the Second Intermediate Period, this particular type of dish might serve as a good illustration of the way in which pottery of the Second Intermediate Period and the early New Kingdom followed regionally divergent developments within the areas of both Egypt and Nubia.[741]

Bowls (Fig. 77)

Several variants of bowls are attested from SAV1 East and SAV1 West, differing not only in sizes but also regarding the rim and contour. The majority is made in Nile clays and several surface treatments are attested, including red rims, red wash and common uncoated surfaces. Rounded bowls with an outer lip often show a red rim.[742] Especially the variants BO 6 and BO 7 are often red slipped and burnished and

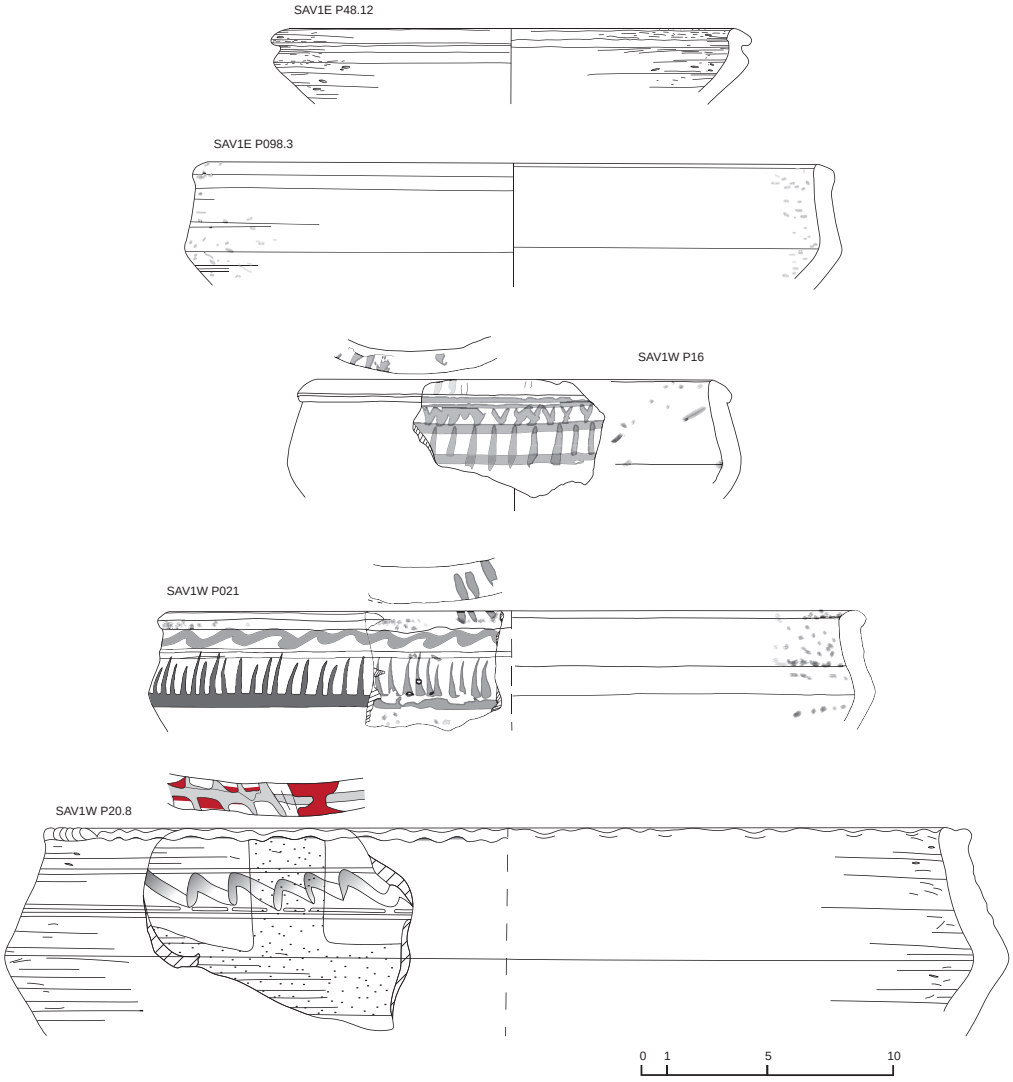

Fig. 77 Common types of bowls from SAV1 East and SAV1 West

740 Budka 2011, 30.
741 Cf. Knoblauch 2007 and recently Seiler 2010; Bourriau 2010. See also Budka 2011, 30 for SAV1 North.
742 Cf. Thutmoside examples from Thebes: Lilyquist 2003, fig. 60c–d, fig. 61a.

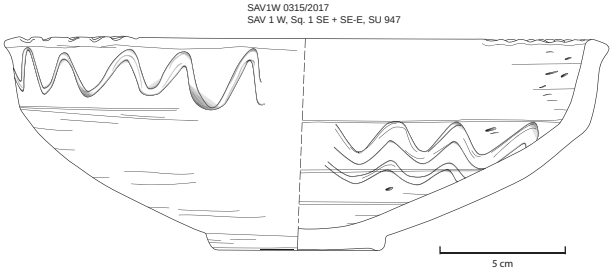

Fig. 78 Complete example of a small carinated bowl with wavy line incised decoration (SAV1W 0315/2017)

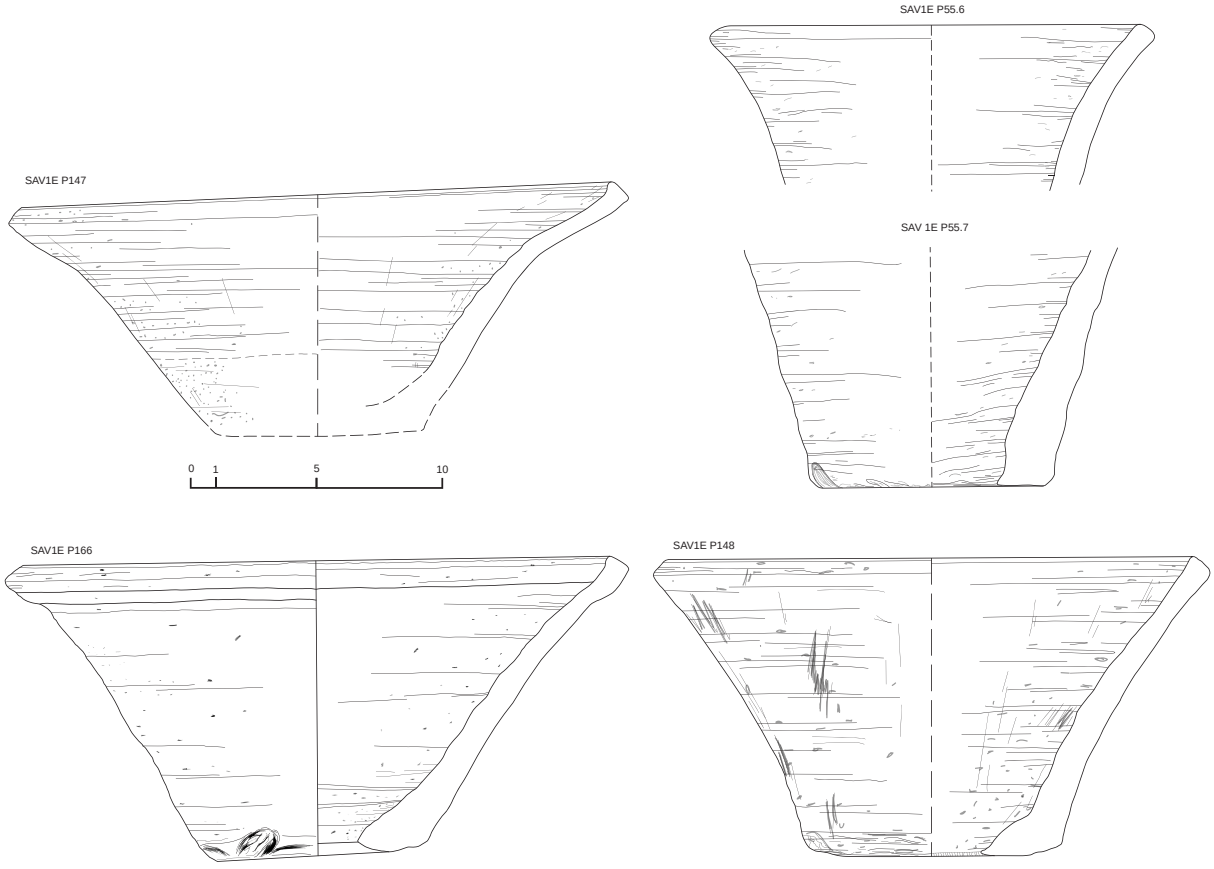

Fig. 79 Flower pots from SAV1 East

sometimes painted with black colour and geometric motifs.[743] The preference of wavy lines (Fig. 78) and painted triangles on these bowls has been discussed by several scholars and Smith proposed to interpret these patterns as local Nubian-style.[744]

Flower pots (Fig. 79)

Chronological markers for the 18th Dynasty are the so-called flower pots, conical deep bowls with perforated bases which are present both at SAV1 East and SAV1 West.[745] They are attested in several variants

743 Cf. Holthoer 1977, pl. 24; Smith and Buzon 2018, 219, fig. 17 with references.

744 Smith 2003a, fig. 6.14, Smith 2003b, fig. 3.7; Budka 2018d, 153. See also Miellé 2014, 389 and most recently Rose 2018, 136.

745 See Wolf 1937, pl. 77, 'Form 25'; Holthoer 1977, pl. 18; Williams 1992, 34–35; Minault-Gout and Thill 2012, pl. 132; Pierce 2013, 514–517. For the shape without a perforated base, see, e.g., Lilyquist 2003, fig. 63.

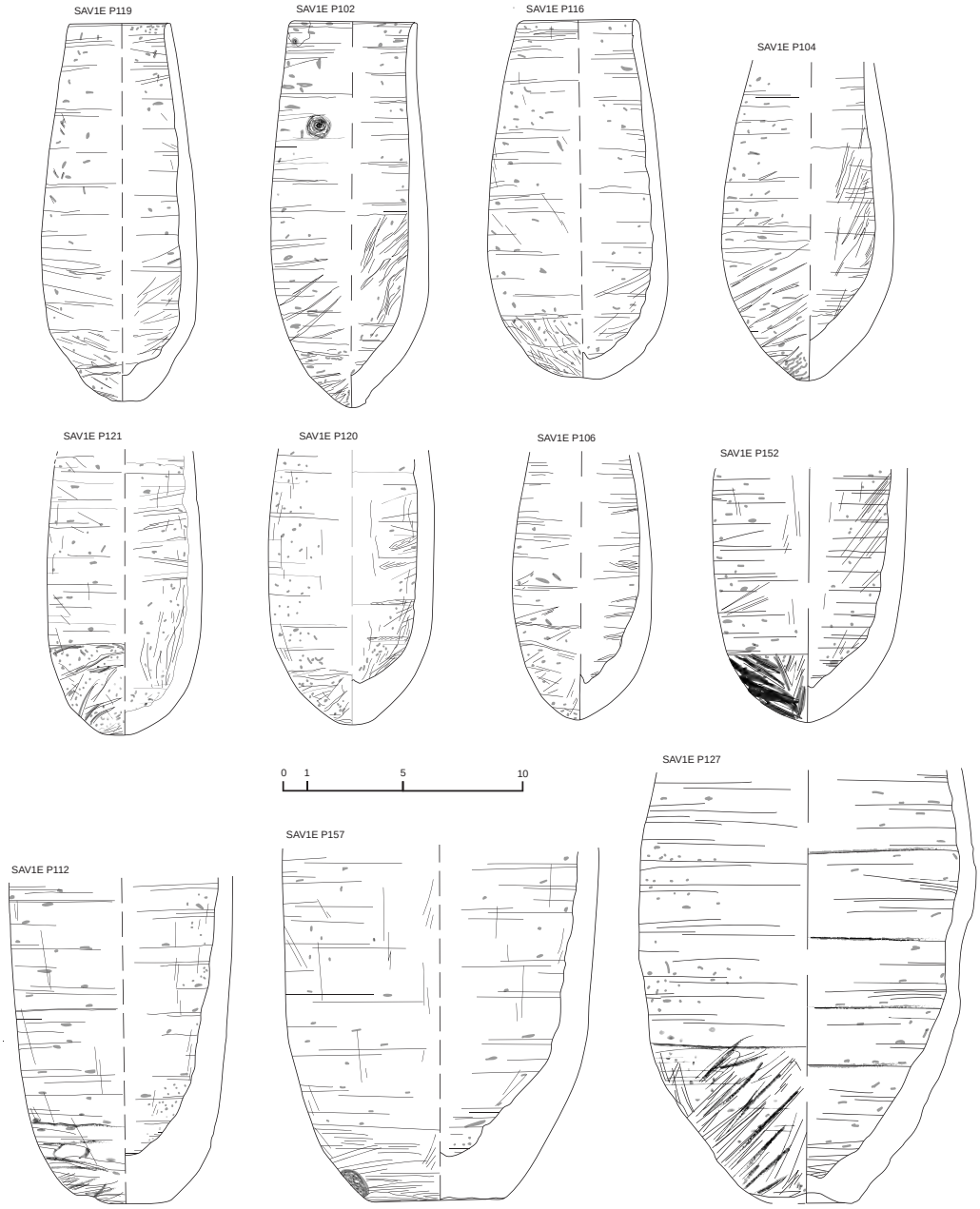

Fig. 80 Beakers from SAV1 East

depending on the rim and whether a hole in the base is attested or not. In general, flower pots seem to be more common at SAV1 East, being often associated with beer jars. Several complete examples were found in Feature 15.[746]

Beakers (Fig. 80)

A large number of complete or almost complete beakers were found at SAV1 East in Feature 15 (Fig. 80).[747] This group of vessels can be regarded as typical drinking vessel of the 18th Dynasty with a clear

[746] See Budka 2018d, 156, fig. 7 bottom.
[747] See Budka 2018g, fig. 5.

morphological evolution going back to the 13th Dynasty.[748] At Sai most common are tall beakers with direct rims (BK 1) which appear in various sizes and with rounded base (BK 1.1), with cut/trimmed base (BK 1.2) and also flat base (BK 1.3). This slender shape finds many parallels in Egypt, for example at Abydos, both from early 18th Dynasty contexts at South Abydos and from Umm el-Qaab.[749] Less common at Sai are beakers with inflected contour and a direct/everted rim (BK 2). All of the beakers from SAV1 East and SAV1 West were made in Nile clay variants; most of them seem to have been manufactured locally.

Carinated vessels (Fig. 81)

Carinated vessels are also known as squat jars and seem to imitate Levantine vessels, both in terms of shape and decoration.[750] This group of jars shows a large variety of shapes and is closely related to jugs with a globular body,[751] but the typical squat jar has a biconical or convex body.[752] The first appearance of these vessels, which are attested as either handleless, with a single vertical handle or with two transverse handles in Egypt and Nubia, has been dated to the early to mid-18th Dynasty (especially Hatshepsut/Thutmose III).[753] The jugs with a vertical handle are regarded as typical Thutmoside vessels.[754] The earliest squat jars of this type are made of Marl A2 clay and decorated with a vertical decoration and criss-cross patterns on the shoulders.[755] They are common burial gifts in Thutmoside tombs, both in Egypt and Nubia.[756]

Both Marl clay vessels (Fig. 81) as well as Nile clay squat jars that imitate Marl clay vessels are well-attested on Sai.[757] The Nile variants from Feature 15 are not decorated, but a large number of painted examples were documented from other sectors of the New Kingdom town of Sai, SAV1 East, SAV1 West and also SAV1 North.[758] The classification of the vessels mainly considers the form of the rim and neck. CV 1 comprise vessels with carination and a modelled rim. They are attested as short-necked (CV 1.1), broad-necked (CV 1.2) and narrow-necked (CV 1.3). An outer lip characterises CV 2. CV 3 carinated vessels show both an outer lip and handles. One well preserved, large squat jar was found in cellar Feature 115 at SAV1 West (SAV1W P233, Fig. 81 bottom). It seems to belong to the broad-necked type, but its upper part is lost. It has a characteristic rim base with a bulged base and can be dated to the mid-18th Dynasty. SAV1W P233 shows a typical vertical decoration. Other vertical decoration patterns include criss-crosses and seem to predate another pattern which is composed of horizontal bands.[759] Rim-tickings on top of the lips of squat jars, for which Rostislav Holthoer has collected the most common patterns, often complement the decoration on the body.[760]

748 Seiler 2005, 152.

749 Budka 2006, figs. 19.9 and 20.1 (South Abydos); Pumpenmeier 1998, fig. 23; Budka 2010c, 42, fig. 21 (both Umm el-Qaab).

750 See Amiran 1969, 187; Lakomy 2016, 167. Williams labelled them as "Pseudo-Import Jars", see Williams 1992, 40–42, figs. 7–8.

751 Labelled by Holthoer as "jugs and juglets", see Holthoer 1977, pls. 20–21. For this group, which is also attested on Sai, see most recently Lakomy 2016, 166–180 with references and parallels.

752 Williams 1992, 41. See also Holthoer 1977, pls. 30–32.

753 For a variety of vessels from Nubia and their diverse decoration patterns, see Holthoer 1977, 133–145. For early 18th Dynasty variants from Level 5 at SAV1 North, see Budka 2017i, 128, fig. 55.

754 See, e.g., Seiler 1992, 126, figs. 6–7.

755 See Rose 2018, 138. 40–42.

756 See Seiler 1992, 126 with references.

757 Two complete Marl clay squat jars were found at sector SAV1 North, see Miellé 2012, 180–181, figs. 5.1–2. For the rare appearance of decorated squat jars already in Levels 5 and 4 at SAV1 North, see Budka 2016a, 52; Budka 2017i, 128–129, fig. 55.

758 Budka 2018d, 152, fig. 3.

759 See Holthoer 1977, 133–134.

760 Holthoer 1977, pl. 14.

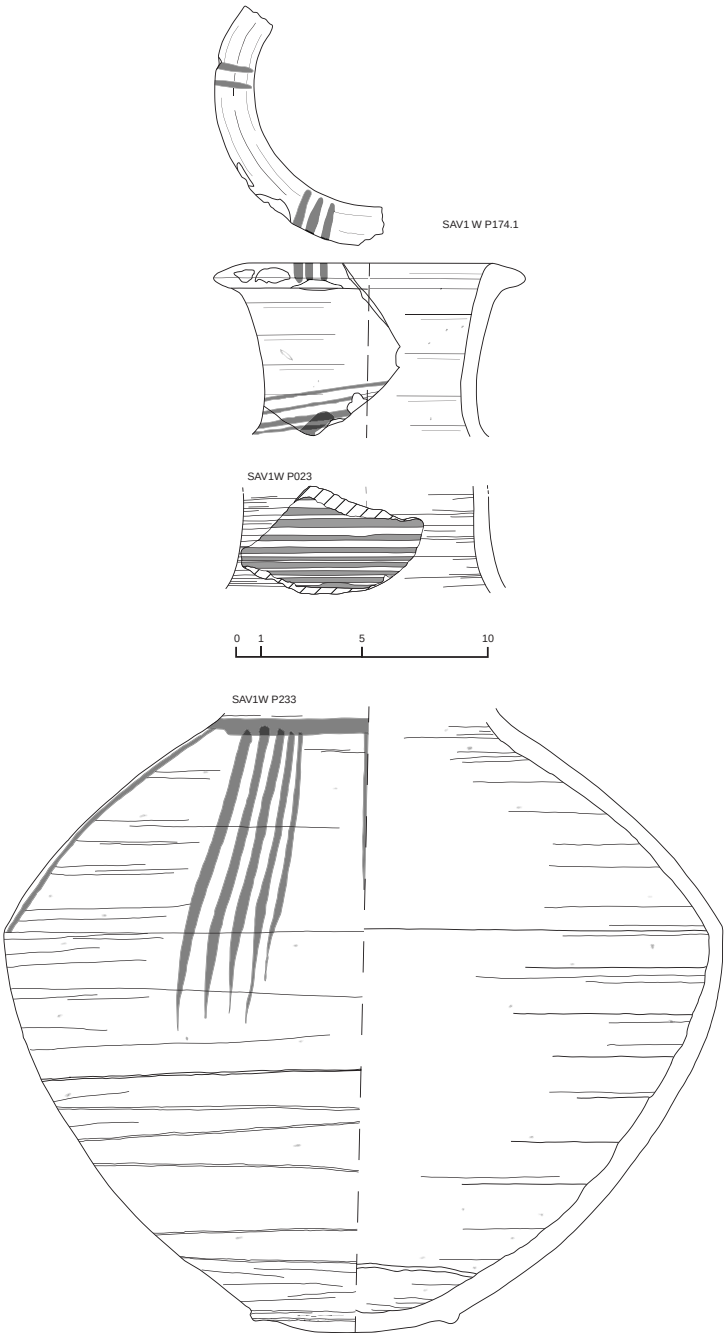

Fig. 81 Examples of carinated Marl clay vessels (squat jars) from SAV1 West

Jars (Fig. 82)

In general, the corpus of various jars is better illustrated by finds from tombs because of the complete state of preservation[761] – only rim fragments and base sherds were found at SAV1 East and SAV1 West. A large variety of different neck-shapes are attested within the category of jars (short-necked, tall-necked, neckless etc., see Fig. 82). Large *zir* vessels of a chaffy Nile C variant are characteristic of the early to

[761] Minault-Gout and Thill 2012; see also Williams 1992, 81–84.

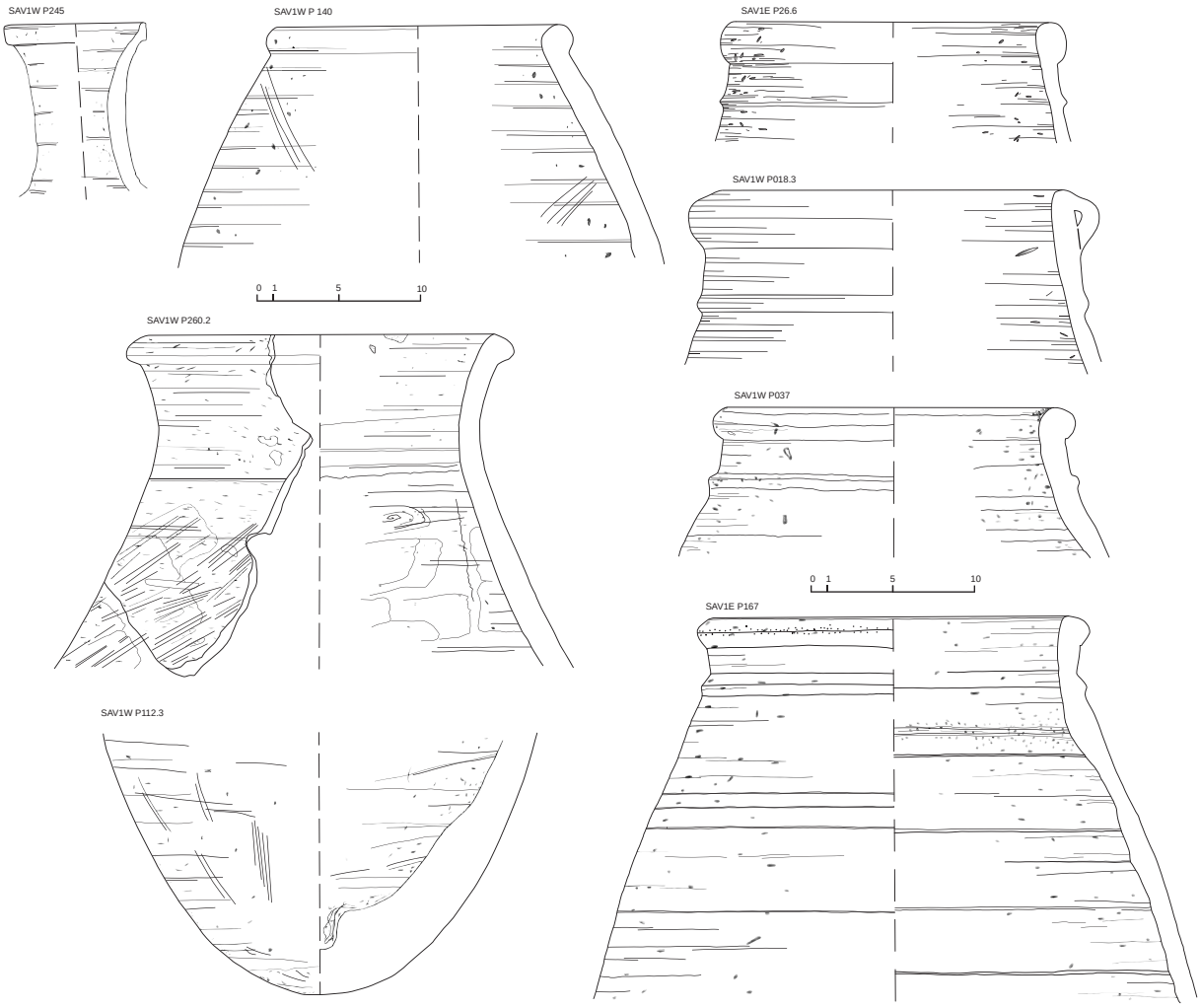

Fig. 82 Common types of jars from the New Kingdom town of Sai

mid-18th Dynasty and find close parallels at Elephantine (Fig. 82, e.g. SAV1E P167).[762] The same holds true for Marl clay variants of *zirs,* which are less common than the Nile clay ones.[763] However, one almost complete in situ ceramic vessel (0838/2015) from Cellar Feature 115 at SAV1 West is noteworthy. Unfortunately, only the body without neck and rim has survived, but it is clear that the vessel represents a typical mid-18th Dynasty *zir* in the specific Marl clay variant (Marl A4 variant 2 of the 18th Dynasty). A large number of these vessels were found still intact and sealed in Theban tombs[764] – one has to assume that the vessel reached Sai as a container full with provisions coming from Egypt. It might have been used for a certain time, possibly with diverse contents, before it ended up in Feature 115. The parallels from Thebes for vessel 0838/2015 support the general dating of Feature 115 to the mid-18th Dynasty (see Chapters 3.3.3 and 4.5). The upper part of a white-washed dense and hard-fired Nile variant of such a *zir* is represented by SAV1W P260.2 (Fig. 82).

Common jars from the early and mid-18th Dynasty are ovoid jars with tall or short necks and modelled rim.[765] During the late 18th Dynasty and the Ramesside period funnel necked jars are attested by

762 Budka 2011, 26 with references.

763 For the parallels from Elephantine and Abydos, see Seiler 1999, 217–219, fig. 51.3; Budka 2005a, 94–95; Budka 2006, 93–94.

764 See most recently Lakomy 2016, 195–198 with references and parallels.

765 For common 18th Dynasty jars, see Williams 1992, 37–40.

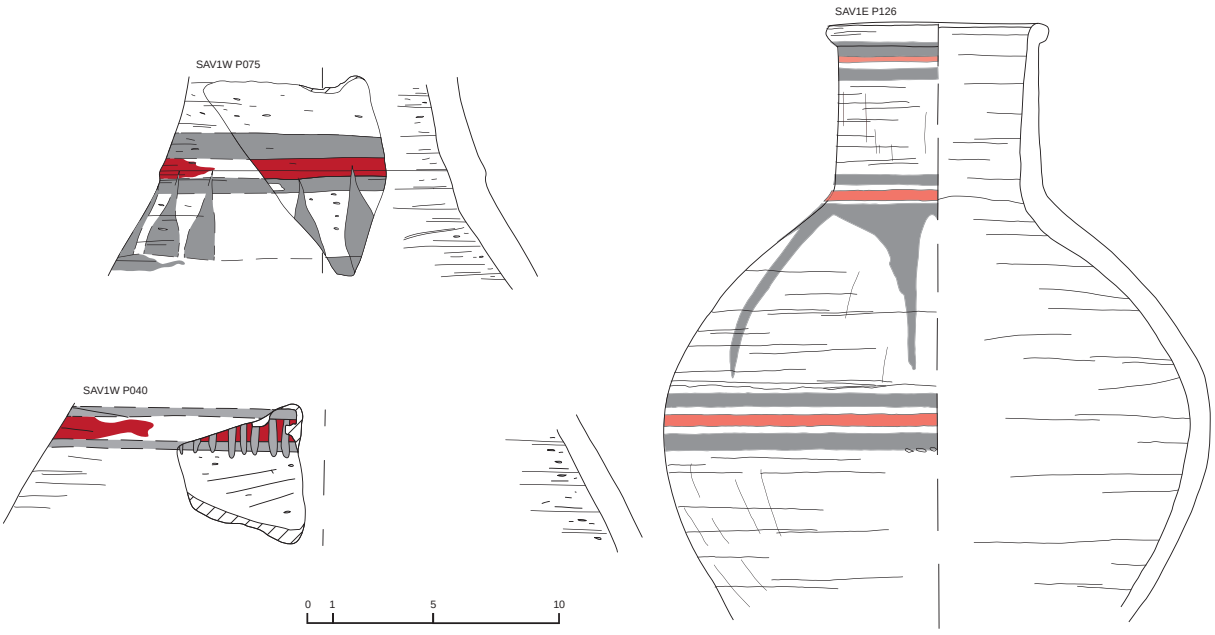

Fig. 83 Bichrome-painted vessels from SAV1 West and SAV1 East

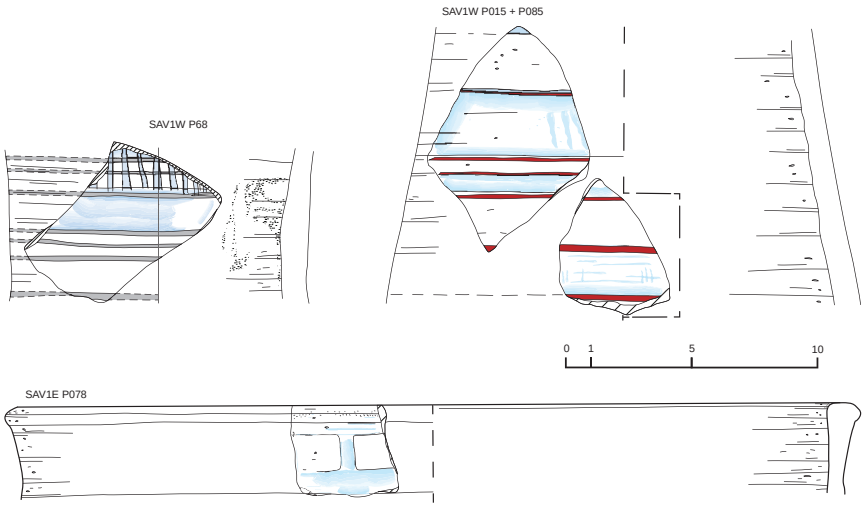

Fig. 84 Examples of blue-painted vessels from the New Kingdom town of Sai

rim fragments in small numbers.[766] A large group of bichrome-decorated necked jars from Sai that show linear and floral as well as figurative designs is of special interest. Such bichrome-painted vessels are well-attested at SAV1 West and also occur at SAV1 East (Fig. 83). Good parallels of mid-18th Dynasty date are known from Nubia at Dokki Gel,[767] but also from Askut, Buhen and Aniba.[768] The origin of these specific vessels is still an open question – on the basis of parallels, the area of Elephantine seemed likely,[769] but new finds from Dokki Gel suggest a local workshop in Upper Nubia as well.[770] Another category of painted closed forms is blue-painted pottery (Fig. 84), which is only rarely attested in Nu-

766 Cf. Williams 1992, 84, figs. 6f–h.
767 Ruffieux 2009, 124–126, figs. 3–5; Ruffieux 2016, 512–513, figs. 7–8.
768 See Budka 2015c with references.
769 Budka 2015c.
770 Personal communication Phillipe Ruffieux, May 2016.

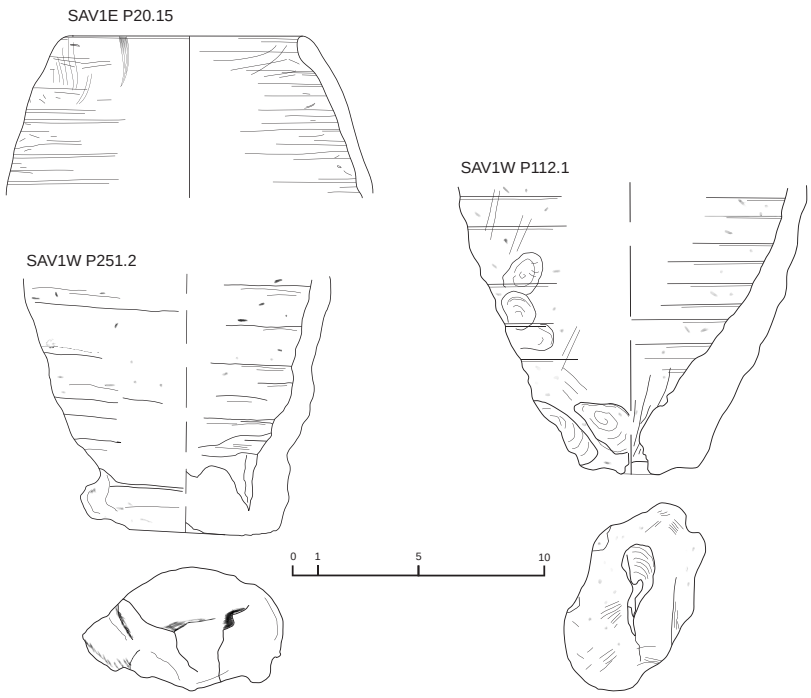

Fig. 85 Examples of beer jars from SAV1 West and SAV1 East

bia.[771] Some pieces from SAV1 West are made in Marl clay and date to the mid-18th Dynasty (Pl. 86); other blue-painted sherds in Nile clay already belong to the Ramesside period (see Fig. 84). Very few blue-painted sherds were documented from SAV1 East, including the interesting open form of SAV1E P078, a carinated bowl (Fig. 84 bottom).

Beer jars (Fig. 85)

Beer jars with an inverted or direct rim are, together with slender beakers of various sizes and types, typical settlement forms of the New Kingdom and well-attested on Sai and from Feature 15 at SAV1 East.[772] Several lower parts of beer jars with flat bases showing deep fingerprints and rim fragments were also found at SAV1 West. Most common are at both sectors Holthoer's BB2, the "Transitional Beer-Bottles".[773] These beer jars from Sai, labelled as BJ 01,[774] compare well to this type of vessel attested in 'Bauschicht' 10 and 9 at Elephantine and from early to mid-18th Dynasty levels at South Abydos.[775]

Stands (Fig. 86)

Pot stands are very numerous at both sectors within the New Kingdom town and vary from low to tall and occur in diverse sizes. They are attested as biconical, transitional and tubular stands with varying rim formats.[776] The stands at Sai are made primarily in Nile clays (Nile B2 and Nile C), but are also at-

771 E.g. at Aniba, Sai, Tombos, Dokki Gel and Amara West, cf. Spencer 2002, pl. 4; Budka 2011, 30. See also Holthoer 1977, pl. 33, FU1.
772 See Budka 2018g, 127, fig. 4.
773 Holthoer 1977, 86, pl. 18.
774 Also attested in cemetery SAC5, see Minault-Gout and Thill 2012, vol. 2, pl. 133.
775 See Budka 2005a, 95; Budka 2006, 88. The type is also attested at Thebes, see Lakomy 2016, 190.
776 Holthoer 1977, pl. 15. For Sai, see Budka 2018g, 124, fig. 1.

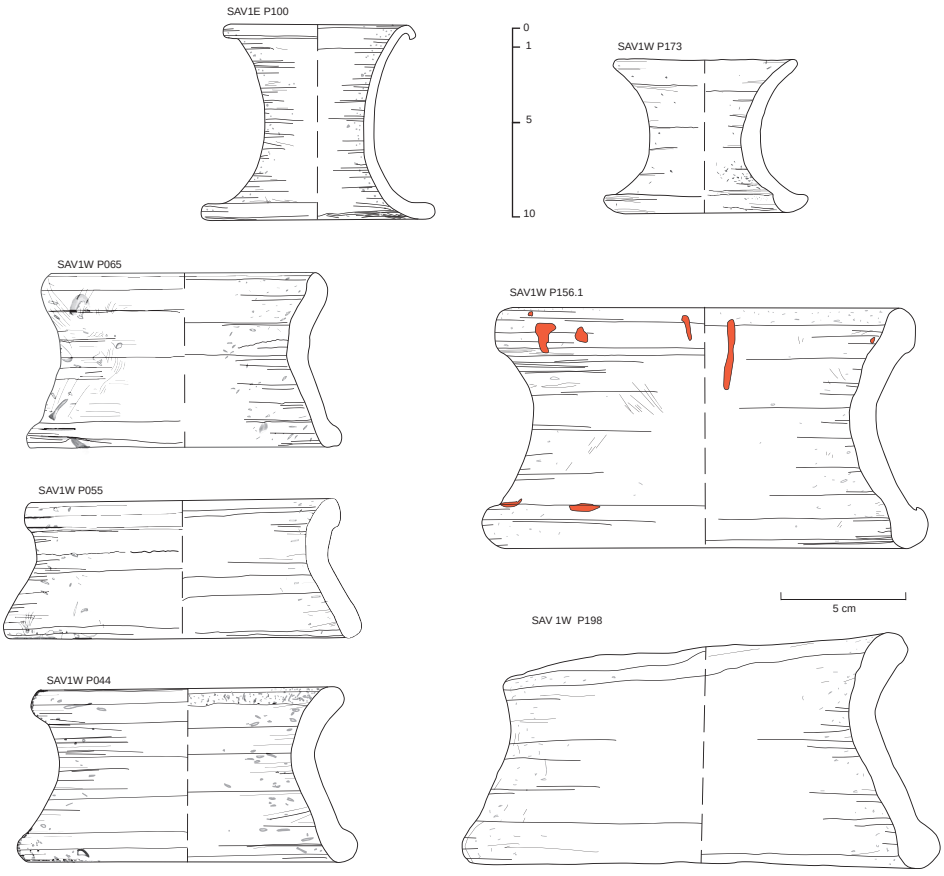

Fig. 86 Common types of stands from the New Kingdom town of Sai

tested in Marl clay (here especially in Marl B and Marl E).[777] Pot stands are very abundant at both SAV1 East and SAV1 West; they represent the New Kingdom pottery type which is most often preserved with its complete profile or even as complete vessel. Examples like SAV1W P198 with very irregular rims (Fig. 86 bottom right) nicely illustrate that pot stands were obviously used for a long time, until they were not functional anymore. At SAV1 West a considerable number of decorated pot stands was noted – very common is a black linear design on a red polished or red washed surface.[778] Also present are red splashes of paint on the exterior of pot stands (see, e.g., SAV1W P156.1, Fig. 86).

Tall stand with bowl/offering bowl (Fig. 87)

A common variant of a stand is a tall stand with an attached bowl – in other contexts, such pedestal bowls are well-known cultic vessels for burning incense.[779] At Sai, it is remarkable that these vessels were primarily found at SAV1 West. Very often they contained organic residues, likely to represent incense, e.g. SAV1W P063 (Fig. 87). They are often smoked inside the bowl and showed a white wash or slip. Such surface treatments are well known from non-funerary contexts like Amarna and Abydos.[780]

[777] For Buhen, see Emery, Smith and Millard 1979, pls. 70–71. For the small amount of stands from funerary contexts see Williams 1992, 88, figs. 10m–p; cf. also Wolf 1937, pl. 68 (cemetery S, Aniba).

[778] Cf. Holthoer 1977, pl. 15.

[779] See Budka 2006, 90–91, fig. 3 with references. Cf. also Smith 2003a, 130–131.

[780] Hulin 1984; Budka 2006, 91. See also Seiler 2005, 102–103, 120 for the ritual function of such burners.

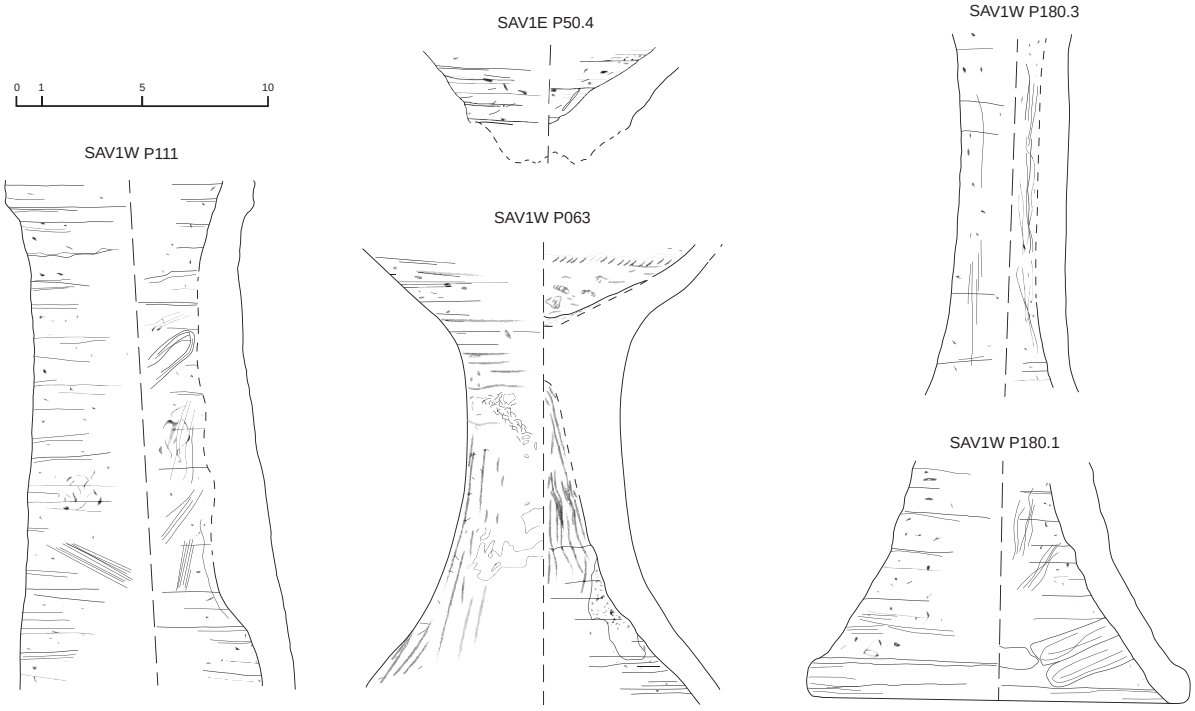

Fig. 87 Tall stands and pedestal bowls from the New Kingdom town of Sai

Within the bowls, incised wavy lines are found quite often (cf. Fig. 76 with a short foot).[781] In Nubia, comparable pedestal bowls/burners were found at Askut[782] and Dokki Gel.[783]

Lids

Various types of lids were recorded from SAV1 East and SAV1 West. A sub-group which will be addressed in the category of small finds are re-cut sherds (see Chapter 4.3). Other typical lids are small dishes of mostly simple shape and a flat base. Sometimes round-based lids also occur. Most of the lids were made in various variants of Nile B and C. In some cases it is not possible to identify whether very simple dishes of small scale were used as miniature vessel or as lid. This holds true for SAV1E P002, which is a surface find from Square 1 (Fig. 88).

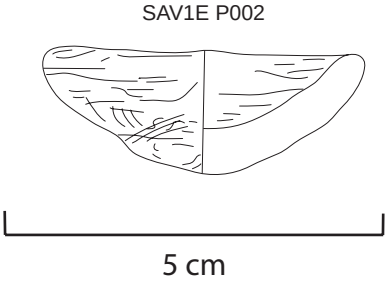

Fig. 88 Miniature vessel or lid SAV1E P002

Fire dogs (Fig. 89, Pl. 87)

Within the pottery corpus from SAV1 North, specific Egyptian ceramic devices, the so-called fire dogs, were found in considerable quantities.[784] Interestingly, these functional vessels, thought to be connected with the preparation of food,[785] were only present in small numbers at SAV1 East, here mostly in surface layers (four pieces in 2013). However, one fragment of a fire dog was discovered

781 Cf. Brunton 1930, pls. XXVI.39–40; see also Budka 2011, 29.
782 Smith 2003a, 130–131, fig. 5.28.
783 Ruffieux 2005, 266, nos. 13, 14 and 16–17.
784 See Budka 2017i, 138–139.
785 See Aston 1989; Giddy 1999, 250–253; Budka 2012, 60–61, figs. 9–10; Budka 2017i, 138–139.

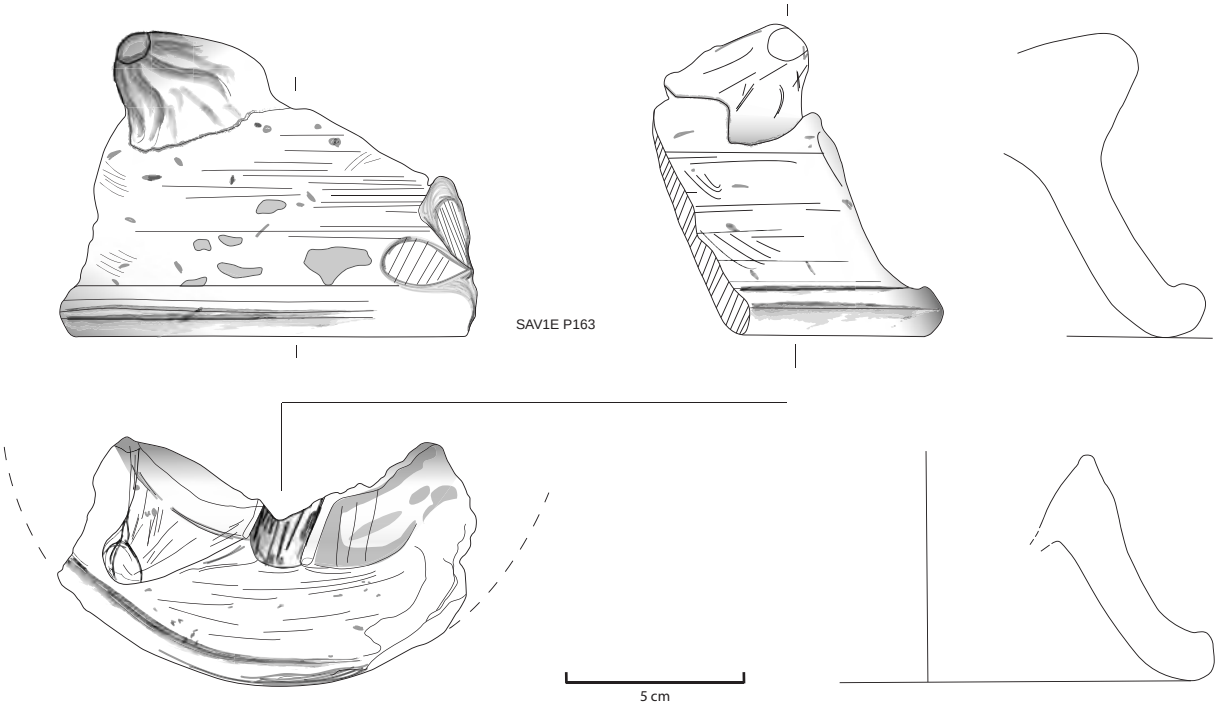

Fig. 89 Fire dog SAV1E P163 from Feature 15

SAV1W P	Find no.	SQ	SU	Label	State of preservation	Ware
14.1	743/2014	1	507	fire dog	ear	B2UC
14.2	743/2014	1	507	fire dog	ear	B2UC
14.3	743/2014	1	507	fire dog	base fragment	B2UC
14.4	743/2014	1	507	fire dog	base fragment	B2UC
15.1	500/2014	1	500	fire dog	ear	B2UC
15.2	500/2014	1	500	fire dog	ear	B2UC
15.3	500/2014	1	500	fire dog	snout	B2UC
15.4	500/2014	1	500	fire dog	base fragment	B2UC
29	1320/2014	1	572	fire dog	ear	C2UC
30	1178/2014	1	551	fire dog	base fragment	C2UC
32.1	1333/2014	1	584	fire dog	base fragment	C2UC
32.2	1333/2014	1	584	fire dog	base fragment	C2UC
64.2	1258/2014	1	565	fire dog	ear	Nile B2localUC
80.1	1358/2014	1	587	fire dog	base fragment	C2chaffy local UC
80.2	1358/2014	1	587	fire dog	ear	C2UC
89	1122/2014	1	548	fire dog	base fragment	B2UC
95	1334/2014	1	585	fire dog	base fragment	C2UC
102.1	593/2014	1	507	fire dog	base fragment	C2UC
102.2	593/2014	1	507	fire dog	base fragment	C2UC
102.3	593/2014	1	507	fire dog	base fragment	C2UC
102.4	593/2014	1	507	fire dog	ear	C2UC

Tab. 17 Fire dogs from Square 1, SAV1 West (2014 season)

in the filling of Feature 15 (Fig. 89). At SAV1 West, by contrast, a quite considerable number was found – not as many as at SAV1 North, but clearly more than in comparable layers at Elephantine. Especially interesting were 21 fragments of fire dogs which were all found in Square 1 at SAV1 West in 2014 (Tab. 17).

All fire dogs are made in a chaffy Nile clay; at least two pieces were clearly made locally (SAV1W P64.2 and 80.1). Four pieces derive from the surface layer (SU 500), eight fragments were found in the debris layer SU 507. In general, the distribution of fire dogs at SAV1 West can be well compared to SAV1 North.

Until now, Sai is the only New Kingdom site in Upper Nubia where fire dogs were found. However, large quantities of these objects were discovered at Buhen; there, the fire dogs were thought not to be associated with cooking but rather with copper production processes.[786] At present, the precise function of the fire dogs at Sai must remain open – a multi-functional use might explain the large numbers from sectors SAV1 North and SAV1 West at Sai. The finding of a SAV1E P163 (Fig. 89) in Feature 15, however, would rather conform to a connection with cooking since much burnt material, charcoal and ashes were found in this cellar (see Chapter 3.2.2).

Spinning bowls (Fig. 90)

Spinning bowls (dishes with two handles attached to the interior of the base)[787] are only known from SAV1 West and are absent at SAV1 East.[788] These functional bowls were primarily produced on site in local Nile clay fabrics as is illustrated by SAV1W P201 (Fig. 90); this is comparable to evidence at Sesebi and Buhen.[789] A pottery manufacture meeting the local demand at Sai is therefore likely, similar to, e.g., the workmen's village at Amarna.[790]

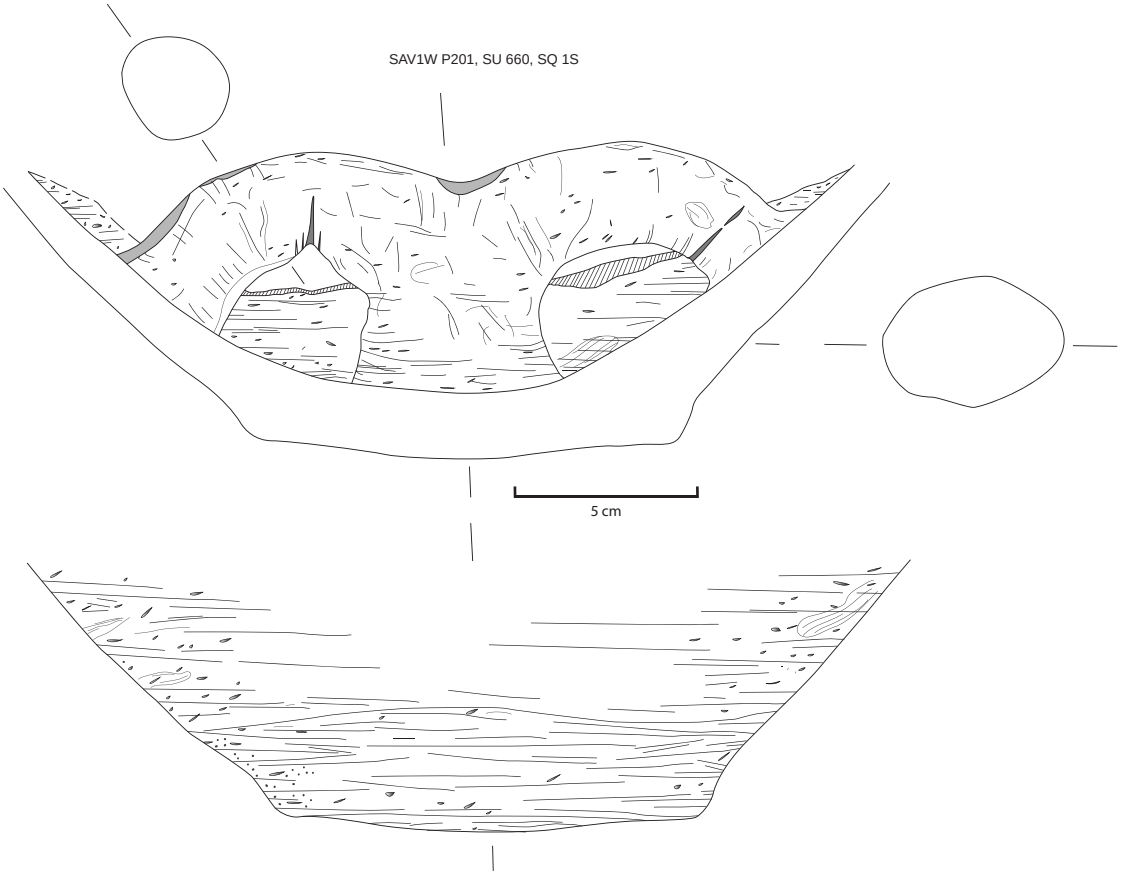

Fig. 90 Base of a Nile clay spinning bowl from SAV1 West (SAV1W P201)

786 Millard 1979, 123–126, pls. 43, 103.
787 See Rose 2007, 60–61, SD 6, 202–203.
788 Spinning bowls comparable to SAV1 West were found at SAV1 North, see Budka 2017i, 137.
789 Sesebi: Rose 2018, 142; Buhen: Emery, Smith and Millard 1979, pl. 68, nos. 143–144 and 148.
790 Cf. Rose 2007, 60; Budka 2018d, 162.

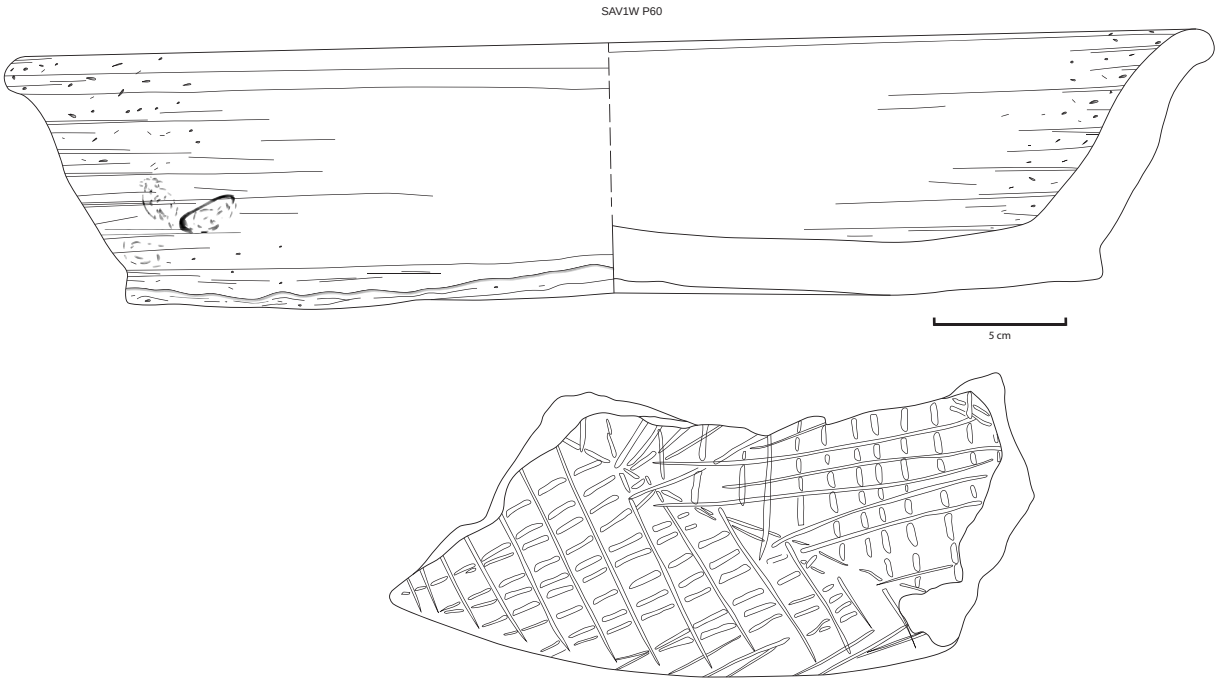

Fig. 91 Marl clay fish bowl from SAV1 West (SAV1W P60)

Fish bowls (Fig. 91)

The so-called *Schaelbecken* or fish bowls[791] illustrate that utilitarian shapes were both directly imported from Egypt and also locally produced. At Sai, these large, thick-walled trays with an oval-shape and incised geometric pattern on the interior occur both in Egyptian Marl E (e.g. SAV1W P60, Fig. 91) and in local Nile clay variants – the shapes and decoration patterns are in both cases the same.[792]

Cooking pots (Figs. 92–93)

At SAV1 East and SAV1 West, imported, authentic Egyptian wheel-made cooking pots[793] are attested as contemporaneous with Nubian-style cooking pots (hand-made with basketry impression or incised decoration).[794] The analysis of the fabrics revealed that these cooking pots are mostly imports from Egypt, but that there are also local variants.[795] Within the form class of Egyptian cooking pots attested from SAV1 East and SAV1 West, four individual types can be differentiated according to morphological details,[796] all of which find close parallels at Elephantine.[797] Further variants regarding the size, carination and details of the rim shape are attested throughout the class; the rim gradually becomes more pronounced and the folded rim or lip is a late morphological feature within this series of cooking pots.

SAV1E P179 illustrates an imported Egyptian cooking pot which was found in the context of a small installation with lots of ash and traces of burning (SU 452). It can be safely dated to the early to mid-18th Dynasty (Fig. 92).

791 This type of vessel is especially well-known in Marl C variants from the Middle Kingdom and Second Intermediate Period; see, most recently, Bietak and Bader 2015; Allen 2017.

792 See Budka and Doyen 2013, 191; cf. also Bader 2016 and Budka 2017i, 137, fig. 62. For SAV1 North, see also Miellé 2012, 178–179, fig. 4.2.

793 Budka 2011, 26; Budka 2012, 60; Budka and Doyen 2013, 196, fig. 26.

794 Budka and Doyen 2013, 197, fig. 27.

795 Cf. D'Ercole and Sterba 2018.

796 Budka 2016c.

797 See Seiler 1999, 223, fig. 53; Budka 2016c; Budka 2018d, 162.

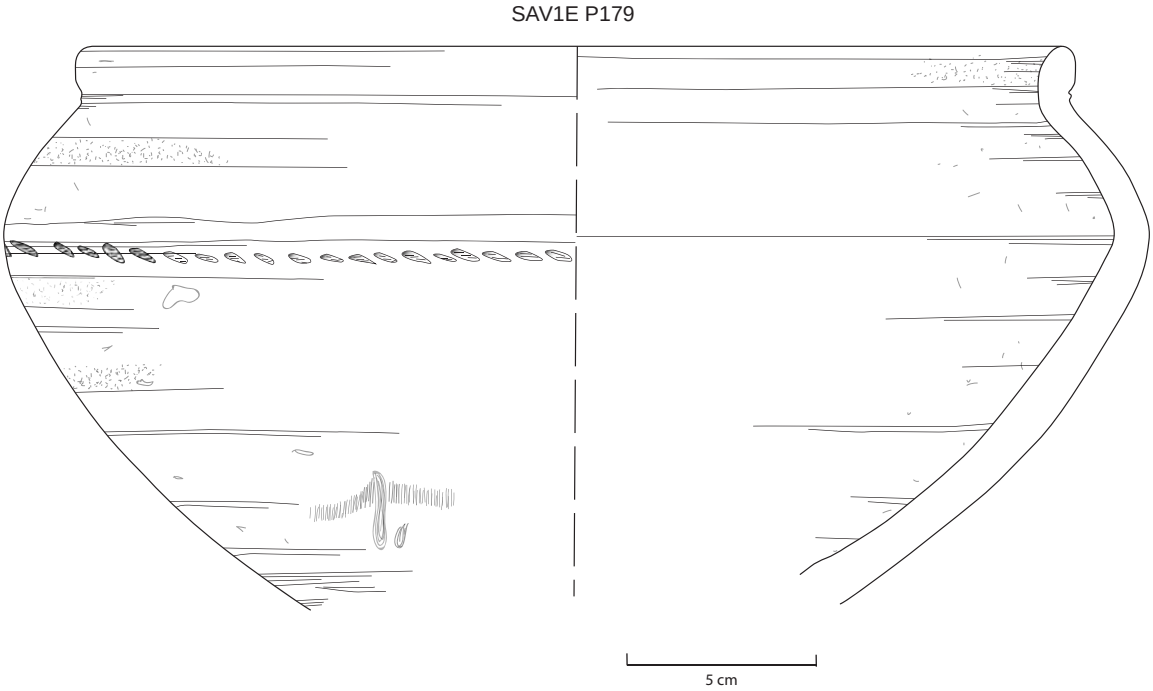

Fig. 92 Example of Egyptian cooking pot (SAV1E P179)

From SU 507 at SAV1 West, a thick, sandy debris layer which was very rich in pottery, a group of cooking pots was documented (Fig. 93). These vessels cover the time from the early to late 18th Dynasty. SAV1W P012.2 and P012.3 belong to the early type and are manufactured in local, chaffy Nile clay variants. SAV1W P 012.1 is made in a sandy Nile clay B2 variant and was imported from Egypt. SAV1W P012.4 illustrates the significant morphological change of cooking pots at the end of the 18th Dynasty – it represents a carinated cooking vessel which dominated the corpus in the late New Kingdom.[798] This vessel was probably produced locally in a Nile B2 variant.

Bread plates and bread moulds (Figs. 94–95)

Bread plates of different sizes are frequent at both sectors and usually made in Nile C (Fig. 94). One in situ evidence at SAV1 East is noteworthy. In Square 4C, associated with Feature 63, a large baking plate was found still in place (SAV1E 889/2016, Fig. 95). It was situated close to a mud brick wall, sitting on a very ashy deposit (see above, Fig. 31). This baking area was most probably located in an open-air zone of one of the domestic buildings associated with the early building phase at SAV1 East (see Chapter 3.2.2).

Conical bread moulds, belonging to Helen Jacquet's Type D (Fig. 94 top left),[799] appear only in very small numbers within the domestic contexts of Sai.[800] The only exception is sector SAV1 East, where they were found in considerable quantities and are probably connected with the temple cult of nearby Temple A.[801]

798 See Budka 2005a, 105 with references.
799 Jacquet-Gordon 1981, 18, fig. 5; see also Rose 2007, HC 2, 288.
800 Budka 2017i.
801 Budka 2015c; Budka 2017g.

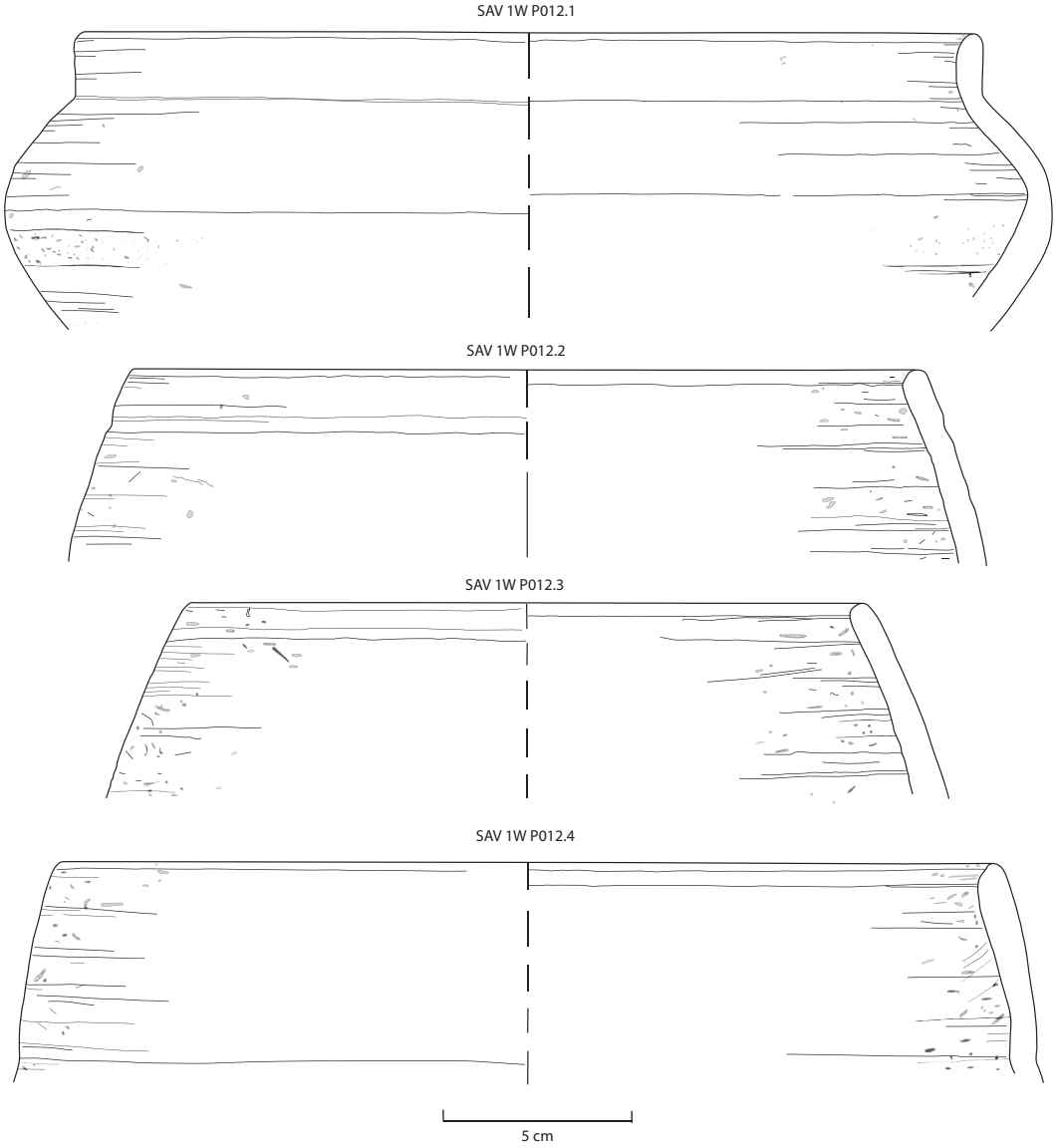

Fig. 93 Selection of Egyptian cooking pots (SAV1W P012.1–4)

Nubian vessels

Native Nubian hand-made pottery vessels are present in all levels and all sectors within the New Kingdom town.[802] These ceramics comprise primarily cooking pots with basketry impression and sometimes incised decoration (Fig. 71), but also fine wares of Kerma style (black-topped cups, dishes and beakers) (see Fig. 71 top). All in all, the hand-made Nubian ceramics from SAV1 East and SAV1 West cover a large spectrum of types and wares, not only cooking pots, but also storage vessels and fine wares.

Interestingly, within the fine ware none of the burnished Kerma vessels shows the silvery band characteristic of Kerma Classique productions,[803] corresponding to the evidence from early 18th Dynasty levels at the town of Sesebi.[804] Nubian storage vessels from the New Kingdom town of Sai generally

802 See Budka 2018d.
803 Gratien 1978, 210.
804 Rose 2017, 466. See also Budka 2018d, 151.

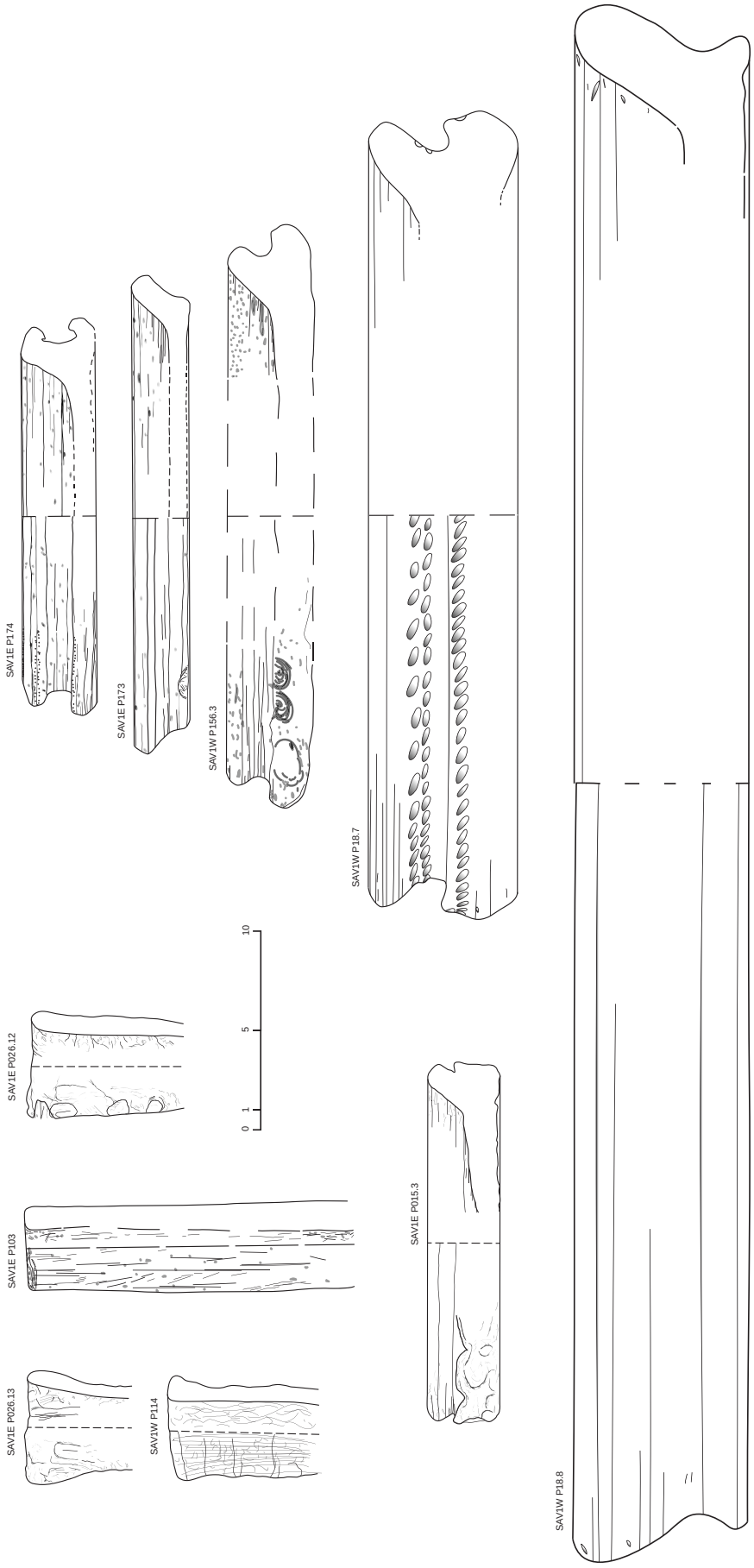

Fig. 94 Bread plates and bread moulds from the New Kingdom town of Sai

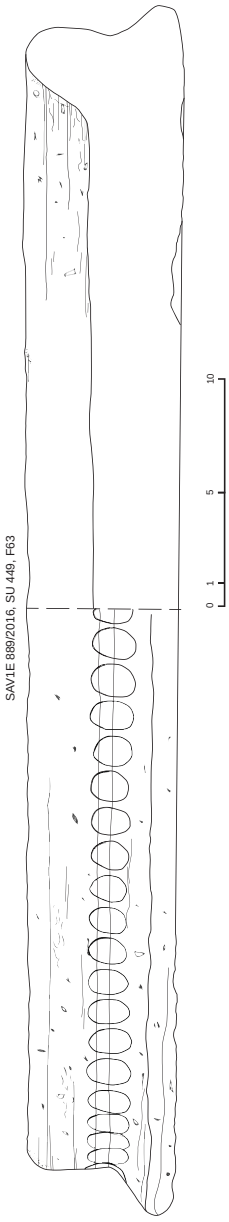

Fig. 95 Baking plate from Feature 63 at SAV1 East (SAV1E 889/2016)

have a larger capacity than Egyptian vessels and often show traces of repair. This is nicely illustrated by the almost complete vessel N/C 650 with four repair holes found at SAV1 North.[805]

Hybrid vessels (Fig. 96)

Some Nile clay pottery vessels from Sai were modelled on Egyptian types but were locally produced and this sometimes with a 'Nubian' influence as far as the surface treatment, production technique or decoration are concerned.[806] For example, SAV1E P20.16 is a typical Egyptian neckless jar fragment with a folded rim (Fig. 96). It was wheel-thrown, but is rather thick-walled. Its surface treatment is not of Egyptian-style – the outer surface has red horizontal burnishing lines, somehow reminiscent of Nubian burnishing of handmade jars/vessels. A similar example is SAV1E P046a, which was found close to Feature 27 (Fig. 96). It is the rim fragment of a large globular jar, again wheel-made and produced from a local, chaffy Nile clay. Its surface treatment, showing a vertical ripple-burnishing on the outside, is similar to Nubian finishing techniques.[807]

In general, the appearance of such hybrid types – Egyptian types made of Nubian fabrics, shaped by hand or with a Nubian surface treatment like ripple-burnishing and incised decoration – is very significant for the 'cultural entanglement' on Sai, but not forthright to explain (see Chapter 8). Influences of the Nubian tradition can also be traced for the decoration of Egyptian types. This does not only apply to the situation on Sai – Teodozija Rzeuska has proposed convincingly that Marl jars with incised decoration attested in Egyptian contexts since the Middle Kingdom reflect Nubian decoration patterns.[808] Such

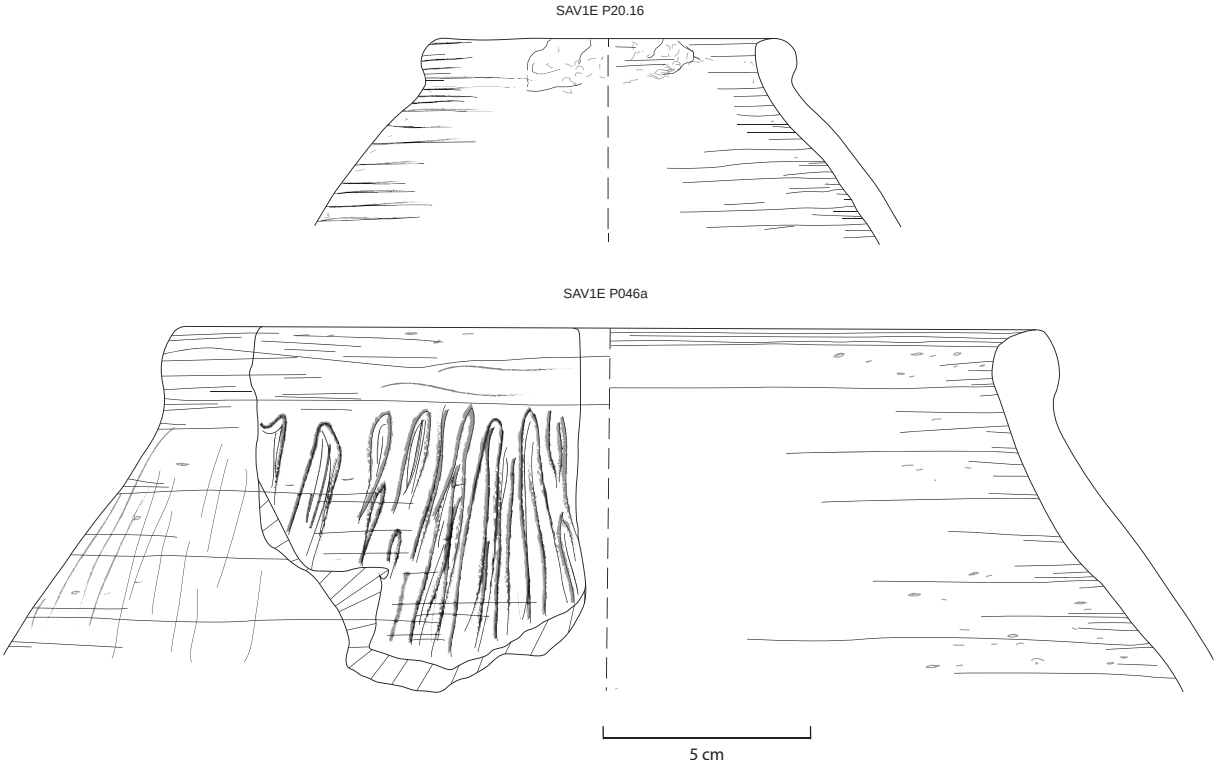

Fig. 96 Hybrid vessels from SAV1 East (SAV1E P20.16 and P46a)

805 Budka 2011, 27; Budka 2018d, 151, fig. 2.

806 Budka 2018d, 163–164.

807 A local production of SAV1E P046a is undisputed but the vessel remains somehow unclear in its date – Feature 27 is associated with Ottoman or even recent activities; the contexts in this area of SAV1 East were very mixed and disturbed. The angular rim and size of the jar are unusual for Egyptian New Kingdom vessels.

808 Rzeuska 2010. For Sai, see also Miellé 2014.

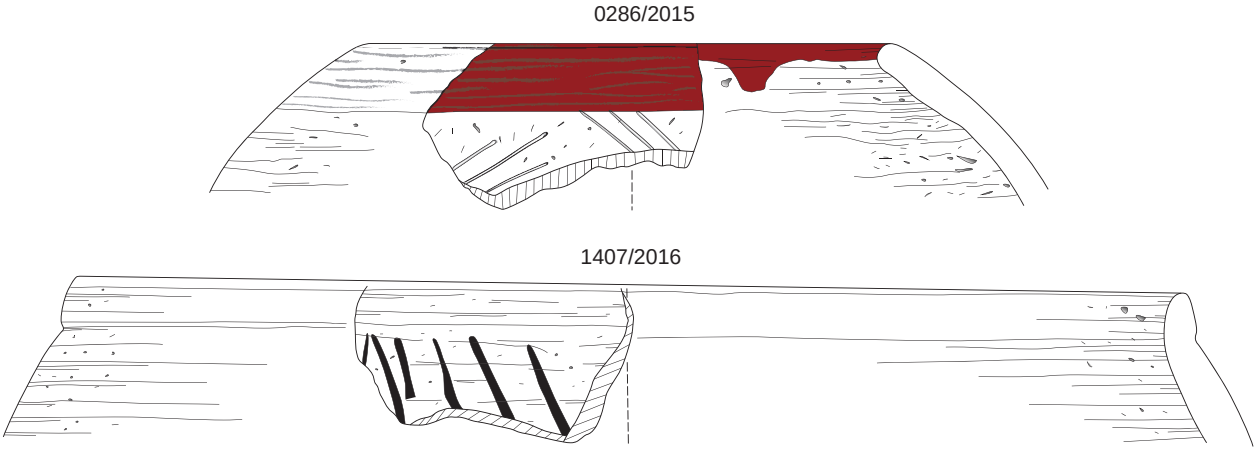

Fig. 97 Example of distinctive Nubian and Egyptian cooking pots from SAV1 West (SAV1W 0286/2015 and 1407/2016)

Marl B and especially Marl A3 storage vessels continue well into the Second Intermediate Period and also the early 18th Dynasty. They are common on Sai, especially at sectors SAV1 North and SAV1 East, preferably showing incised wavy lines.[809] Such a preference for wavy lines can also be found on open decorated shapes like carinated bowls (see Figs. 76–78) and is traceable until the late 18th Dynasty, also as painted decoration.[810] Similar to the triangular decoration of deep bowls mentioned above, it would require further research whether such decorative patterns are really of a local, Nubian character.

Good examples of so-called hybrid vessels with adaptations of Nubian decoration are wheel-made imitations of Nubian cooking pots with red rims and incised decoration found in considerable numbers at Elephantine. These have been labelled as Medjay-imitations by Dietrich Raue.[811] Although of different shape, these vessels combine a Nubian surface treatment with the Egyptian production technique as well as the use of Egyptian Nile clay. Within the large corpus of ceramics from Sai only two sherds were recovered from SAV1 West which are in some aspects related to this large group of 'hybrid cooking pots' from Elephantine (Fig. 97). The Nubian cooking pot SAV1W 0286/2015 has an Egyptian-like red rim, but a Nubian incised decoration, comparable to pieces from Elephantine. The rim fragment SAV1W 1407/2016 derives from an Egyptian cooking pot which was imported to Sai (see above). What makes this piece unique and maybe relevant within the sphere of hybridity is a charcoal drawing of diagonal lines on the sherds. These lines seem to imitate incised decoration on this Egyptian type of vessel.

4.3 Small finds[812]

by Julia Budka

As supplement to the overview of find categories (Chapter 4.1), examples of small finds clearly datable to the New Kingdom will be presented here. All in all, the database of finds from the New Kingdom town comprises 4,812 objects from both SAV1 East and SAV1 West.[813] 536 objects are clearly of a Post-New Kingdom date; the majority of the remaining *c.* 4,000 finds are likely to be of New Kingdom date. 242 pieces remain of unclear date. Four palaeolithic stone artefacts were found at SAV1 West (see

809 Budka 2017i, 148, fig. 77, N/C 1182.
810 Smith 1995, fig. 6.14; Rose 2017, fig. 1.4; Budka 2018g, 112. For painted wares from SAV1 North, see also Miellé 2012, 183–187.
811 Raue 2017. See also Budka 2018d, 158.
812 The following is based on the database entries; these were composed (in chronological order) by Nathalie Bozet, Julia D. Preisigke, Nicole Mosiniak, Kenneth Griffith, Meg Gundlach and Veronica Hinterhuber.
813 In addition, the database comprises ten objects from SAV1 Northeast; see above.

Chapter 4.4.1). The selected pieces will be presented in the following according to excavation area, illustrating both similarities and differences between SAV1 East and SAV1 West.

4.3.1 SAV1 East

All together 2,977 objects were found and registered between 2013 and 2017 from sector SAV1 East. A considerable amount (441 pieces) originates from Feature 15, which will be published elsewhere and is not discussed in the following.[814]

Scarab

Only one scarab was found at SAV1 East, thankfully within a well stratified context. SAV1E 1595 (Fig. 98) comes from SU 377 in Square 4B, datable to the early to mid-18th Dynasty (see Chapter 3.2.2). It is a small ovoid steatite scarab (16 × 12 × 5mm) with one horizontal perforation through the body (diam. 2mm). The scarab beetle itself was hacked off, leaving just the decoration on the back. The decoration on the back is surrounded by an incised band. Within this, a crudely carved winged cobra, perhaps wearing the Red Crown, holds a *shen*-ring with her talons. In front of this is an empty cartouche topped by several indistinct hieroglyphs, perhaps to be interpreted as including *nṯr-nfr nb-tꜣ.wj* (the Good God, Lord of the Two Lands).

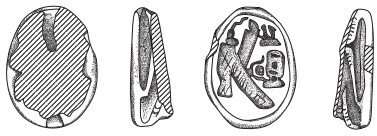

Fig. 98 SAV1E 1595, scarab. Scale 1:1

Jewellery

Five amulets of presumed New Kingdom date were found in sector SAV1 East (cf. Fig. 56). These are three in faience, one in steatite and one in ivory/tooth.

SAV1E 0294 is a frog amulet in light blue faience (Fig. 99). It was found intact, is very small in size (8 × 4 × 3.8mm) and finely worked as frog-scaraboid.[815] The lower base is oval-shaped; there is one horizontal perforation through the body (diam. 1mm). This small faience amulet came up while cleaning around Feature 28, the stone foundation in Square 2B which might be the extension of Feature 57 (see Chapter 3.2.4, Plan 1). Unfortunately, the archaeological context – found in dense mud debris with mixed ceramic material, filling material of the depression south of Feature 28 – does not provide any clue for dating. In Ancient Egypt, frogs were primarily associated with fertility and birth – they are common amulets used during a long time span, both for the living and in funerary contexts.[816]

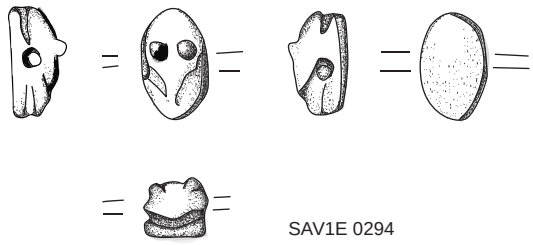

Fig. 99 SAV1E 0294, frog amulet. Scale 2:1

SAV1E 0531 is another small faience amulet (12 × 4 × 9mm), light blue in colour (Fig. 56). Two suspension holes pierce the amulet horizontally. The design of the amulet is unclear, although it may be a floral motif or a shell. The next amulet in blue faience, SAV1E 2852, is shaped like a pomegranate seed (5 × 5 × 13mm). Its colour is 5.0BG8/2 (Ice Blue). On the back side the surface is flat. Pendants like this are well known from examples in carnelian[817] and occur in faience at Amarna.[818]

814 Budka forthcoming b.
815 See Budka 2013b.
816 For a recent re-assessment of the symbolism of frogs in Ancient Egypt, see Kremler 2012.
817 For example in New Kingdom tombs on Sai at SAC5, see Minault-Gout and Thill 2012, vol. 2, pl. 120, T1P5, T20Ca103.
818 Kemp and Stevens 2010b, 80, fig. 10.5.

SAV1E 2730 is a small piece of worked steatite (7 × 12 × 25mm), perhaps an amulet (Fig. 100). It is broken at one end and this broken end has traces of what might be a suspension hole, indicating that the piece was worn. Traces of an unclear incised decoration were documented.

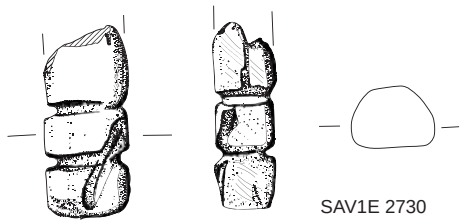

Fig. 100 Worked steatite, possibly an amulet (SAV1E 2730). Scale 1:1

SAV1E 0971 is a nearly intact, small (25 × 5–11 × 3–7mm), finely worked amulet of ivory or tooth (hippopotamus tooth?) of unclear shape and date (Fig. 56). One very small part is broken away where there was once a horizontal perforation (diam. 02–03mm) through the middle of the body. The shape is uncertain, possibly this amulet represents a figurine, maybe there is the indication of an arm at the right side; at the opposite edge there are three short incised lines. The base of the object is half-disc shaped and at the base there are fine incised lines of which two are building a cross (not directly central) and one is a short line at one side. The top part is not exactly worked; at each side of the 'head' there is a small hollow/beginning of a perforation. This could indicate that the object was not finished.

100 beads were found at sector SAV1 East (see Figs. 54–55). These are of diverse materials: bone (9); bronze (1); fired clay (9); unfired clay (2); glass (6); shell (3); stone (4) and faience (65). The material of one bead remained uncertain. The beads are mostly ring beads (faience, shell, stone, glass), also circular/ball-shaped (glass, faience, stone, clay), tubular (clay, faience), cylindrical bead (clay) and spherical (clay). SAV1E 2783 represents a small blue faience ring bead, with fluted outer edge. SAV1E 2768 is a small faience tube bead, with one original and one broken end. The remainder is divided by two narrow areas, causing it to resemble three adjoining spherical beads.

A single faience finger ring was found at SAV1 East. SAV1E 2882 is a bezel with a wedjat-eye as the central element (Fig. 57, Pl. 77).[819] Though the wedjat-eye is quite well preserved, the body of the ring is represented by only a short piece on the left side. The wedjat appears to have been moulded as a separate piece from the rest of the ring, though the front is nicely smoothed; the connection points can be clearly seen on the interior. Wedjat-eye ring bezels are "the most popular ring design at Amarna"[820] where faience rings like SAV1E 2882 were very common. Based on these parallels, SAV1E 2882 can clearly be dated to the 18th Dynasty.

SAV1E 2729 (Fig. 57, Pl. 78) also belongs to the category jewellery. This small fragment is probably part of a finely produced faience earring.[821] While only half of the ring has survived, it is clear that it is only broken at one end. The other end is finished, with a small notch nearby for attaching the ring in place. The exterior circumference of the ring is decorated with small serrated nodules.

Another piece of personal adornment is SAV1E 2967 (Fig. 57). This fragment of an arched faience object is most probably a badly deteriorated bracelet. Areas of pale blue glaze remain at the edges, but most has faded to white.

Seal impressions

221 clay seal impressions were discovered at SAV1 East and all derive from Feature 15, which will be presented in detail elsewhere.[822] These sealings comprise a large number of royal names (Amenhotep I, Hatshepsut and Thutmose III), a seal of the viceroy Nehy (see Chapter 6.4.1.2) and various floral deco-

[819] Gundlach 2017b.
[820] Kemp and Stevens 2010b, 119.
[821] For similar examples in stone from SAC5 on Sai, see Minault-Gout and Thill 2012, vol. 2, pl. 121C. For faience ear or hair rings from Amarna, see Kemp and Stevens 2010b, 130–132.
[822] Budka forthcoming b.

rations in a style typical for the Second Intermediate Period.[823] Some of these sealings might have been used on papyri,[824] while the majority probably sealed bags and boxes.

Stamps/seal-amulets

Two pieces of stamps/seals or seal-amulets were found at SAV1 East (Fig. 61). SAV1E 1089 derived from Square 3, SU 095 and represents an intact but very badly preserved stamp of fired clay. The surface of the stamp with a rather cuboid body measures 19 × 16mm and the rectangular side has the inscription/signs (the section is rather trapezoid-shaped). The visible signs on the top side are very unclear, most probably they represent a floral or abstract motif. This stamp field is perforated through the width (diam. 03–04mm); nearly all five sides are decorated with incised lines in different patterns which form unclear motifs (if any).

The second stamp was found at Square 4B in SU 451. SAV1E 2865 is a small pyramidal clay stamp of fired clay (12 × 11 × 15mm). It is pierced through the point (now broken, diam. 2.5mm). The flat base is carved with an incised design, likely for stamping seals. The design is, however, unclear.

Both stamp seals from SAV1 East seem to be associated with the early building phase of the sector (see Chapter 3.2.3). They are remarkable because they do not find comparisons in New Kingdom towns. These seals rather compare well with finds from Kerma and Askut[825] and raise several questions for their use at Sai. Since no seal-impressions with these stamps were found at SAV1 East, they might have served as seal-amulets, like Smith has proposed for those discovered at Askut.[826]

Figurines

47 pieces of figurines were found at SAV1 East (Tab. 18). 14 are of 18th Dynasty date (or more general of the New Kingdom); two are possibly from the New Kingdom and 16 are Christian/medieval (mostly horses). Of the remaining 15 pieces, generally simple animal figurines/quadrupeds, the date remains unclear.

Within the 18th Dynasty examples there are four rudimentary female figurines (Pls. 88–90) attesting two different types of figurines. SAV1E 0896 from Square 3, SU 052, is made of unfired clay with brownish (7.5YR5/3) colour. The piece (34 × 24 × 19mm) represents the lower part of a female figurine of the type of figurines modelled in the round.[827] At the front side legs are formed out of clay, maybe even with the knees inclined. At the back side one incised line indicates the space between the legs. Three lines at the base possibly designate the feet.

The other three examples from SAV1 East all fall into the category of plaque-type rudimentary female figurines.[828] SAV1E 0939 from SU 322 in Square 4C is made of brownish-grey unfired clay (18 × 18 × 32mm, Pl. 88). This figurine was originally rectangular in shape, but is now largely broken. Remains of black pigment are traceable on at least two faces. The pubic triangle was incised at the front.

SAV1E 2801 derives from SU 405 in Square 4B1 (Pl. 89). It is a small female figurine in unfired clay, roughly triangular in shape (20 × 43 × 7mm). The top of the figurine comes to a point and appears to be complete. The breasts were not applied but moulded out of the same piece of clay. The back surface is slightly convex.

SAV1E 1065 from SU 1401 in Square 4D seems to have been slightly fired (31 × 29 × 47mm, Pl. 90). It is the fragment of a rectangular rudimentary female figurine, decorated with incisions on the two wider faces and flaring slightly towards the bottom. The front is determined by a prominent pubic triangle, with a dot in the centre. On the reverse, a single line is incised vertically down the centre, and a small dot is incised to each side near the bottom. Both sides of the figure are undecorated, but a dot is incised in the centre of the base. The top is broken and there is a large chip out of the right side.

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823 Budka 2015a, 45.
824 As suggested for fragments of sealing from Amarna, Kemp and Stevens 2010b, 39–44.
825 Smith 2003a, 113–114, fig. 5.17, E–J with references for Kerma seals.
826 Smith 2003a, 113.
827 See Stevens 2017, fig. 4.
828 See Stevens 2017, figs. 1–3.

Number of Object	Area Location	SU	Type of Object	Material	Date of Object	Form
SAV1E 2343	SQ2, W-part of SU, above floor	1321	Figurine	Clay, fired	18th Dynasty	Prisoner or execration figurine?
SAV1E 2840	SQ4B1	420	Figurine	Pottery	unclear	Animal; dog?
SAV1E 0160	SQ2A, E side of SQ2a, in filling of sandy pit/ridge	NA	Figurine	Clay, fired	Unclear	Animal; quadruped
SAV1E 2016	SQ4, 0–1m W-E/8.8–9.7m N-S	215	Figurine	Pottery	Unclear	Animal; quadruped
SAV1E 2218	SQ4+4A, 8.8–10.5m W-E/9.3–12m N-S	236	Figurine	Pottery	Unclear	Animal; quadruped
SAV1E 2224	SQ4+4A, 8–9m W-E/9.4–11.4m N-S	239	Figurine	Pottery	New Kingdom?	Animal; quadruped
SAV1E 2276	SQ2	1321	Figurine	Pottery	mid-18th Dynasty	Animal; quadruped
SAV1E 2362	SQ4-3, baulk between squares	1307	Figurine	Pottery	Christian/medieval	Animal; quadruped
SAV1E 2703	SQ4B	337	Figurine	Pottery	Unclear	Animal; quadruped
SAV1E 1120	SQ4, 3.5–6 m W-E; 0–3.5 m N-S	105	Figurine	Clay, fired	Unclear	Animal; bull?
SAV1E 1142	SQ4, 0–7.5m W-E/7.1–10m N-S	202	Figurine	Pottery	Unclear	Animal?
SAV1E 2891	SQ4C	449	Figurine?	Clay, alluvial silt	unclear	Animal?
SAV1E 1386	SQ4, 0–4m W-E/6–10m N-S	205	Application	Pottery	Christian/medieval	Application to pottery vessel
SAV1E 2002	SQ4, 1–2.7m W-E/3.7–5m N-S	223	Figurine	Pottery	Unclear	Bull
SAV1E 2917	SQ4D	1423	Figurine	Clay, unfired	Post-New Kingdom	Camel
SAV1E 2355	SQ4, 0–4m W-E/ 7–9 m N-S/9–10 m N-S	205	Figurine	Clay, unfired	medieval?	Camel?
SAV1E 0657	SQ1B, 0.5–2.5m W-E /4–5m N-S	19	Figurine	Pottery	Christian/medieval	Female
SAV1E 0851	SQ1B, 1.5–4m W-E / 0–2.3m N-S	51	Figurine	Clay, unfired	18th Dynasty	Hippo
SAV1E 0087	SQ2, 6.50 m (North) East	NA	Mould/ Figurine	Clay, fired	Christian/medieval	Horse
SAV1E 0342	SQ4B	373	Figurine	Pottery	Christian/medieval	Horse
SAV1E 0406	SQ4B	311	Figurine	Pottery	Christian/medieval	Horse
SAV1E 0733	SQ3, 0–2m W-E / 4.4–10m N-S	25	Figurine	Clay, fired	Christian/medieval	Horse
SAV1E 1453	SQ4D, from ash-spot, base of SU	1403	Figurine	Clay, fired	Christian/medieval	Horse
SAV1E 1939	SQ4+4A, 3.5–5.5 W-E/8.3–11.3m N-S	214	Figurine	Pottery	Christian/medieval	Horse
SAV1E 2361	SQ4A, 0.7–5m W-E/10.3–12m N-S	227	Figurine	Pottery	Christian/medieval	Horse
SAV1E 2648	SQ4D, from pit	1420	Figurine	Pottery	Christian/medieval	Horse
SAV1E 2667	SQ4A/4, south profile/ south west profile cleaning	302	Figurine	Pottery	Christian/medieval	Horse
SAV1E 2675	SQ4C	328	Figurine	Pottery	Christian/medieval	Horse
SAV1E 2759	SQ4C	383	Figurine	Pottery	Christian/medieval	Horse
SAV1E 2787	SQ4B1	395	Figurine	Pottery	Christian/medieval	Horse
SAV1E 2779	SQ4B1	301	Figurine	Pottery	New Kingdom	Human, male
SAV1E 2677	SQ4B	316	Figurine	Pottery	Unclear	Human; doll?

Number of Object	Area Location	SU	Type of Object	Material	Date of Object	Form
SAV1E 2358	SQ2, Feature 15	1316	Figurine	Clay, fired	mid-18th Dynasty	Human?
SAV1E 2226	SQ2, Feature 15	1321	Figurine	Clay, unfired	mid-18th Dynasty	Obelisk, painted
SAV1E 0181	SQ4, Feature 15	1337	Figurine/Lid	Clay, unfired	mid-18th Dynasty	Ram
SAV1E 0896	SQ3, 2.3–4.8m W-E/3–5.2m N-S	52	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine
SAV1E 0939	SQ4C	322	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine
SAV1E 1065	SQ4D	1401	Figurine	Clay, fired	18th Dynasty	Rudimentary female figurine
SAV1E 2801	SQ4B1, S part of SU, directly W of wall	405	Figurine	Clay, unfired	New Kingdom	Rudimentary female figurine
SAV1E 0858	SQ4C	322	Figurine	Pottery	Unclear	Unclear
SAV1E 1266	Sq 4, 0–4m W-E/7.1–9.7m N-S	205	Unidentified object	Clay, fired	Unclear	Unclear
SAV1E 2421	SQ2, Feature 15	1321	Figurine	Pottery	18th Dynasty	Unclear
SAV1E 2605	SQ2, Feature 15	1321	Figurine	Pottery	mid-18th Dynasty	Unclear
SAV1E 2618	SQ2, Feature 15	1320	Figurine	Clay, fired	mid-18th Dynasty	Unclear
SAV1E 2778	SQ4C	393	Figurine	Clay, unfired	New Kingdom?	Unclear
SAV1E 2819	SQ4B1, N part of SU	405	Figurine	Clay, fired	Unclear	Unclear
SAV1E 2821	SQ1B, 1.5–4m W-E/0–2.3m N-S	51	Figurine	Pottery	Christian/medieval	Unclear

Tab. 18 Figurines from SAV1 East

A single male clay figurine was found at SAV1 East. Only the head is preserved (SAV1E 2779, Pl. 91). Though the surface is badly worn, the eye sockets, nose and chin are all visible and testify that this figurine was carefully crafted.[829] The break comes at the top of the neck, but the hair is well defined around the face and is probably a lappet wig. Possible traces of an orange-red wash or paint are visible on the right side of the face and wig. This figurine contrasts considerably from the rudimentary female figurines.

Among the zoomorphic figurines, one object is especially remarkable. SAV1E 0851 is a rather crudely shaped clay figurine found in Square 1B (Pl. 92). Its shape is elongated with one rounded and one broken end. The object represents the rear part of an animal which was identified as a hippopotamus by Meg Gundlach.[830] Two lines of incised dots run across the back (one forming the edge of a break). In addition to the dotted lines, the left flank bears a lotus petal and the right a butterfly, motifs typically found on the well-known faience figurines of hippopotami of the Middle Kingdom.[831] Clay figurines of hippopotami are also attested in other New Kingdom settlements, e.g. at Amarna.[8321]

Some exceptional pieces of figurines without close parallels were found in Feature 15: SAV1E 2226 is a small clay figurine in the shape of an obelisk with a square base (19 × 19mm) with certain similarities to the rudimentary female figurines, but with painted design. SAV1E 0181 is probably a small lid equipped with the nicely modelled figurine of a seated ram.[833] Remarkable is also SAV1E 2343, the fragment of a small human figurine of almost unfired clay. The feet/legs are missing; the right arm is indicated through the negative. According to the rectangular position, the figurine can possibly be identified as an Asiatic prisoner or execration figurine. These three pieces from Feature 15 illustrate that the corpus of figurines from SAV1 East shows also some peculiarities, despite its close parallels from Amarna, Amara West and other New Kingdom sites.

829 Cf. a figurine from Askut, Smith 2003a, 131, fig. 5.31A.

830 Gundlach 2017a.

831 See, e.g., ÄS 6040 and ÄS 1571, Wildung 1987. See also Pinch 1993, 79 and 162 for such faience figurines found outside of Egypt, at Byblos.

832 See Stevens 2006, 104–105. Clay figurines of hippopotami are also known from Kerma, see Bonnet 1990, 133–134.

833 Detailed publication in preparation (Budka forthcoming b).

Number of Object	Area Location	SU	Type of Object	Date of Object	Colour
SAV1E 0085	SQ1, SP 1–3 E 8.85m, N 1.55m	–	Nun bowl	18th Dynasty	Blue
SAV1E 0317	SQ2B, 6m to E, 1.3m to S	–	Nun bowl	New Kingdom?	Light greenish-blue
SAV1E 0350	SQ3, 10 × 10m	001	Nun bowl	Post-New Kingdom?	Outside: blue inside: light blue top of rim: black-brownish
SAV1E 0351	SQ3, 4.5m W-E/2m N-S	005	Nun bowl	18th Dynasty	Outside: blue inside: light blue & dark painting
SAV1E 0394	SQ4, 8m W-E/1m N-S	002	Nun bowl	18th Dynasty	Light blue - turqoise dark blue paint
SAV1E 0513	SQ4B	320	Nun bowl	18th Dynasty	Blue
SAV1E 0796	SQ3, 1.3m W-E/9.8m N-S	041	Nun bowl	18th Dynasty	Light blue, dark (black) painting
SAV1E 0978	SQ1B, 0–1.1m W-E/4–5m N-S	065	Nun bowl	18th Dynasty	Outside light blue, grey lines, inside dark and light grey - black break bownish grey
SAV1E 1252	SQ4, 4m W-E/8m N-S	205	Nun bowl	18th Dynasty	Blue - turquoise, light blue, dark blue lines
SAV1E 2075	SQ4A, 3.5–5.1m W-E/0-2m N-S	229	Nun bowl	18th Dynasty	Light blue & greenish brown, black paint
SAV1E 2076	SQ4A, 3.5–5.1m W-E/0-2m N-S	229	Nun bowl	18th Dynasty	Greenish blue & pale yellow
SAV1E 2229	SQ2	1321	Nun bowl	18th Dynasty	White, green, and blue
SAV1E 2449	SQ2, sieving	1321	Nun bowl	18th Dynasty	Greenish-blue
SAV1E 2767	SQ4B	391	Nun bowl	18th Dynasty	Blue
SAV1E 2785	SQ4B1	394	Nun bowl	18th Dynasty	Blue
SAV1E 2804	SQ4B1, S part of SU	405	Nun bowl	18th Dynasty	Blue
SAV1E 2846	SQ4B, bottom of SU	437	Nun bowl, re-used as scraper	18th Dynasty?	Blue
SAV1E 2884	SQ4C	475	Nun bowl	18th Dynasty	Blue
SAV1E 0635	SQ1B, 2m W-E / 5m N-S	019	Vessel	unclear	Turquoise
SAV1E 0667	SQ1B, 7.5m W-E/2m N-S	021	Vessel	unclear	Greenish turquoise
SAV1E 0673	SQ3, 9.25m W-E/6.5m N-S	002	Vessel	Post-New Kingdom?	Blue-greenish
SAV1E 0923	SQ1B, 2m W-E/3m N-S, SQ1B, 6.5–10m W-E/0–1.7m N-S	056, 048	Vessel, two pieces	Post-New Kingdom?	Greenish turquoise, dark blue
SAV1E 1411	SQ4D, S part SU	1404	Vessel?	unclear	Greenish-blue
SAV1E 1910	SQ4+4A, 5–6.5m W-E/8.2–12m N-S	213	Vessel, thick-walled; re-used	New Kingdom ?	Bluish-green
SAV1E 2416	SQ2, Feature 15, above floor	1321	Vessel, small	mid-18th Dynasty	Bright blue

Tab. 19 Faience vessels from SAV1 East

Fragments of stelae

Two small pieces of inscribed stelae were found in sector SAV1 East, both in Square 4 and thus close to Temple A. SAV1E 1938 from Square 4, SU 220, is the small fragment of a stela (60 × 42 × 31mm) in limestone. The piece contains part of one register line in addition to a side (end) line. The traces of hieroglyphs seem to be part of the *ḥtp-di-nsw* formula, with the *di*-sign being the clearest. The stela was carved in sunk relief (Pl. 93).

SAV1E 1124 derives from Square 4, SU 107, and was made in a very pale orange-coloured sandstone (10YR8/2), possibly of local origin (cf. Chapter 2.3). The material is very fragile and the stone porous; the back side was nicely smoothed. It is the small fragment of an inscribed sandstone stela (49 × 27 × 57mm) with only one part of a column preserved. An incised *wꜣs*-scepter is preserved looking towards the right, possibly with a column line to the right of it. The preserved size of the sign is 3cm + x; it remains, therefore, unclear if the sceptre was once held by a god now lost or really should be read as a hieroglyph.

Faience vessels

A total of 25 fragments of faience vessels were found at SAV1 East; 18 pieces clearly derive from Nun bowls (Tab. 19). All in all, these fragments from the eastern sector are rather insignificant and small pieces; well-dated mid-18th Dynasty examples are only present because of three sherds from Feature 15. Another interesting piece is SAV1E 2846 from Square 4B because it was re-used as a scraper which is rather rare for faience vessels (Pl. 94). It is a small rectangular rim fragment of faience, probably from a bowl (31 × 9 × 18mm). The re-use as a scraper is well visible along both long sides. The original blue surface is preserved on one broad surface, decorated with a series of black chevrons (four of which remained).

Re-used pottery

374 re-used pottery sherds were documented from sector SAV1 East. 122 are of clear Post-New Kingdom date and 95 of 18th Dynasty date.[834] The remaining pieces are probably also of New Kingdom origin (Figs. 101–102). Among the datable sherds (Tab. 20), scrapers, lids and tokens/gaming pieces are most common. The majority of the pieces were made from Nile clay sherds.

SAV1E 2966 was originally an 18th Dynasty dish and was re-shaped as a scraper (Fig. 101). SAV1E 2647 is another scraper, but re-used from a large body sherd of a Nile clay jar (Fig. 102). The base jar of a round-based Nile clay beaker was also reworked into a tool, possibly a scraper (SAV1E 2964, Fig. 102). One example for re-used sherds as token/gaming pieces is SAV1E 0989 (Fig. 101). SAV1E 2271 (Fig. 101) is the ring base of an early 18th Dynasty dish which was later re-cut and pierced with a hole in the centre. Possibly, it was used as a weight.

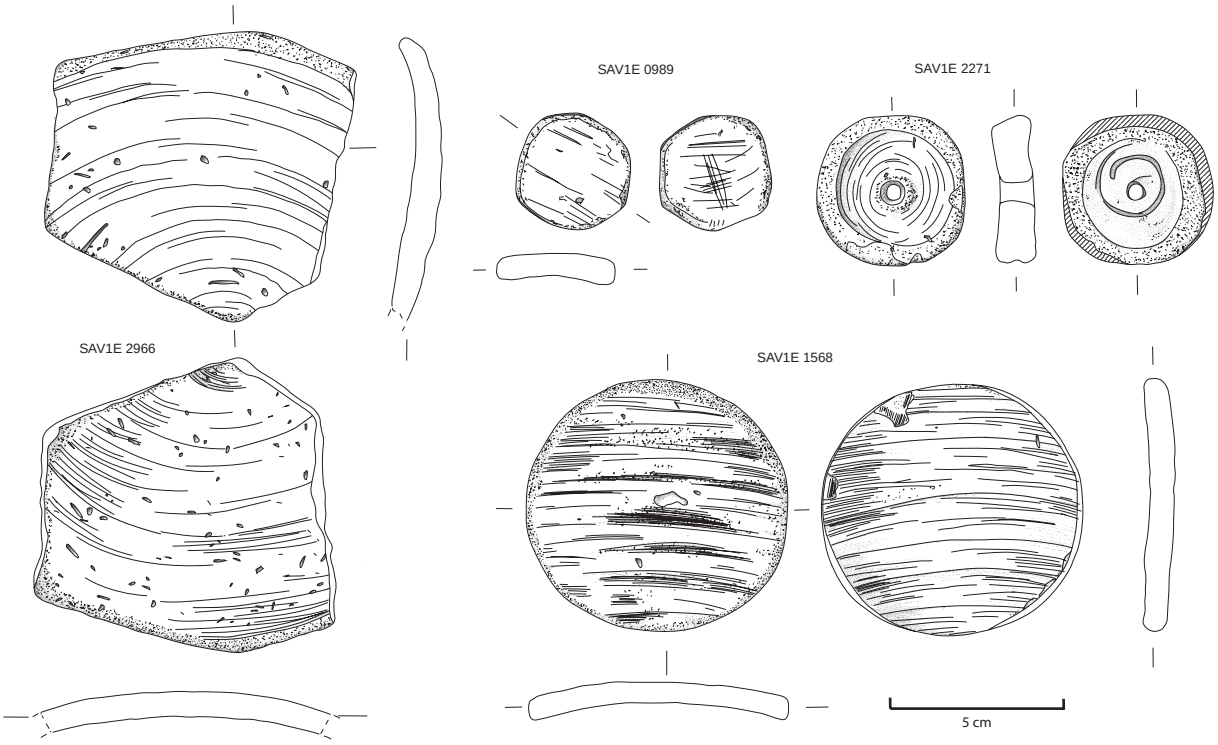

Fig. 101 Re-used pottery objects from SAV1 East (scraper, token, weight and lid)

[834] Re-used sherds formed to net weights were already mentioned above, Chapter 4.1.1. Only one piece from SAV1 East falls into this category (SAV1E 2068).

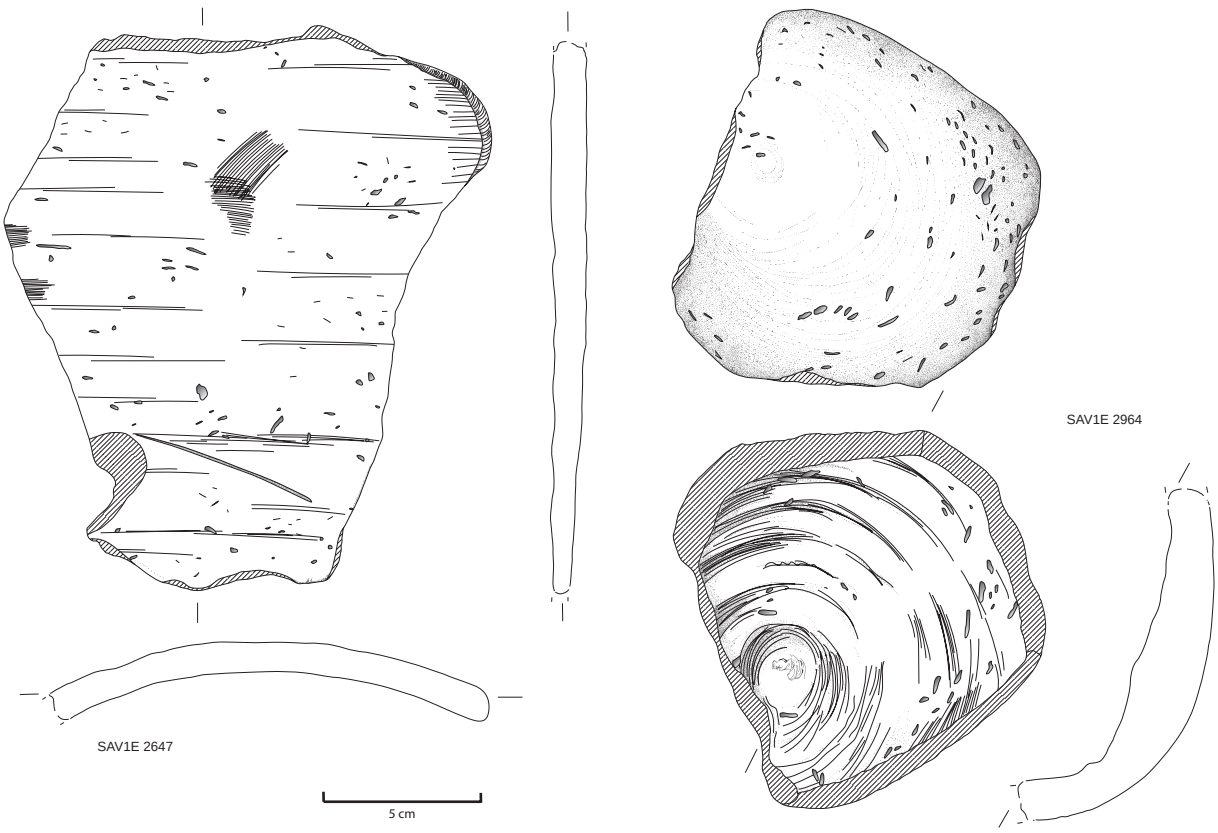

Fig. 102 Re-used pottery from SAV1 East – two scrapers (SAV1E 2964 and 2647)

Number of Object	Area Location	SU	Type of Object	Material	Date of Object
SAV1E 0314	SQ4C	456	Lid	Nile clay	18th Dynasty
SAV1E 2619	SQ4A, 0.7–5m W-E/10.3–12m N-S	227	Lid	Nile clay	18th Dynasty
SAV1E 2672	SQ4C	327	Lid	Nile clay	18th Dynasty
SAV1E 2733	SQ4C	375	Lid	Nile clay	18th Dynasty
SAV1E 2781	SQ4C	384	Lid	Nile clay	18th Dynasty
SAV1E 2909	SQ4D	1423	Lid	Nile clay	18th Dynasty
SAV1E 2954	SQ4C	1485	Lid	Nile clay	18th Dynasty
SAV1E 0256	SQ 2B, 5–6.5m to E	NA	Lid	Nile clay	18th Dynasty
SAV1E 2762	SQ4C	384	Lid (from ring base of dish)	Nile clay	18th Dynasty
SAV1E 2788	SQ4B	396	Lid (from ring base of dish)	Nile clay	18th Dynasty
SAV1E 2716	SQ4C	335	Lid (from *zir* vessel)	Marl clay	18th Dynasty
SAV1E 2834	SQ2B, 2.5–4.5m to E		Palette	Nile clay	18th Dynasty
SAV1E 0006	SQ1, NW	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0009	SQ1	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0045	SQ2	NA	Re-used sherd	Nile clay	18th Dynasty?
SAV1E 0082	SQ2, 3.5m to E	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0083	SQ2, 3.5m to E	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0084	SQ2, 0–6.5m to E	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0089	SQ2, cleaning S of Feature 14	NA	Re-used sherd	Nile clay	18th Dynasty

Tab. 20 Re-used 18th Dynasty sherds from SAV1 East

Number of Object	Area Location	SU	Type of Object	Material	Date of Object
SAV1E 0140	SQ1A, 4.5–5m to E	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0143	SQ1A, 4.5–5m to E	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0172	SQ1+2, up to 1m W, surface cleaning	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0190	SQ2B, 1–3m to E debris	NA	Re-used sherd	Nile clay	18th Dynasty?
SAV1E 0207	SQ2A, 0–3m to S along E border	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0218	SQ2B, *c.* 5–7m to E	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0257	SQ2B, 0–2.5 m to E	NA	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0271	SQ2B, S-baulk 1–6 m to E	NA	Re-used sherd	Marl clay	18th Dynasty
SAV1E 0290	SQ2B, cleaning 7.5–10 m to E	NA	Re-used sherd	Marl clay (A4)	18th Dynasty
SAV1E 0293	SQ2B, cleaning 7.5–10 m to E	NA	Re-used sherd	Nile clay	early 18th Dynasty
SAV1E 0316	SQ2B, cleaning Feature 27 and S of Feature 27		Re-used sherd	Nile clay local	18th Dynasty
SAV1E 0346	SQ3	005	Re-used sherd	Nubian ware	18th Dynasty
SAV1E 0777	SQ3, 9–10.5m W-E/2.6–5.5m N-S	34	Re-used sherd	Nile clay	18th Dynasty
SAV1E 0989	SQ4D	1403	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1028	SQ3, 4.8–7m W-E/4–8.3m N-S	066	Re-used sherd	Nubian clay	18th Dynasty
SAV1E 1074	SQ3, 6–7.5m W-E/3.5–5m N-S	080	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1112	SQ4, 7,.3-8m W-E/0-2.5m N-S	111	Re-used sherd	Nile clay local	18th Dynasty
SAV1E 1385	SQ4, 0–4m W-E/6–10m N-S	205	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1420	SQ4D	1407	Re-used sherd	Marl clay	18th Dynasty
SAV1E 1465	SQ4A, 1.7–3.2m W-E/0–1.5m N-S	205	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1466	SQ4A, 1.7–3.2m W-E/0–1.5m N-S	205	Re-used sherd; scraper	Nile clay	18th Dynasty
SAV1E 1813	SQ4, 3.5–5m W-E/9–10m N-S	105	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1819	SQ4A, 4–5m W-E/1.4–2m N-S	205	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1820	SQ4A, 4–5m W-E/1.4–2m N-S	205	Re-used sherd, scraper	Canaanite ware	18th Dynasty
SAV1E 1874	SQ4, 5–5.9m W-E/4.2–5.8m N-S	207	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1931	SQ4+4A, 6–10m W-E/8.2–12m N-S	213	Re-used sherd	Nile clay	18th Dynasty
SAV1E 1940	SQ4+4A, 3.5–5.5 W-E/8.3–11.3m N-S	214	Re-used sherd	Nile clay	18th Dynasty
SAV1E 2257	SQ4A, 5.1–5.9m W-E/0–2m N-S	230	Re-used sherd	Nile clay	18th Dynasty
SAV1E 2573	SQ4, 2.5–5.5m W-E, 9–10m N-S/SQ4A, 2.6–6.5m W-E, 0–2m N-S	009	Re-used sherd	Marl clay	18th Dynasty
SAV1E 2608	SQ2, Feature 15	1321	Re-used sherd	Nile clay	18th Dynasty
SAV1E 2626	SQ4, 7–9.2m W-E/6.8–8m N-S	212	Re-used sherd	Nile clay	18th Dynasty
SAV1E 2629	SQ4A, 0–3m W-E/0–2m N-S	205	Re-used sherd	Nile clay	18th Dynasty
SAV1E 2632	SQ4A, 0–1m W-E/0–2m N-S	217	Re-used sherd	Nile clay	mid-18th Dynasty
SAV1E 2652	SQ4, N baulk, Feature 15	1309	Re-used sherd	Nile clay	mid-18th Dynasty
SAV1E 2659	SQ2, Feature 15	1321	Re-used sherd	Nile clay	mid-18th Dynasty
SAV1E 2938	SQ4C	1481	Re-used sherd	Nile clay	18th Dynasty
SAV1E 2970	SQ4D	1444	Re-used sherd	Nile clay	mid-18th Dynasty
SAV1E 1104	SQ3, 7.7–8.8m W-E/3.5–8m N-S	097	Re-used sherd from imported amphora	Imported ware	mid-18th Dynasty

Tab. 20 *continued* Re-used 18th Dynasty sherds from SAV1 East

Number of Object	Area Location	SU	Type of Object	Material	Date of Object
SAV1E 1304	SQ4, 0–4m W-E, 5–10m N-S	205	Scraper	Nile clay	New Kingdom
SAV1E 2267	SQ4A, 3.5–5.1 W-E/0–2 N-S	229	Scraper	Nile clay	18th Dynasty
SAV1E 2278	SQ4A, 0.7–5m W-E/10.3–12m N-S	227	Scraper	Nile clay	18th Dynasty
SAV1E 2279	SQ4D	1407	Scraper	Nile clay	18th Dynasty
SAV1E 2609	SQ2, Feature 15	1321	Scraper	Nile clay	mid-18th Dynasty
SAV1E 2634	SQ4+4A, 0.5–3.5m W-E/7.5–10.3m N-S	227	Scraper	Nile clay	18th Dynasty
SAV1E 2911	SQ4D	1421	Scraper	Nile clay	18th Dynasty
SAV1E 2915	SQ4D	1421	Scraper	Nile clay	18th Dynasty
SAV1E 2925	SQ4D	1419	Scraper	Nile clay	18th Dynasty
SAV1E 2933	SQ4D	1428	Scraper	Nile clay	18th Dynasty
SAV1E 2964	SQ4D	1424	Scraper	Nile clay	mid-18th Dynasty
SAV1E 2966	SQ4B	1444	Scraper	Nile clay	mid-18th Dynasty
SAV1E 0302	SQ2B, 0–6.5 m to E	NA	Scraper	Nile clay	18th Dynasty
SAV1E 0303	SQ2B, 0–6.5 m to E	NA	Scraper	Nile clay local	18th Dynasty
SAV1E 0672	SQ1B, 6–7.5m W-E/0–2.5m N-S	021	Scraper	Nile clay	mid-18th Dynasty
SAV1E 1091	SQ4, 9.2–9.6m W-E/0–1.1m N-S	087	Scraper	Nile clay	18th Dynasty
SAV1E 2653	SQ4, from filling of Feature 44 in Feature 15	1324	Scraper	Nubian ware	18th Dynasty
SAV1E 0442	SQ4C	348	Scraper	Nile clay	18th Dynasty?
SAV1E 0814	SQ4C	322	Scraper	Nile clay	18th Dynasty
SAV1E 1309	SQ2	1321	Scraper	Nile clay	mid-18th Dynasty
SAV1E 2623	SQ4+4A, 0.4–5m W-E/7.5–12m N-S	228	Scraper	Nile clay	18th Dynasty
SAV1E 2624	SQ4+4A, 0.4–5m W-E/7.5–12m N-S	228	Scraper	Nile clay	18th Dynasty
SAV1E 2656	SQ2	1321	Scraper	Nile clay	18th Dynasty
SAV1E 2657	SQ2	1323	Scraper	Nile clay	18th Dynasty
SAV1E 2695	SQ4C	330	Scraper	Nile clay	18th Dynasty
SAV1E 2696	SQ4C	330	Scraper	Nile clay	18th Dynasty
SAV1E 2816	SQ4C	408	Scraper	Nile clay	18th Dynasty?
SAV1E 2836	SQ4B1	418	Scraper	Nile clay	18th Dynasty
SAV1E 2843	SQ4B1	423	Scraper	Nile clay	18th Dynasty
SAV1E 2946	SQ4C	1482	Scraper (from beer jar)	Nile clay	18th Dynasty
SAV1E 2734	SQ4C	375	Scraper (from flat-based dish)	Nile clay	18th Dynasty
SAV1E 2422	SQ2, Feature 15	1321	Token/gaming piece	Nile clay	mid-18th Dynasty
SAV1E 2655	SQ2, Feature 15	1321	Token/gaming piece	Nile clay	mid-18th Dynasty
SAV1E 2658	SQ2, Feature 15	1321	Token/gaming piece	Nile clay	mid-18th Dynasty
SAV1E 2686	SQ4C	319	Token/gaming piece	Nile clay	18th Dynasty
SAV1E 2687	SQ4C	319	Weight	Nile clay	18th Dynasty
SAV1E 1138	SQ4+4A, 0–7.5m W-E/7.1–12m N-S	200	Weight (from an imported amphora)	Canaanite ware	18th Dynasty
SAV1E 2271	SQ4A, 3.5–5.1 W-E/0-2 N-S	229	Weight (from ring base of a dish)	Nile clay	early 18th Dynasty

Tab. 20 *continued* Re-used 18th Dynasty sherds from SAV1 East

4.3.2 SAV1 West

All together 1,835 objects were found and registered between 2014 and 2017 from sector SAV1 West.

Scaraboids/cowroids

One frog-scaraboid was found in Square 1 at SAV1 West. SAV1W 0527 is made in blue faience and represents a small, finely worked scarab in the shape of a frog with the head broken off (13 × 11 × 6mm,

Fig. 103 Frog-scaraboid (SAV1W 0527) and cowroids (SAV1W 0723 and 1736)

Fig. 103). The lower base is oval-shaped with an incised cross. The remains of the forelegs are visible and the hind-legs are nicely worked. One horizontal perforation through the body (from head to back, diam. 1mm) demonstrates that is was probably used as amulet. It is from a completely different type than SAV1E 0294 (see above) and seems to be an 18th Dynasty piece. Amuletic beads in the shape of frogs which compare well to SAV1W 0527 were found at Amarna.[835]

Two 18th Dynasty cowroids were unearthed at SAV1 West (SAV1W 0723 and SAV1W 1736, Fig. 103). SAV1W 0723 is a small, very nicely worked cowroid bead in glazed steatite with a hole running through the centre for suspension (diam. 2mm).[836] One side is formed in the shape of the cowrie shell while the other, which is flat, depicts the goddess Taweret wielding a knife. This iconography is commonly attested on Middle Kingdom apotropaic wands.[837] In front of the goddess appears the *s3*-symbol, which she is frequently associated with. SAV1W 0723 finds several parallels from Egyptian New Kingdom sites.[838]

SAV1W 1736 is also made in glazed steatite and was found in the filling of Feature 152, providing a clear mid-18th Dynasty for this piece (see above). The flat side of this small cowroid bead depicts a lotus form barque with a small central hut (Fig. 103).[839] Above the barque is a small sun disk, with interior cross hatching.

Amulets and beads

Besides the two cowroids from SAV1 West, only one other amulet was found in the sector. SAV1W 1436 derives from the filling of Feature 115 and represents a small faience amulet in the shape of a lotus blossom (5 × 2 × 7mm). It was pierced through the stem so that it would hang upside down and can be interpreted as necklace pendant (Fig. 56). Such amulets are well-attested in faience at Amarna.[840]

A small stone pendant or bead is SAV1W 1759 (Fig. 56). It is a small teardrop-shaped object, pierced through the narrow point. It is quite similar in shape to the pendant stamp SAV1E 2865 (see above), though no design was ever present. This piece is one of the objects within the category of personal adornment from SAV1 West which seems rather Nubian in character and not Egyptian (see Chapter 8).

835 Kemp and Stevens 2010b, 108–109, fig. 10.10.

836 Griffin and Gundlach 2015c.

837 On those so-called birth tusks, see Quirke 2016; cf. also Morris 2017.

838 See, e.g., BM EA 3737, http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=143200&partId=1&people=98412&peoA=98412-1-7&page=1 (last access 23 August 2018).

839 Cowroids with barque motifs including floral elements are well known from Egypt, e.g., BM EA 28686, http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=142278&partId=1&page=2. For a more sophisticated representation of a solar barque, see BM EA23298, http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=142606&partId=1&page=2 (last access 23 August 2018).

840 See Kemp and Stevens 2010b, 76, fig. 10.1, 80, fig. 10.5.

92 beads from SAV1 West were registered; similar to SAV1 East, they represent various shapes and types. Faience is the most common material, but also stone, pottery, shell and bone are attested. A small ring bead, SAV1W 1405, was identified as ivory. Ring beads are in general the most numerous, followed by tubular beads. Disc-shaped beads are well-attested from Feature 115 and thus datable to the mid-18th Dynasty (SAV1W 1440, three pieces, Pl. 95). From the same cellar more than 100 faience ring beads of various colours, ranging between 4 × 5 × 3–3 × 3 × 1mm and 3 × 3 × 2–2 × 2 × 1mm respectively in size were recovered (SAV1W 1443, 44 pieces and SAV1W 1444, 76 pieces; see below Chapter 4.5). A single shell bead was found with SAV1W 0504 (Fig. 55).

Figurines

50 clay and pottery figurines were found at SAV1 West (Tab. 21). The largest group represents female figurines, followed by various animals. The New Kingdom animal figurines include a dog and three ibexes besides other quadrupeds.

The simple hand-modelled clay sticks with indications of the female genitalia, the so-called plaque-type female figurines (or rudimentary female figurines), are with 19 pieces well-attested from SAV1 West (Figs. 104–106). SAV1W 1647 (Pl. 96) is an almost completely preserved example of a female figurine of fine unfired grey clay, roughly rectangular in shape. The figure comes to a point at the top, in place of the head, and the bottom is slightly broken with traces of white slip. All decoration is confined to the front surface. Near the top, an excess piece of material is stuck to the figure and the texture of the

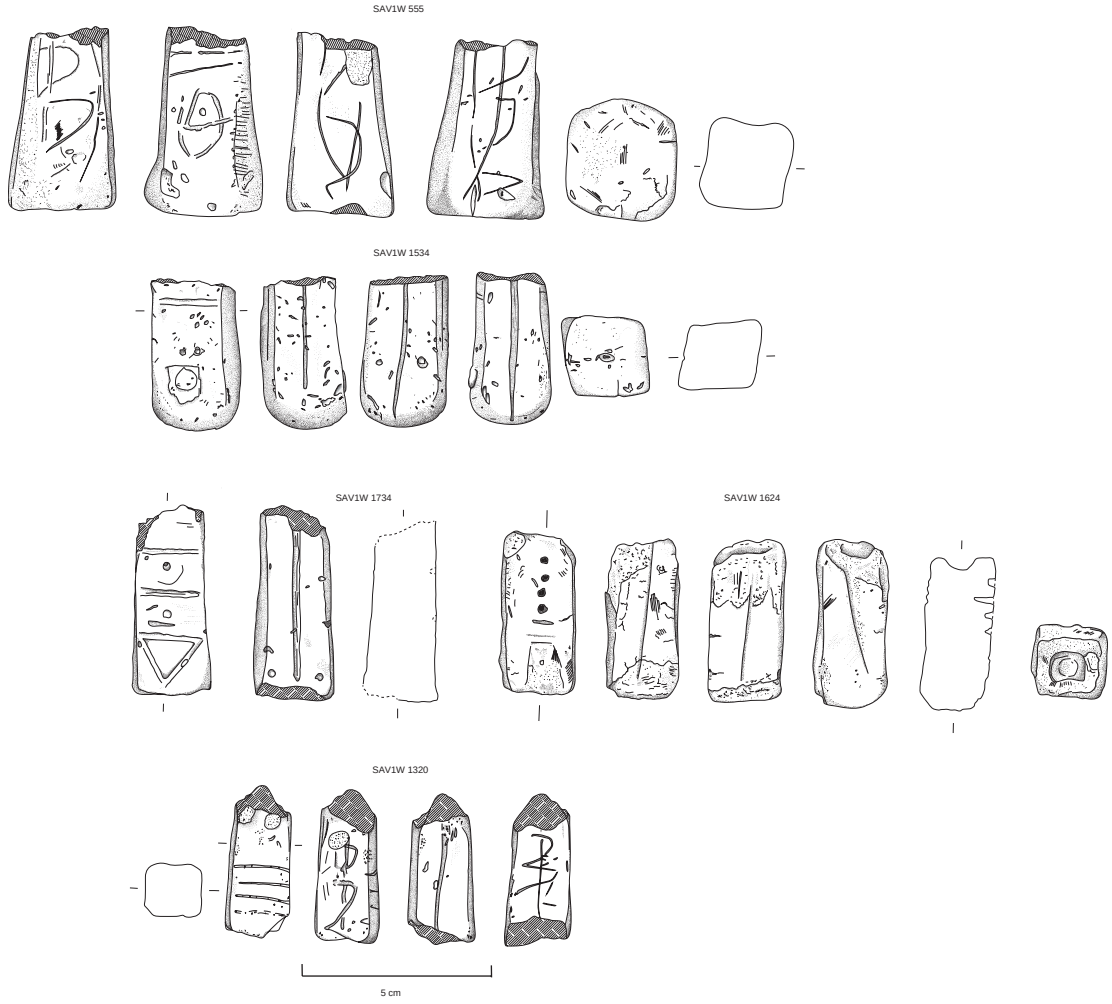

Fig. 104 Rudimentary female figurines from SAV1 West

surface indicates there is one missing next to it, indicating the probable addition of breasts.[841] Below this are five horizontal incised lines, of differing lengths and straightness. A short vertical dash likely represents the navel, while the waist is formed in two more horizontal lines. The pubic triangle is the most prominently carved feature and is perhaps more anatomically correct than most.

The rectangular rudimentary female figurine SAV1W 1734 (Fig. 104) is decorated with incisions on the two wider faces. The front is determined by a prominent pubic triangle, topped by three horizontal lines. In this case, these incised lines seem to replace the otherwise attested dotted lines on the figurines. It still remains unclear whether such lines represent body adornments like tattoos and scarification, or maybe girdles.[842] A deep hole was incised between the upper two lines, while a more shallow imitation appears between the lower lines; one of these holes likely indicated the navel. On the reverse, a single line is incised vertically down the centre, ending just short of the bottom. A small hole is incised in each of the bottom corners. A further two holes appear along the left edge and one even higher on the right edge. Both sides of the figure are undecorated. The top is broken and there is a large chip out of the bottom surface. There is no indication that the figure was ever painted.[843]

SAV1W 0555 (Fig. 104) is the lower part of a rudimentary female figurine (base = 3.1 × 2.9cm), more or less rectangular/cuboid-shaped. All sides are incised and might relate to the 'Nubian' design of the figurines on Sai (see above, Chapter 4.1.1). At the front, the pubic area is designed like a rounded triangle pointing upwards. Within the triangle, there is a small hollow indicating the navel. Above this there are two almost horizontal lines incised and some traces of red paint.[844] The right side shows on the left a vertical line (in the eroded part); from this line three strongly curved lines go to the right, slightly sloping upwards. The lowest curved line is small and pointed; on the right there is another rather straight vertical line, nearly at the edge. Some remains of red paint are visible on this side.

The back side of the figurine clearly refers to the anatomy and shows a more or less straight vertical line, almost in the centre. It indicates the back bone or the space between the legs; a second vertical line to the left crosses the first in the lower part and nearly at the bottom there is another strongly curved line oriented to the right (similar to the lines on the right side of the figurine). Some traces of red paint are preserved on this side as well. The left side shows on the right a vertical line ending in a triangle pointing downwards; from this vertical line two curved lines go to the left, above the larger curve there is the end of another vertical line.

Another fragment of a rudimentary female figurine, which is decorated on all four faces and similar to SAV1W 0555, is SAV1W 1320 (Fig. 104). The front has four horizontal rows of dots; the rear has a vertical line along the entire length of the piece, while the sides have a similar pattern, consisting of a vertical line with a long squiggle running through it.

Only the lower half is preserved of figurine SAV1W 1534 (Fig. 104), again decorated on all four sides. The front face has a horizontal line at the top, usually representing the waist. Beneath this are two small perforations, followed by the pubic triangle, which is incised, and a small circular dimple (applied) in the centre. The remaining three faces have vertical incised lines in the centre with the back having two small perforations towards the bottom.

SAV1W 1624 (Fig. 104) is another fragment of a female figurine. The front face appears to have the pubic triangle outlined, though the area is damaged. There are four incised hollows above this zone, possibly representing the navel and some form of tattoo or scarification.[845] The remaining sides all have a single vertical line incised through the length.

A slightly different pattern of decoration is illustrated with SAV1W 0029 (Fig. 105), which was found in the filling of one of the Post-New Kingdom pits above the enclosure wall. The shape and general type corresponds to the other stick figurines. It is decorated on all four sides; here, either horizontal

[841] Attached breasts by means of small pegs are also attested for female figurines at Amara West; Stevens 2017, fig. 2, F12688.
[842] For possible tattoos and/or scarification of the figurines and references, see most recently Stevens 2017, 411–412.
[843] For painted figurines from Amara West, see Stevens 2017, 412–413, fig. 5.
[844] See Stevens 2017, 412.
[845] For circles of dots around the navel of such figurines, see Stevens 2017, esp. 423.

Number of Object	Area Location	SU	Type of Object	Material	Date of Object	Form
SAV1W 0164	SQ1W, E-W 0–5m/S-N 0–5m	500	Figurine	Clay, fired	18th Dynasty?	Animal
SAV1W 1465	SQ1	732	Figurine	Pottery	New Kingdom?	Animal
SAV1W 1636	SQ1SE	854	Figurine	Clay, unfired	18th Dynasty	Animal; bull?
SAV1W 1396	SQ1 & E	729	Figurine	Pottery	18th Dynasty	Animal; ibex?
SAV1W 1491	SQ1, sieved material	731	Figurine	Pottery	18th Dynasty	Animal; ibex?
SAV1W 1680	SQ1SE/SQ1 S	862	Figurine	Pottery	18th Dynasty	Animal; ibex?
SAV1W 0016	SQ1SE	809	Figurine	Pottery	18th Dynasty?	Animal; quadruped
SAV1W 0165	SQ1, E of Feature 100, 2m S/4m E	500	Figurine	Clay, fired	Post-New Kingdom?	Animal; quadruped
SAV1W 0215	SQ1W, E-half	501	Figurine	Clay, fired	Unclear	Animal; quadruped
SAV1W 0500	SQ1	559	Figurine	Clay, fired	New Kingdom?	Animal; quadruped
SAV1W 1303	SQ1, N-part, 3–4m to S	664	Figurine	Pottery	18th Dynasty	Animal; quadruped
SAV1W 0772	SQ1S	634	Figurine	Pottery	18th Dynasty	Animal; quadruped
SAV1W 1523	SQ1S, sieved material	710	Figurine	Pottery	New Kingdom?	Animal; quadruped
SAV1W 1546	SQ1SE	815	Figurine	Pottery	18th Dynasty?	Animal; quadruped
SAV1W 1586	SQ1SE	837	Figurine	Pottery	Christian/medieval	Animal; quadruped
SAV1W 1657	SQ1SE	860	Figurine	Pottery	18th Dynasty?	Animal; quadruped
SAV1W 1683	SQ1 S	863	Figurine	Pottery	18th Dynasty?	Animal; quadruped
SAV1W 0910	SQ1S	612	Figurine	Clay, fired	18th Dynasty?	Animal; quadruped, horse?
SAV1W 1206	SQ1	686	Figurine	Pottery	Christian/medieval	Animal; quadruped, horse?
SAV1W 0800	SQ1S, 10 x 10m	600	Figurine	Pottery	Christian/medieval	camel
SAV1W 0764	SQ1S	647	Figurine/ applique	Clay, fired	18th Dynasty	Dog; applique of vessel
SAV1W 1301	SQ1S	678	Figurine	Clay, fired	Christian/medieval?	Female figurine
SAV1W 1708	SQ1S/SQ1SE	884	Figurine	Clay	18th Dynasty	Female figurine; 'Nubian doll type'
SAV1W 1735	SQ1S, S of Feature 143	903	Figurine	Clay, unfired	18th Dynasty	Female figurine; 'Nubian doll type'
SAV1W 1612	SQ1SE	843	Figurine	Pottery	Christian/medieval	Horse
SAV1W 0409	SQ1	547	Statuette/ figurine	Clay, unfired	Unclear	Human?
SAV1W 1574	SQ1SE	834	Figurine	Clay, unfired	18th Dynasty	Model boat
SAV1W 0412	SQ1	512	Figurine/ gaming piece	Pottery	Post-New Kingdom	Gaming piece?
SAV1W 0029	SQ1, pit filling above enclosure wall	503	Figurine	Mud, unfired	18th Dynasty	Rudimentary female figurine
SAV1W 0257	SQ1, 0–2m S-N, 0–1m E-W	507	Figurine	Mud, fired	18th Dynasty	Rudimentary female figurine
SAV1W 0408	SQ1	512	Figurine	Mud, fired	18th Dynasty	Rudimentary female figurine
SAV1W 0499	SQ1	563	Figurine	Clay, fired	New Kingdom	Rudimentary female figurine
SAV1W 0555	SQ1, 3.5m NS/1.8m EW	585	Figurine	Clay, slightly fired	18th Dynasty	Rudimentary female figurine
SAV1W 0906	Cleaning SQ1 (2014)	600	Figurine	Clay, fired	18th Dynasty	Rudimentary female figurine
SAV1W 0908	SQ1/1S, cleaning connection between SQ1/SQ1S	609	Figurine?	Clay, fired	18th Dynasty	Rudimentary female figurine
SAV1W 1030	SQ1S	652	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine
SAV1W 1299	SQ1S	705	Figurine	Clay, fired	18th Dynasty	Rudimentary female figurine
SAV1W 1320	SQ1E	714	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine

SAV1W 1498	SQ1SE	817	Figurine	Mud, unfired	18th Dynasty	Rudimentary female figurine
SAV1W 1534	SQ1SE	802	Figurine	Pottery	18th Dynasty	Rudimentary female figurine
SAV1W 1624	SQ1SE	854	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine
SAV1W 1647	SQ1 S	857	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine
SAV1W 1733	SQ1SE	900	Figurine	Clay, fired	18th Dynasty	Rudimentary female figurine
SAV1W 1734	SQ1S, S of Feature 143	903	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine
SAV1W 1792	SQ1SE	921	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine
SAV1W 0591	SQ1W	544	Figurine	Clay, unfired	18th Dynasty?	Rudimentary female figurine?
SAV1W 1648	SQ1S	857	Figurine	Clay, unfired	18th Dynasty	Rudimentary female figurine?
SAV1W 0573	SQ1	584	Figurine?	Clay, fired	Post-New Kingdom	Unclear
SAV1W 1677	SQ1SE/SQ1S	865	Figurine	Pottery	Christian/Medieval	Unclear
SAV1W 1641	SQ1S	852	Figurine	Pottery	New Kingdom?	Unclear

Tab. 21 Figurines from SAV1 West

or vertical lines are used for each side. The frontal face shows five slightly diagonal incised lines above the pubic triangle zone. It is quite similar to SAV1W 1534, but the small circular feature was incised here and not applied.

SAV1W 0906 is the lower part of a rudimentary female figurine of the second type, modelled in the round (Fig. 106). The pubic triangle is clearly visible while the derriere is well defined. Traces of the left hand are still visible at the waist. The figure is broken at the waist, the right knee and the left thigh.[846]

To conclude, some of the plaque-type female figurines from SAV1 West, which dominate the corpus of female representations, combine a typical Nubian pattern of incised lines[847] with Egyptian stylistic features (Fig. 104).[848] However, like at SAV1 North, female figurines in distinctive 'Nubian-style' as identified at Askut,[849] were not found at SAV1 West. However, another group – the so-called pottery fertility figurines, Type 3 after Geraldine Pinch,[850] well-attested in Egypt and Nubia – is attested at SAV1 West. Of two pieces, SAV1W 1708 and SAV1W 1735, the characteristic head has survived (Fig. 107, Pl. 97).[851] The heads of these figurines are always flattened, with rudimentary facial features: a beak-like nose and slits for the eyes and eyebrows. The disc surmounting the face is always pierced with a series of holes, through which better preserved examples indicate that artificial hair was threaded.[852] According to Pinch, this hairstyle might suggest a Nubian origin of these figurines.[853] Although more common from tomb contexts, parallels for the domestic context from Sai are also found at Abydos, Deir el-Medine, Karnak and Memphis.[854]

846 For parallels, see Stevens 2017, fig. 4.
847 See, e.g., a net weight found at Elephantine in Nubian fabric and with un-Egyptian incised decoration; see von Pilgrim 1996, 276, fig. 120b.
848 As already observed for SAV1 North, see Budka and Doyen 2013, 183.
849 Smith 2003a, 131–134, fig. 5.31. For female figurines from Kerma, cf. Bonnet 1990, 133–134.
850 Pinch 1993, 201–203.
851 Pinch 1993, 201–202.
852 Pinch 1993, 202.
853 Pinch 1993, 202.
854 Pinch 1993, 229, List 3.

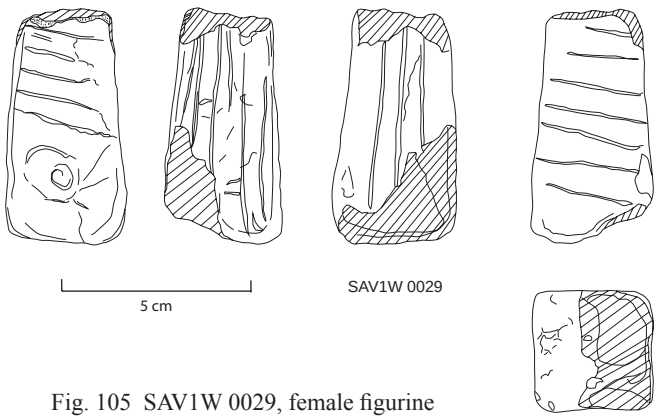

Fig. 105 SAV1W 0029, female figurine

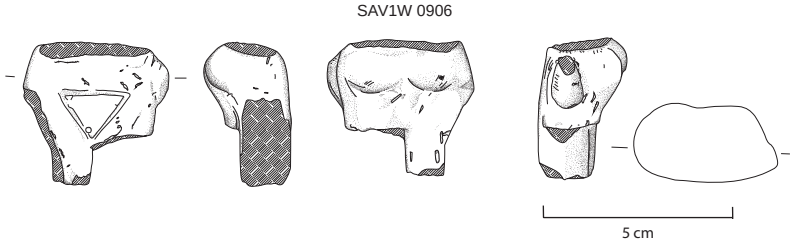

Fig. 106 SAV1W 0906, rudimentaryfemale figurine

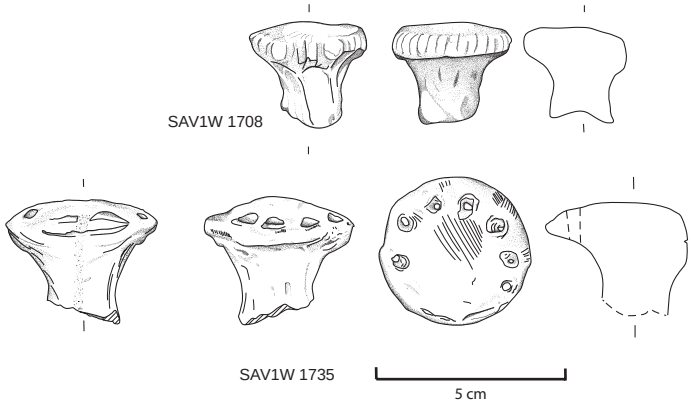

Fig. 107 Two 'Nubian' doll heads from SAV1 West (SAV1W 1708 and SAV1W 1735)

The head of SAV1W 1735 (Fig. 107) is round and flat on the top, with a thin stem for the face and neck. The area of the face is represented only by two rows of horizontal dashes, the upper ones are slightly hooked to indicate the nose. Seven holes have been pierced through the top of the head in order to attach strands of hair. The bottom of the neck is broken. Remains of orange wash/paint are visible on all surfaces.

Figurine SAV1W 1708 is comparable, but much smaller in size and also without the perforations (Fig. 107). Possibly the small dashes incised along the entire outer edge should represent the hair – in this case it is likely to be short hair in contrast to the long-haired figurines with strands of hair attached through the holes. The bottom of the neck tapers unevenly to a point, but the lower surface appears to be original, so this is the intended shape and not broken like at SAV1W 1735. Traces of red paint are visible on the top of the head, as well as around the neck.

One of the most remarkable zoomorphic figurines from all sectors within the New Kingdom town is SAV1W 0764. This object was found in Square 1S in SU 647 (Fig. 108). It is the small, intact clay

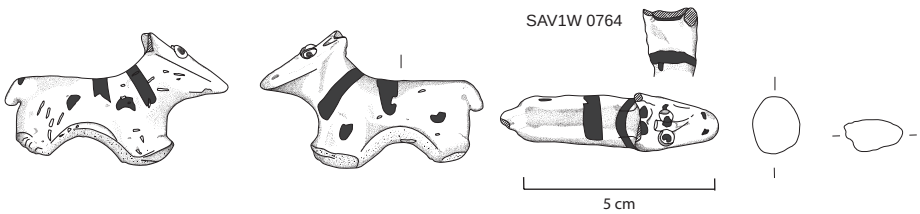

Fig. 108 SAV1W 0764, dog applique/figurine

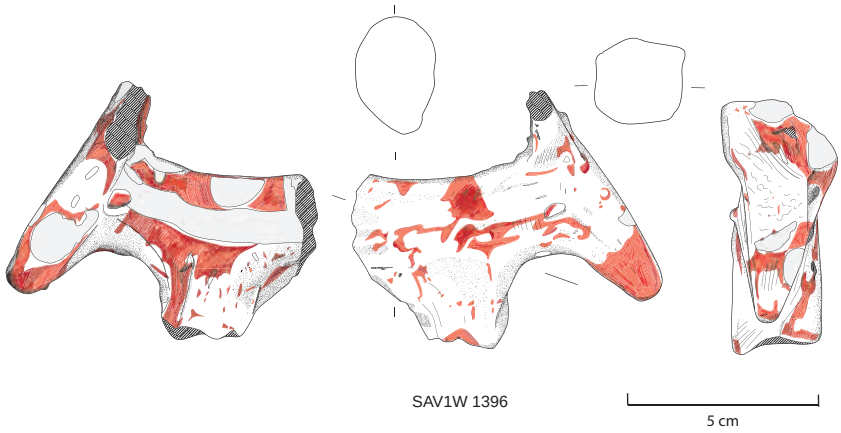

Fig. 109 SAV1W 1396, figurine of an ibex/gazelle

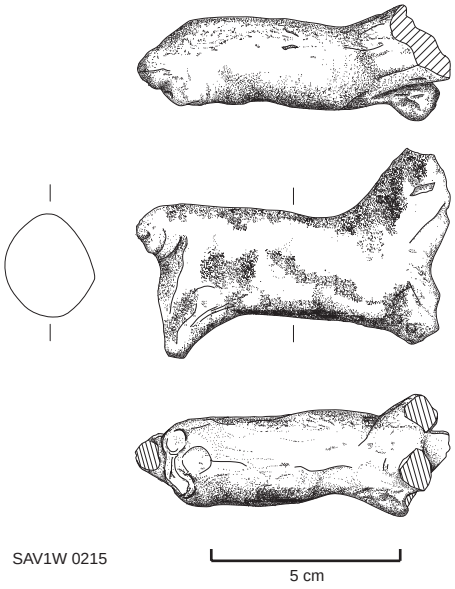

Fig. 110 SAV1W 0215, animal figurine

figurine of a dog (58 × 15 × 35mm). It is broken at the feet and was most probably once applied to a pedestal or rather the rim of a vessel. It has a long snout, pointy ears and a short tail. The eyes were applied separately with small circles of clay. The dog figurine has a painted collar, which is black, and several black dots over the body; the eyes are also painted black.

Among the animal figurines from SAV1 West, three examples represent ibexes or gazelles. SAV1W 1396 (Fig. 109) is quite fragmented; only the front of the animal is preserved, with a long face and long horns, which are partially broken. Only the upper parts of the front two feet are preserved. The figurine is painted red and white. It shows several similarities to the dog figurine SAV1W 0764; its eyes were applied separately as well with small circles of clay. In general, the amount and variety of painted animal figurines from SAV1 West is quite unusual and differs from SAV1 East and SAV1 North. Of a common type, but of unclear date, is SAV1W 0215 (Fig. 110). The fragmented figurine of an animal figurine has an elongated body. With the beginning of the neck, the forelegs and the hind legs as well as a short tail it might represent a horse. It comes from the surface layers from SAV1 West and is possibly Post-Pharaonic.

Another notable figurine from SAV1 West is a clay model boat, SAV1W 1574 from Square 1SE, SU 834 (Pl. 98). It is a crudely carved handmade clay model boat representing a papyrus skiff. The ends of the boat are missing. The boat is painted white throughout, while the deck also has traces of black. Boat

models are common finds in Egyptian settlements since the Early Dynastic period.[855] New Kingdom examples in Nubia were found at Buhen.[856]

Seal impressions

Only two fragments of mud sealings with remains of a stamp/impression were excavated in sector SAV1 West. This seems to contrast considerably from SAV1 East. However, at SAV1 East all seal impressions derive from Feature 15 – otherwise seal impressions are as rare as at SAV1 West or SAV1 North.[857]

One particularly well preserved seal impression derives from a closed context, the oldest filling of Feature 115 (see Chapter 4.5). The sealing SAV1W 1451 (Pl. 99) measures 15 × 6 × 18mm and shows an oval seal impression with the name of Thutmose, perhaps Thutmose III. The name is written with an ibis bird on a standard, the *ms*-sign in front and the *s*-sign behind. The writing is surrounded by an oval-shaped border. The impression of a cord on the back side indicates that this sealing was used to seal a box/chest or maybe a bag.

The other seal impression from SAV1 West shows only traces of lines of the stamp, but no clear impression. SAV1W 1455 was found in SQ1S in SU 710 and is a small fragment which measures 18 × 18 × 11mm. It is stratigraphically younger than Features 119 and 121 and is maybe associated with the debris/abandonment phase of Structure A.

Seals/plaques

Two possible seals were found at SAV1 West, which might have been used for mud bricks or just as plaques. The largest and best preserved cartouche-shaped plaque in mud is SAV1W 0532 (11.4 × 6.1 × 3.4cm, Fig. 111).[858] It bears incised hieroglyphs on the front, giving, as it seems, the name and epithet of a god. The deity is a falcon-god, possibly Horus, Horakhty or even Hauron – the group of signs in front of the god could not be read until now. The other signs probably represent a playful writing of "Lord of the Thrones of the Two Lands, numerous in beauty" (*nb ns.wt tꜣ.wj ꜥšꜣ nfr.w*). "Lord of the Thrones of the Two Lands" is a well-known epithet for Amun, Amun-Ra and Ra-Horakhty-Amun.[859] *ꜥšꜣ-nfr.w* was used during the Late Period for Amun and in Ptolemaic times for a specific Horus form.[860] For the New Kingdom it cannot be excluded that the falcon of SAV1W 0532 is actually associated with the king and refers to a royal epithet.

SAV1W 0532 with its incised hieroglyphic cartouche reminds of the stamped bricks attested from the early 18th Dynasty onwards. However, it most probably held a symbolic character. It was found in the sandy pit cutting the enclosure wall in Square 2 at SAV1 West. SAV1W 0532 might have once belonged to a foundation deposit for the town enclosure. Comparable cartouche-shaped plaques are regularly found in foundation deposits in Egypt, but most often in other materials (faience or stone) and smaller in size. According to John Weinstein, cartouche-shaped plaques are new additions to foundation deposits in the mid-18th Dynasty (Thutmose IV/Amenhotep III).[861] This could correspond to a possible connection of SAV1W 0532 with the town enclosure, which can be dated to Thutmose III (the later part of his reign). However, one has to remark that the only foundation deposits attested in Upper Nubia for town walls were found at Sesebi[862] – at Sai itself several deposits came to light in the foundations of Temple A.[863] Close to SAV1W 0532 in Square 2 of SAV1 West another fragment of a similar cartouche-shaped

855 For early finds from Elephantine, see Ziermann 2002; for New Kingdom examples, see Stevens 2006, 116.
856 Millard 1979, 146.
857 For SAV1 North, see Budka 2017j, 165.
858 Budka 2015d, 66, fig. 10.
859 Leitz 2002b, 672, a and d.
860 See Leitz 2002a, 216a and c.
861 Weinstein 1973, 94.
862 Thill 1997, 115 with references.
863 Thill 1997, 105–117.

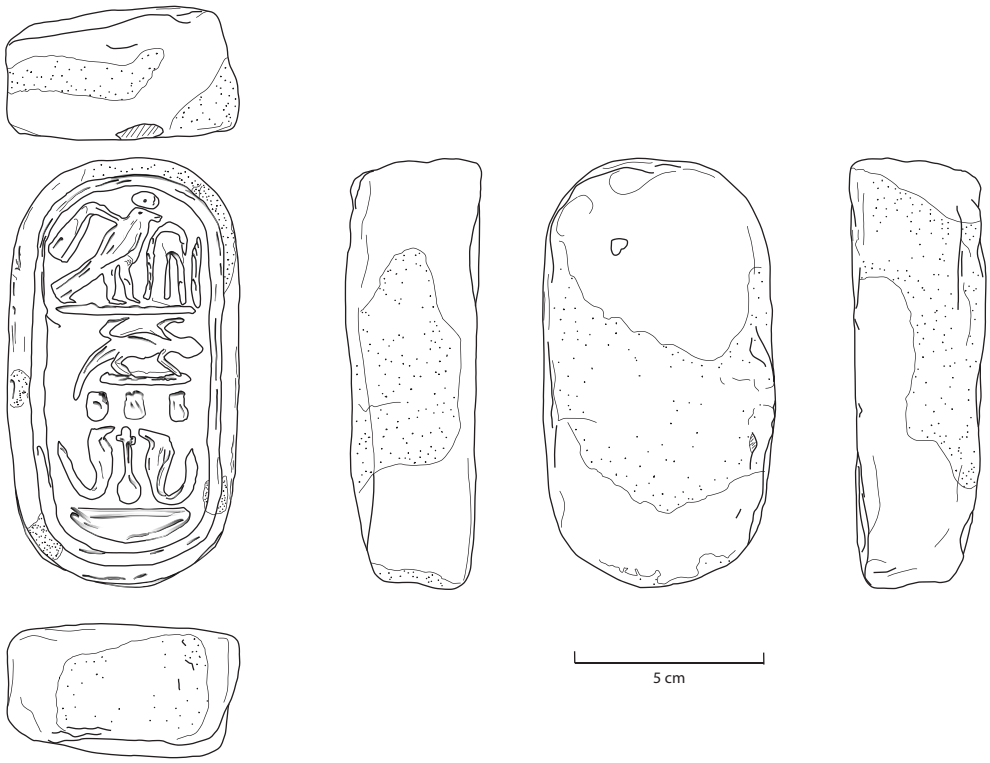

Fig. 111 SAV1W 0532, cartouche plaque

plaque was found, supporting the interpretation of a disturbed deposit for these objects. SAV1W 0031 (Pl. 100) is very fragmented and part of a plaquette with three hieroglyphs (an eye, *n*-sign and *nb*-sign?) and rests of the cartouche. Like SAV1W 0532 it is made in fired clay and might have been a dummy brick or a seal/stamp.

Another small stamp of completely different character was found in Square 1NW and is of unclear date. It might have been used to decorate figurines or pottery with circular designs. SAV1W 1707 is a small cylindrical clay object, very likely a stamp (9 × 9 × 19mm, Fig. 62). The flat end is decorated with an incised dot and a surrounding circle (diam. 9mm). The opposite end is not quite flat and makes the piece rather unstable (diam. 85mm). The whole object was handmade and possibly secondarily burnt.

Fragment of stelae

Unfortunately, only a surface find from south of Square 1 at SAV1 West is SAV1W 0590 (Pl. 101), the fragment from the upper part a sandstone stela (10.6 × 11.2cm with a width of 3.4cm).[864] The sandstone seems to be local and is very pale brown to pale yellow (10YR8/2–2.5Y8/2). The stela was decorated in raised relief. The preserved part of the lunette shows the common motif of a so-called *shen*-ring flanked by two *wedjat*-eyes. Below the right *wedjat*-eye, facing left, the presumed donor of the stela is represented: he is wearing a shoulder long wig and is offering a libation to persons facing him. Only the lotus flower of the first seated person on the left is preserved – it was probably a female family member, maybe the mother of the donor. However, in the 18th Dynasty the lotus as an attribute is also well-attested for men. A fragmented sandstone stela discovered in the New Kingdom cemetery at Sai shows a seated couple, with the man holding a lotus flower next to a woman embracing him (T16S21).[865] According to

[864] Budka 2015d, 66–67, fig. 11.
[865] Minault-Gout and Thill 2012, vol. 2, pl. 84 and 162.

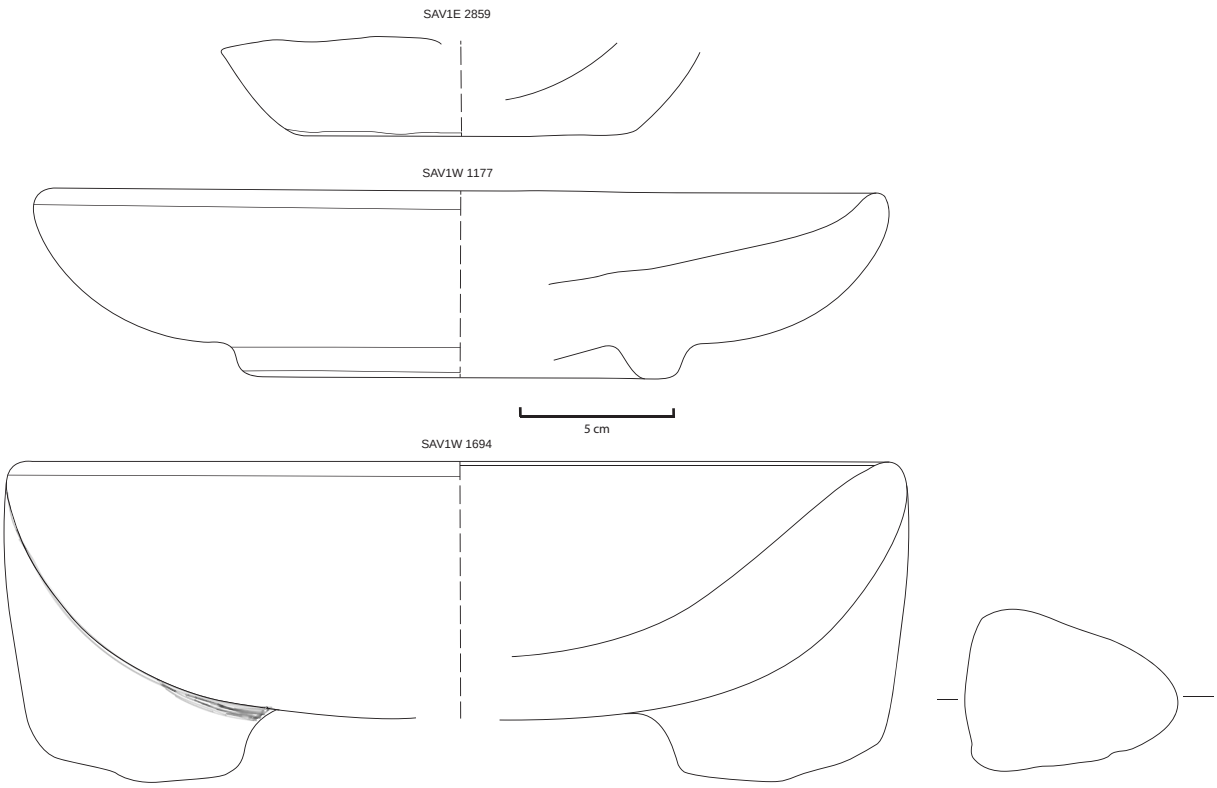

Fig. 112 Examples of stone vessels from SAV1 West and SAV1 East

the stylistic features of hair and costume of the donor, the stela from SAV1 West can be dated to the mid-18th Dynasty. Close parallels are stelae datable to the reign of Thutmose III and especially Amenhotep II – for example British Museum EA 623 by the viceroy Usersatet (see also Chapter 6.4.1.3).[866] Regrettably, no text has survived on the stela fragment from SAV1 West identifying the donor by name – we can safely assume that it was one of the Egyptian officials working and living on Sai, and maybe even buried on the island (see Chapter 6).

Stone vessels

16 fragments of stone vessels were documented from SAV1 West (Tab. 22). All seem to be New Kingdom in date and the fragments are more significant than from sector SAV1 East. Except for two small pieces in calcite, mostly hard stone such as granite and sandstone was used. Apart from the calcite vessels which presumably belonged to cosmetic vessels, all stone vessels from SAV1 West represent open forms (Fig. 112).

Most are quite large pieces with a practical function: large basins, some of them with legs/supports (SAV1W 1531, 1585, 1694, Fig. 112) and large bowls with ring bases (SAV1W 0367, 0455, 1177, Fig. 112). Especially interesting regarding the function of the basins with legs is SAV1W 1694 (Fig. 112, Pl. 102). This fragment of a sandstone basin has its pronounced rim preserved, with the top surface being concave. The underside contains the remains of a leg. Large amounts of red pigment were documented on the inner surface. Found in proximity to this basin was SAV1W 1693 (Pl. 103), a small natural pebble of agate which was used as a pounder or pestle. Along the circumference of this stone tool are some percussion marks as well as red pigment. Thus, SAV1W 1694 was possibly a kind of mortar where red pigment was crushed with the pestle SAV1W 1693 (for mortars, see also Chapter 4.4, stone tools).

866 Purchased at Wadi Halfa, see Randall-Maciver and Woolley 1911, 96.

Number of Object	Area Location	SU	Type of Object	Material
SAV1W 0837	SQ1S, 10 × 10m	600	Basin	Stone (quartzite)
SAV1W 1531	SQ1SE	800	Basin with leg	Stone (sandstone)
SAV1W 1585	SQ1SE	837	Basin with leg	Stone (sandstone)
SAV1W 1694	SQ1S	866	Basin with leg	Stone (sandstone)
SAV1W 0367	SQ1, 0–3m E-W/0–5m N-S	537	Bowl with ring base	Stone (granite)
SAV1W 0455	SQ1	548	Bowl with ring base	Stone (granite)
SAV1W 1177	SQ1S	674	Bowl with ring base	Stone (quartzite)
SAV1W 0994	SQ1S	626	Bowl/basin	Stone (quartzite)
SAV1W 1053	SQ1S	649	Bowl/plate	Stone
SAV1W 1313	SQ1S	689	Bowl/plate	Stone
SAV1W 0834	SQ1S, 10 × 10m	600	Dish/bowl	Stone
SAV1W 1361	SQ1E	713	Vessel	Stone (sandstone)
SAV1W 1663	SQ1SE	856	Vessel	Stone (calcite)
SAV1W 1045	SQ1S	658	Vessel/plate	Stone
SAV1W 0936	SQ1/S	614	Vessel/pot stand?	Stone (sandstone)
SAV1W 1196	SQ1SE	837	Vessel; with flat base	Stone (calcite)

Tab. 22 Stone vessels from SAV1 West

Faience vessels

The faience vessel fragments from SAV1 West include 30 sherds from Nun bowls (Tab. 23). These comprise rim sherds, body sherds and base sherds. The iconography of the bowl decoration is quite elaborate and diverse; almost all vessels are painted both outside and inside (Fig. 113).[867]

SAV1W 0530 shows lotus petals on the outside and the well-known geometric motif of a lotus pond on its inside (Fig. 113).[868] On the interior of SAV1W 1418 one of the other most common motifs of the

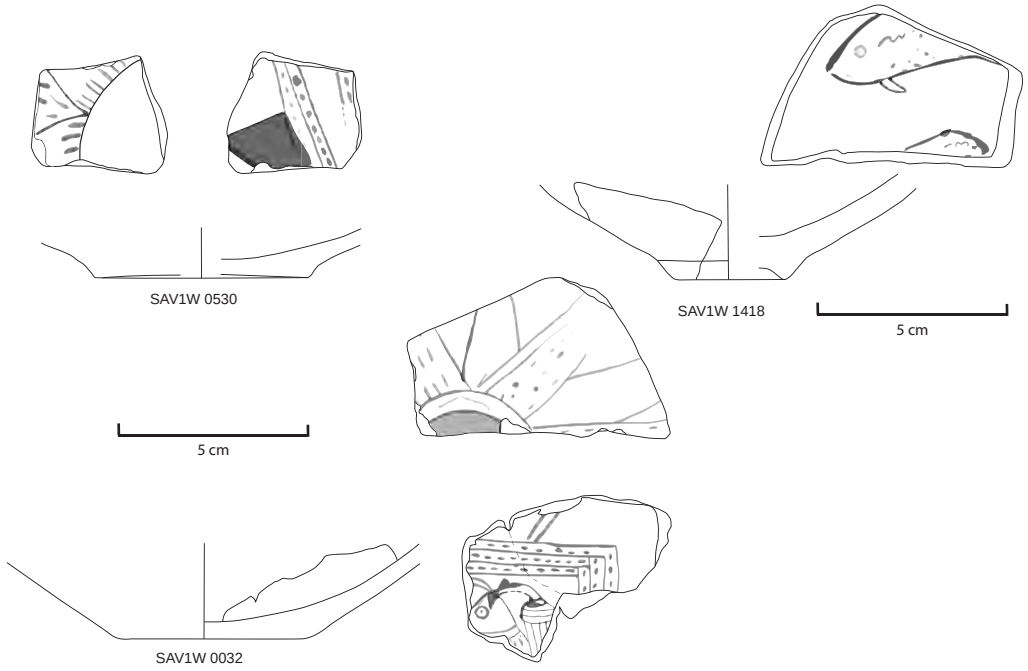

Fig. 113 Examples of faience vessels from SAV1 West – SAV1W 0530, 1418, 0032

867 See Tschorn 2017.

868 See Strauss 1974; Schoske 1992, 174–177; Friedman 1998, 211; Tschorn 2017, 438–439, figs. 7–8.

Number of Object	Area Location	SU	Type of Object	Colour
SAV1W 0032	SQ1, E of Feature 100/SQ1, 1m from E, 1m from S	501/507	Nun bowl	Outside blue, inside blue-turquoise
SAV1W 0428	SQ1	512	Nun bowl	Light turquoise - light blue, greyish lines
SAV1W 0442	SQ1NW	552	Nun bowl	Blue - turquoise
SAV1W 0506	SQ1	563	Nun bowl	Blue - turquoise, light blue, dark blue lines
SAV1W 0528	SQ1	556	Nun bowl	Outside light turquoise; inside blue - turquoise, black painting
SAV1W 0529	SQ1	556	Nun bowl	Turquoise, black painting
SAV1W 0530	SQ1, 4.9m S-N/5.5m E-W	568	Nun bowl	Outside turquoise, black painting; inside blue, black painting
SAV1W 0724	SQ1S	633	Nun bowl	Blue, with a darker blue for the decoration
SAV1W 0725	SQ1S	631	Nun bowl	Light blue
SAV1W 0738	SQ1S	627	Nun bowl	Various shades of blue
SAV1W 0771	Surface, 3m E of SQ1S	NA	Nun bowl	Various shades of blue
SAV1W 0964	SQ1S, S part of trench, cleaning and sand removal	612	Nun bowl	Blue - turquoise, light blue, dark blue lines
SAV1W 0987	SAV1W, 20m E of SQ1	NA	Nun bowl	Blue (three shades)
SAV1W 1007	SQ1S	642	Nun bowl	Blue and black (soot)
SAV1W 1193	SQ1S	669	Nun bowl	Bright blue
SAV1W 1194	SQ1S	668	Nun bowl	Bright blue
SAV1W 1418	SQ1 & E	731	Nun bowl	Blue with black decoration
SAV1W 1424	SQ1E	713	Nun bowl	Blue, with black decoration
SAV1W 1425	SQ1 & E	717	Nun bowl	Blue, with black decoration
SAV1W 1528	SQ1SE, 1m strip around trench	800	Nun bowl	Blue, with black decoration
SAV1W 1535	SQ1SE	801	Nun bowl	Blue, with black decoration
SAV1W 1544	SQ1SE	815	Nun bowl	bright blue, black decoration
SAV1W 1591	SQ1SE	843	Nun bowl	Blue, with black decoration
SAV1W 1621	SQ1SE	850	Nun bowl	Blue, with black decoration
SAV1W 1626	SQ1SE	855	Nun bowl	Blue, with black decoration
SAV1W 1631	SQ1SE	855	Nun bowl	Blue, with black decoration
SAV1W 1655	SQ1S	861	Nun bowl	Blue, with black decoration
SAV1W 1681	SQ1S	865	Nun bowl	Blue, with black decoration
SAV1W 1682	SQ1S	864	Nun bowl	Blue, with black decoration
SAV1W 1732	SQ1SE	900	Nun bowl	Blue, with black decoration

Tab. 23 Nun bowls from SAV1 West

Nun bowls is attested, the *tilapia* fish (Fig. 113).[869] A somewhat unusual piece is SAV1W 0544, the fragment of a faience chalice (Pl. 104). Its shape is rather rare and it shows signs of secondary use. Both the inside and the outside are very unclean and the motifs of several flowers and buds on the outside are difficult to recognise. The severely abraded edge at the broken bottom of the cup suggests a secondary use of unknown purpose.[870]

Among the faience vessels other than Nun bowls from SAV1 West, SAV1W 1749 (Pl. 105) is especially remarkable. It is the fragment from the body of a small vessel, broken on all sides. Parts of the neck and rounded body are preserved; it seems to be a goblet or beaker with a complex shape. Decoration was added on the outside in black paint and appears rather elaborate, despite the small percentage preserved. Two horizontal lines run around the shoulder. Between the upper line and the break a small grid of six squares remains (probably originally nine), alternating in black and blue. To either side there

[869] Krönig 1934, 157–161; Strauss 1974, 79–82; Tschorn 2017, 439–440, figs. 9–10.
[870] Tschorn 2017, 441, fig. 13.

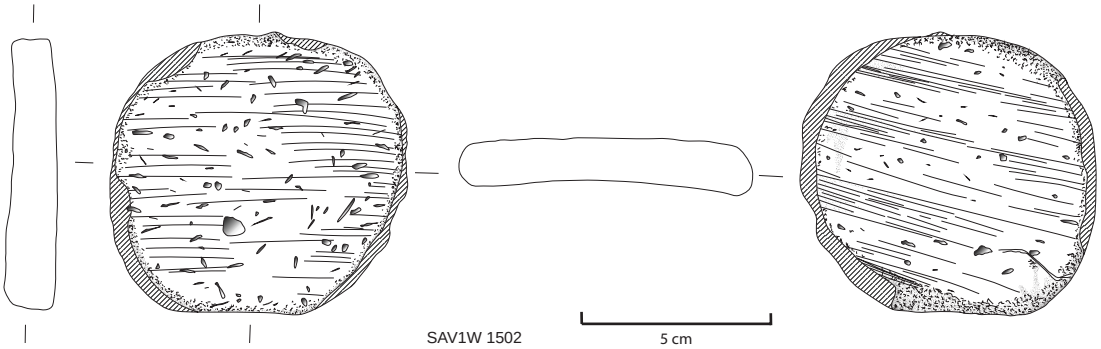

Fig. 114 Re-used pottery from SAV1 West – lid SAV1W 1502

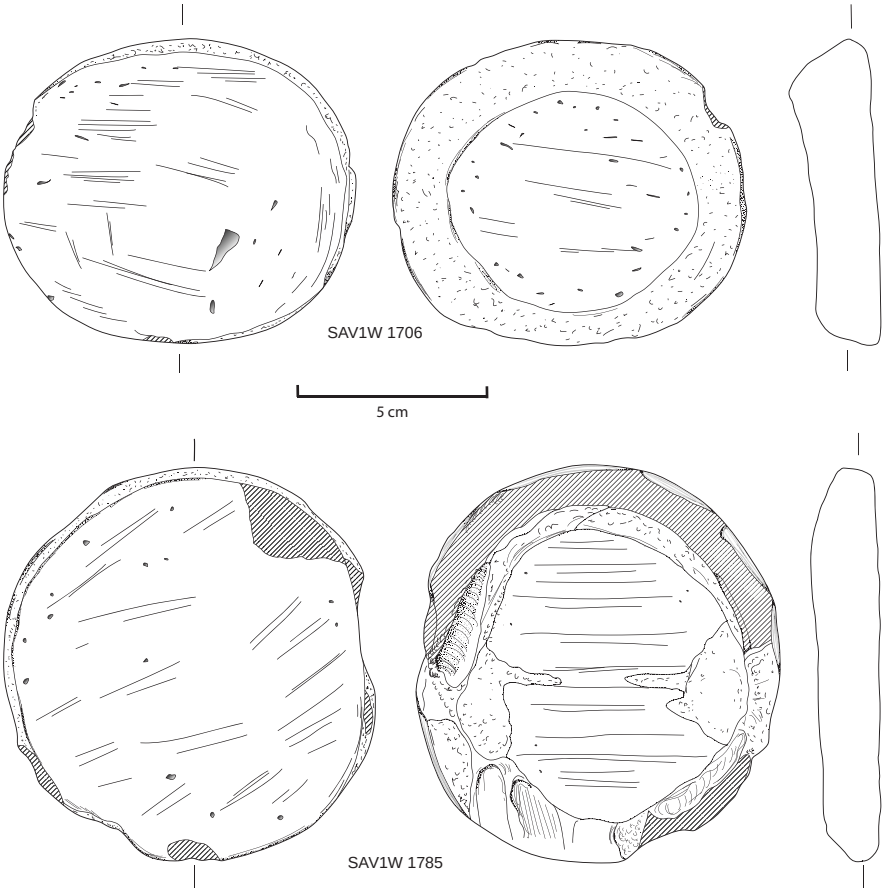

Fig. 115 Re-used pottery from SAV1 West – lids SAV1W 1706, 1785

is an empty panel – based on the small bits of paint remaining at the breaks, this may have held glyphs or small images. Faint remains of another horizontal band are visible at the bottom, connected to the top by vertical lines near the break on each side.

Re-used pottery

240 re-used pottery sherds were documented from SAV1 West and 144 of these could be dated to the 18th Dynasty (Tab. 24, Figs. 114–117). The most common group are scrapers (40 pieces), followed by lids (26 pieces). Ten tokens and six weights as well as four net weights are attested (see above, Chapter 4.1).

Examples for almost circular lids from body sherds of Nile clay vessels are SAV1W 1502 (Fig. 114), 1568, 1706 and 1785 (Fig. 115). SAV1W 1599 is the re-cut body sherd of a Nubian cooking pot.

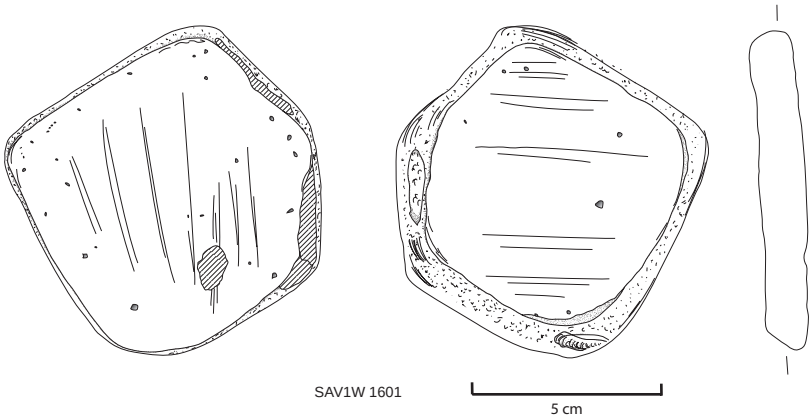

Fig. 116 Re-used pottery from SAV1 West – Marl clay piece SAV1W 1601

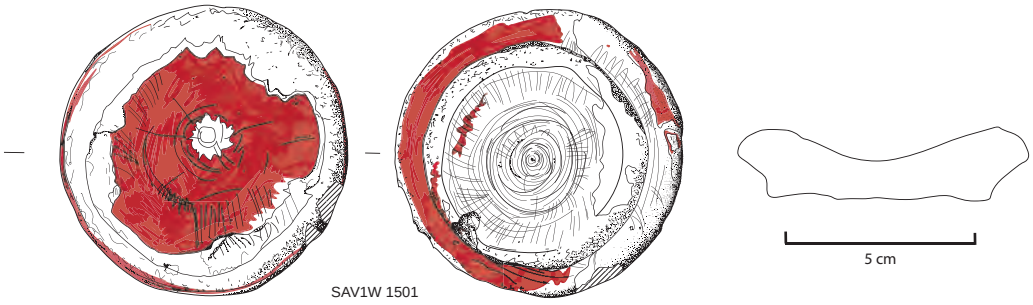

Fig. 117 Re-used pottery from SAV1 West – lid SAV1W 1501

Number of Object	Area Location	SU	Type of Object	Material	Date of Object
SAV1W 0012	SQ2, 15 x 5m, surface	500	Lid	Pottery	18th Dynasty
SAV1W 0019	SQ1SE	809	Lid	Pottery	18th Dynasty
SAV1W 0112	SQ1, NW-corner, 1–5m W-E/3–5m N-S	502	Lid	Pottery	18th Dynasty
SAV1W 0142	SQ1SE	811	Lid	Pottery	early 18th Dynasty
SAV1W 0261	SQ1, 0–2m S-N/0–4m E-W	507	Lid	Pottery	18th Dynasty
SAV1W 0320	SQ1SE	809	Lid	Pottery	18th Dynasty
SAV1W 0350	SQ1, 3–5m E-W/0–5m N-S	538	Lid	Pottery	18th Dynasty
SAV1W 0359	SQ1, 0–5m N-S/0–1m E-W	507	Lid	Pottery	18th Dynasty
SAV1W 0495	SQ1W	561	Lid	Pottery	18th Dynasty?
SAV1W 0523	SQ1	556	Lid	Pottery	18th Dynasty
SAV1W 0561	SQ1	584	Lid	Pottery	18th Dynasty
SAV1W 0628	SQ1	537	Lid	Pottery	18th Dynasty
SAV1W 1130	SQ1S	646	Lid	Pottery	18th Dynasty
SAV1W 1239	SQ1S	669	Lid	Pottery	18th Dynasty
SAV1W 1501	SQ1	708	Lid	Pottery	18th Dynasty
SAV1W 1502	SQ1S	705	Lid	Pottery	18th Dynasty
SAV1W 1547	SQ1SE	815	Lid	Pottery	18th Dynasty
SAV1W 1566	SQ1SE	828	Lid	Pottery	118th Dynasty
SAV1W 1567	SQ1SE	818	Lid	Pottery	18th Dynasty
SAV1W 1568	SQ1SE	832	Lid	Pottery	mid-18th Dynasty
SAV1W 1587	SQ1SE	837	Lid	Pottery	18th Dynasty
SAV1W 1588	SQ1SE	837	Lid	Pottery	18th Dynasty

Tab. 24 Re-used sherds from SAV1 West from the 18th Dynasty

Number of Object	Area Location	SU	Type of Object	Material	Date of Object
SAV1W 1596	SQ1SE	844	Lid	Pottery	18th Dynasty
SAV1W 1599	SQ1SE	839	Lid	Pottery	18th Dynasty?
SAV1W 1601	SQ1SE	848	Lid	Pottery	18th Dynasty
SAV1W 1602	SQ1SE	848	Lid	Pottery	18th Dynasty
SAV1W 1611	SQ1SE	843	Lid	Pottery	18th Dynasty
SAV1W 1629	SQ1S	852	Lid	Pottery	18th Dynasty
SAV1W 1635	SQ1SE	854	Lid	Pottery	18th Dynasty
SAV1W 1654	SQ1S	857	Lid	Pottery	18th Dynasty
SAV1W 1705	SQ1S	880	Lid	Pottery	early 18th Dynasty
SAV1W 1706	SQ1S	880	Lid	Pottery	18th Dynasty
SAV1W 1710	SQ1S/SQ1SE	884	Lid	Pottery	18th Dynasty
SAV1W 1711	SQ1S/SQ1SE	884	Lid	Pottery	18th Dynasty
SAV1W 1718	SQ1	530	Lid	Pottery	18th Dynasty
SAV1W 1949	SQ1SE	812	Lid	Pottery	18th Dynasty
SAV1W 0411	SQ1	549	Net Weight	Pottery	18th Dynasty
SAV1W 0496	SQ1	565	Net Weight	Pottery	18th Dynasty
SAV1W 0739	SQ1S	628	Net Weight	Pottery	18th Dynasty
SAV1W 1679	SQ1SE/SQ1S	862	Net weight	Pottery	mid-18th Dynasty
SAV1W 0494	SQ1	563	Polishing instrument	Pottery	18th Dynasty?
SAV1W 0023	SQ1, SW-corner	501	Re-used sherd	Pottery	18th Dynasty
SAV1W 0563	SQ1	585	Re-used sherd	Pottery	18th Dynasty
SAV1W 0586	SQ1	530	Re-used sherd	Pottery	18th Dynasty
SAV1W 0736	SQ1S	622	Re-used sherd	Pottery	18th Dynasty
SAV1W 0759	SQ1S	622	Re-used sherd	Pottery	18th Dynasty
SAV1W 0765	SQ1S	636	Re-used sherd	Pottery	18th Dynasty
SAV1W 0774	SQ1S	633	Re-used sherd	Pottery	18th Dynasty
SAV1W 0775	SQ1S	633	Re-used sherd	Pottery	18th Dynasty
SAV1W 0887	SQ1S	609	Re-used sherd	Pottery	18th Dynasty
SAV1W 0966	SQ1S	618	Re-used sherd	Pottery	18th Dynasty
SAV1W 1008	SQ1S	638	Re-used sherd	Pottery	18th Dynasty
SAV1W 1032	SQ1S	643	Re-used sherd	Pottery	18th Dynasty
SAV1W 1035	SQ1S	646	Re-used sherd	Pottery	18th Dynasty?
SAV1W 1128	SQ1S	646	Re-used sherd	Pottery	18th Dynasty
SAV1W 1129	SQ1S	646	Re-used sherd	Pottery	18th Dynasty
SAV1W 1131	SQ1S	647	Re-used sherd	Pottery	18th Dynasty
SAV1W 1132	SQ1S	647	Re-used sherd	Pottery	18th Dynasty
SAV1W 1134	SQ1S	642	Re-used sherd	Pottery	18th Dynasty
SAV1W 1198	SQ1S	658	Re-used sherd	Pottery	18th Dynasty
SAV1W 1199	SQ1S	662	Re-used sherd	Pottery	18th Dynasty
SAV1W 1302	SQ1S	678	Re-used sherd	Pottery	18th Dynasty?
SAV1W 1304	SQ1, N-part, 3–4m to S	664	Re-used sherd	Pottery	18th Dynasty
SAV1W 1305	SQ1, N-part, 3–4m to S	664	Re-used sherd	Pottery	18th Dynasty
SAV1W 1306	SQ1, N-part, 3–4m to S	664	Re-used sherd	Pottery	18th Dynasty
SAV1W 1307	SQ1S	674	Re-used sherd	Pottery	18th Dynasty
SAV1W 1312	SQ1S	701	Re-used sherd	Pottery	18th Dynasty
SAV1W 1394	SQ1S	698	Re-used sherd	Pottery	18th Dynasty
SAV1W 1432	SQ1E	601	Re-used sherd	Pottery	18th Dynasty
SAV1W 1434	SQ1 & E	717	Re-used sherd	Pottery	18th Dynasty
SAV1W 1462	SQ1, sieved material	726	Re-used sherd	Pottery	18th Dynasty
SAV1W 1478	SQ1 & E	731	Re-used sherd	Pottery	18th Dynasty

Tab. 24 *continued* Re-used sherds from SAV1 West from the 18th Dynasty

Number of Object	Area Location	SU	Type of Object	Material	Date of Object
SAV1W 1740	SQ1S, S of Feature 143	903	Re-used sherd	Pottery	18th Dynasty
SAV1W 1750	SQ1SE-E & 1SE	912	Re-used sherd	Pottery	18th Dynasty
SAV1W 1784	SQ1SE	921	Re-used sherd	Pottery	18th Dynasty
SAV1W 1785	SQ1SE	921	Re-used sherd	Pottery	18th Dynasty
SAV1W 1788	SQ1SE	924	Re-used sherd	Pottery	18th Dynasty
SAV1W 1805	SQ1SE	937	Re-used sherd	Pottery	early 18th Dynasty
SAV1W 1810	SQ1SE	943	Re-used sherd	Pottery	18th Dynasty
SAV1W 1811	SQ1SE & SQ1SE-E	947	Re-used sherd	Pottery	18th Dynasty
SAV1W 1820	SQ1S	963	Re-used sherd	Pottery	18th Dynasty
SAV1W 1829	SQ1S	964	Re-used sherd	Pottery	early 18th Dynasty
SAV1W 1830	SQ1S	962	Re-used sherd	Pottery	18th Dynasty
SAV1W 1832	SQ1SE	920	Re-used sherd	Pottery	18th Dynasty
SAV1W 1835	SQ1SE_E	916	Re-used sherd	Pottery	18th Dynasty
SAV1W 1836	SQ1SE, N of SU 941	916	Re-used sherd	Pottery	early 18th Dynasty
SAV1W 1837	SQ1S	970	Re-used sherd	Pottery	18th Dynasty
SAV1W 0017	SQ2, 15 x 5m, surface	500	Scraper	Pottery	18th Dynasty
SAV1W 0021	SQ1, from debris of SU 502	502	Scraper	Pottery	18th Dynasty
SAV1W 0037	SQ1, SW-corner	501	Scraper	Pottery	18th Dynasty
SAV1W 0205	SQ1, SE-corner, 3–5m E-W/0–5m S-N	501	Scraper	Pottery	18th Dynasty
SAV1W 0233	SQ1, adj. to Feature 100, 3–5m E-W/0–5m N-S	501	Scraper	Pottery	18th Dynasty
SAV1W 0234	SQ1, adj. to Feature 100, 3–5m E-W/0–5m N-S	501	Scraper	Pottery	18th Dynasty
SAV1W 0270	SQ1, 0–1m E-W/0–2m S-W	507	Scraper	Pottery	18th Dynasty
SAV1W 0271	SQ1, 0–1m E-W/0–2m S-W	507	Scraper	Pottery	18th Dynasty
SAV1W 0291	SQ1, 0–3m E-W/0–5m N-S	537	Scraper	Pottery	18th Dynasty?
SAV1W 0349	SQ1, 3–5m E-W/0–5m N-S	538	Scraper	Pottery	18th Dynasty
SAV1W 0354	SQ1, 3–5m E-W/0–5m N-S	538	Scraper	Pottery	18th Dynasty
SAV1W 0384	SQ1, E-W 4–5m/S-N 0–5m	507	Scraper	Pottery	18th Dynasty
SAV1W 0410	SQ1	512	Scraper	Pottery	18th Dynasty
SAV1W 0497	SQ1	559	Scraper	Pottery	18th Dynasty
SAV1W 0546	SQ1, 4–5m E-W/0–5m S-N	507	Scraper	Pottery	18th Dynasty
SAV1W 0552	SQ1, 4–5m E-W/0–5m S-N	507	Scraper	Pottery	18th Dynasty
SAV1W 0580	SQ1	585	Scraper	Pottery	18th Dynasty
SAV1W 0581	SQ1, E-half	507	Scraper	Pottery	18th Dynasty
SAV1W 0584	SQ1	587	Scraper	Pottery	18th Dynasty
SAV1W 0593	SQ2, sandy area, 0–5m from W	504	Scraper	Pottery	18th Dynasty?
SAV1W 1507	SQ1S	639	Scraper	Pottery	18th Dynasty
SAV1W 1508	SQ1S	641	Scraper	Pottery	18th Dynasty
SAV1W 1510	SQ1S	657	Scraper	Pottery	18th Dynasty
SAV1W 1512	SQ1S	668	Scraper	Pottery	18th Dynasty
SAV1W 1514	SQ1S	668	Scraper	Pottery	18th Dynasty
SAV1W 1515	SQ1S	674	Scraper	Pottery	18th Dynasty
SAV1W 1516	SQ1	680	Scraper	Pottery	18th Dynasty
SAV1W 1518	SQ1E	601	Scraper	Pottery	18th Dynasty
SAV1W 1519	SQ1 & E	732	Scraper	Pottery	18th Dynasty
SAV1W 1521	SQ1S	711	Scraper	Pottery	18th Dynasty
SAV1W 1522	SQ1 & E	719	Scraper	Pottery	18th Dynasty
SAV1W 1533	SQ1	512	Scraper	Pottery	18th Dynasty
SAV1W 1550	SQ1SE	818	Scraper	Pottery	18th Dynasty

Tab. 24 *continued* Re-used sherds from SAV1 West from the 18th Dynasty

Number of Object	Area Location	SU	Type of Object	Material	Date of Object
SAV1W 1551	SQ1SE	818	Scraper	Pottery	18th Dynasty
SAV1W 1600	SQ1SE	846	Scraper	Pottery	18th Dynasty
SAV1W 1606	SQ1SE	847	Scraper	Pottery	18th Dynasty
SAV1W 1638	SQ1 S	852	Scraper	Pottery	18th Dynasty
SAV1W 1639	SQ1 S	852	Scraper	Pottery	18th Dynasty
SAV1W 1669	SQ1SE	858	Scraper	Pottery	18th Dynasty
SAV1W 1672	SQ1SE/SQ1S	865	Scraper	Pottery	18th Dynasty
SAV1W 0020	SQ1, from debris of SU 502	502	Token/gaming piece	Pottery	18th Dynasty
SAV1W 0296	SQ1, 0–5m W-E/0–5 m N-S	533	Token/gaming piece	Pottery	18th Dynasty
SAV1W 0323	SQ1	536	Token/gaming piece	Pottery	18th Dynasty
SAV1W 0381	SQ1NW	501	Token/gaming piece	Pottery	18th Dynasty
SAV1W 0439	SQ1, 1.8m W-E/3.9m N-S	551	Token/gaming piece	Pottery	18th Dynasty
SAV1W 1525	SQ1, sieved material	731	Token/gaming piece	Pottery	18th Dynasty
SAV1W 1608	SQ1SE	850	Token/gaming piece	Pottery	18th Dynasty
SAV1W 1609	SQ1SE	850	Token/gaming piece	Pottery	18th Dynasty
SAV1W 1637	SQ1 S	852	Token/gaming piece	Pottery	18th Dynasty?
SAV1W 1671	SQ1SE/SQ1S	865	Token/gaming piece	Pottery	18th Dynasty?
SAV1W 0437	SQ1	512	Weight (central perforation)	Pottery	18th Dynasty
SAV1W 1532	SQ1SE (surface cleaning)	800	Weight (central perforation)	Pottery	18th Dynasty
SAV1W 1642	SQ1S	852	Weight (central perforation)	Pottery	mid-18th Dynasty
SAV1W 1675	SQ1SE/SQ1S	865	Weight (intended perforation)	Pottery	18th Dynasty
SAV1W 1678	SQ1SE/SQ1S	862	Weight (intended perforation)	Pottery	mid-18th Dynasty
SAV1W 1833	SQ1S	953	Weight (central perforation)	Pottery	18th Dynasty

Tab. 24 *continued* Re-used sherds from SAV1 West from the 18th Dynasty

SAV1W 1601 is a rare re-used body sherd of a Marl clay vessel (Marl B, Fig. 116). SAV1W 1501 represents one of the many re-used ring bases of dishes as lids (Fig. 117). It is another example for a red-washed/slipped dish with an uncoated bottom of the ring base (see above. 4.2). Another re-used sherd is SAV1W 0494. It seems to be a polishing instrument (Pl. 106), possibly for the pottery production. It has a diameter of 35–40mm and was made from a Nile clay body sherd of a jar.

Tools

Metallic remains are rare at SAV1 West. A bronze or copper needle was found in Square 1S, SU 618 (SAV1W 0965, Fig. 66). It is a long thin needle with a greenish surface and a rounded section; it tapers into a point (length 119mm; diam. 4.5mm). The top of the object is lightly perforated (diam. 1.5mm). Such needles are well known from New Kingdom settlements in Egypt, e.g. Amarna.[871]

Further tools were manufactured from bone and find parallels at New Kingdom towns in Egypt such as Amarna, Gurob and Memphis.[872] Two very nicely worked piercing tools were found at SAV1 West (SAV1W 1520 and SAV1W 1769, Fig. 67). SAV1W 1520 is shaped to be used as a piercing tool (64 × 6 × 14mm). SAV1W 1769 was found in SU 909 within Feature 151 (see below, Chapter 4.5). It is a small bone sherd which was worked to a polished point at one end (49 × 3 × 7mm). All in all, the scarcity of

871 Kemp and Stevens 2010b, 346–348, fig. 20.3.
872 Kemp and Stevens 2010b, 449 with references.

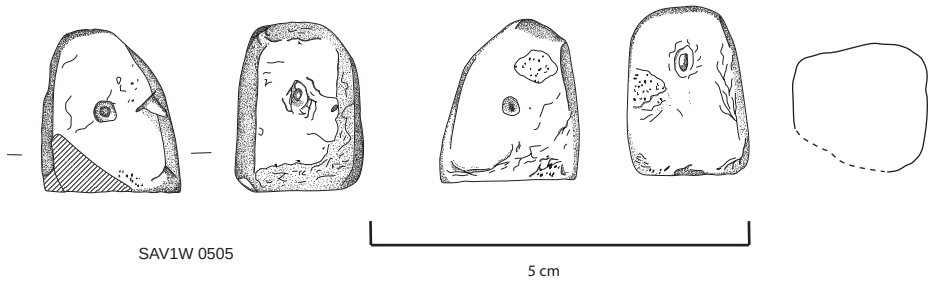

Fig. 118 SAV1W 0505, gaming piece

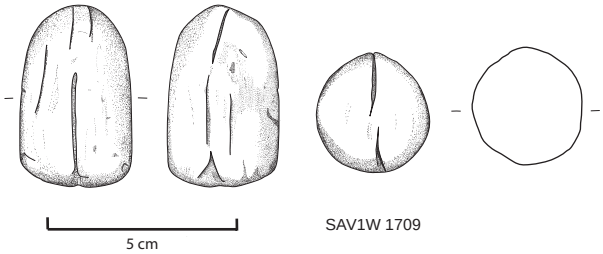

Fig. 119 SAV1W 1709, gaming piece/stone object

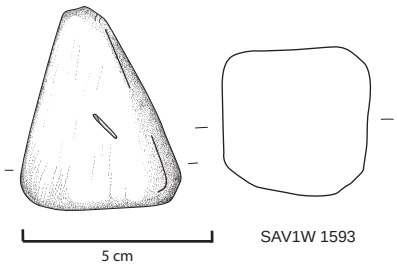

Fig. 120 SAV1W 1593, stone object

bone tools from the New Kingdom town of Sai is remarkable and contrasts, for example, with Amarna, where more than 160 pieces were recovered, possibly related to the textile production.[873] The function of the two bone tools from SAV1 West must remain open.[874]

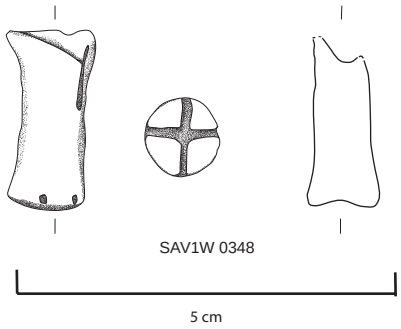

Fig. 121 SAV1W 0348, clay object/ gaming piece (medieval)

Tokens/gaming pieces

Altogether, 41 gaming pieces were registered from SAV1 West which are mostly re-used pottery sherds (see above, Tab. 24). Some objects in other materials and of various shapes were tentatively interpreted as tokens/gaming pieces, but the function remains unclear in most cases.

SAV1W 0505 (Fig. 118) is a small clay object with a flat, nearly quadratic surface and a half-oval-shaped/arched body. Each of its four sides was equipped with a small hole. One pair of opposite lying holes are connected with each other and represent a perforation; the other pair is not connected. This object might have been used as a gaming piece or as a bead/pendant.

SAV1W 1709 (Fig. 119) is a conical fragment in sandstone with a roughly flat base and rounded tip. Two lines were incised through the length of it, but do not quite match up at either end. A further shorter dash appears next to each line. The object is quite large for a gaming piece and maybe SAV1W 1709 was used as a small stopper.

Another unclear sandstone piece is SAV1W 1593 (Fig. 120). It is shaped as a pyramid and all sides are flat and smooth. The function of the object could be that of a gaming piece, but perhaps a polishing stone or even a figurine are more likely.

[873] Kemp and Vogelsang-Eastwood 2001, 358–373; Kemp and Stevens 2010b, 449.

[874] For bone tools from Egypt a use within the textile production, net-making and leatherworking was suggested, see Kemp and Stevens 2010b, 449.

Some of the gaming pieces from SAV1 West are also of Post-New Kingdom date as can be illustrated with SAV1W 0348 (Fig. 121). This medieval piece is a cylindrical object at which incised lines at the upper part depict a cross. The lower part seems to be broken off; maybe this object was attached to something or it was used as gaming piece.

4.4 Stone tools

by Julia Budka

Unsurprisingly, the group of tools from the New Kingdom town of Sai is mostly represented by stone tools. As mentioned above, tools made of other materials like metal, wood and bone are rare.[875] The large group of stone tools from SAV1 East and SAV1 West comprises weights, querns, grinders, hammer stones, pounders and pestles, polishers and burnishers, a small number of possible whetstones and finally miscellaneous and/or multifunctional stone tools.[876] The following is an overview of the most common types.

4.4.1 Lithics

A total of 42 lithics were recorded during AcrossBorders excavations in the New Kingdom town (15 from SAV1 East, 27 from SAV1 West, Tab. 25). Predictably, the most common tool types are those useable in domestic contexts like scrapers and blades.[877] Some unidentified tools and sickles are notable as well. The raw material used is mainly flint, but also chert/radiolarith.[878] Small flakes attest both at SAV1 East and SAV1 West that also other material like agate was used. Three small flakes of agate were found associated with Feature 151 at SAV1 West and can safely be dated to the mid-18th Dynasty (SAV1W 1839, Fig. 122). SAV1W 1493 illustrates that besides agate also quartz and silicified wood were used.[879]

The material from SAV1 East (Figs. 123–125) comprises five pieces from 18th Dynasty contexts which are closely datable (see Chapter 3.2.4) – SAV1E 1527 and SAV1E 2348 from Feature 15 and SAV1E 2875, SAV1E 2876 and SAV1E 2877 from the small silo, Feature 75. The three blades from Feature 75 are in particular interesting because they can be dated to the early 18th Dynasty.

SAV1E 2875 is a small flint flake (43 × 4 × 21mm), lightly worked into a blade along one long edge. The material is 10YR8/2, very pale brown (Pl. 107). Slightly darker flint was used for SAV1E 2876, which is 5YR5/2, pale brown. This piece is also a small flint flake, lightly worked into a blade along both long edges. One short edge is preserved and flat, so it is likely that the point is missing (Pl. 108). The third lithic artefact found in Feature 75 is SAV1E 2877 with a middle brown to pale brown colour (5YR5/2). This small flint flake has also been lightly worked into a blade along both long edges. One long side is curved and the end surface is notched (Fig. 123).

A sickle blade (SAV1E 1527) from Feature 15 falls into Tillmann's Type A,[880] and can be dated to the mid-18th Dynasty because of its find context. Implements made of flint stayed into use at least until the New Kingdom in Egypt and this also holds true for Egyptian sites in Nubia.

Significant within the material from SAV1 East is also the blade SAV1E 0357 (Fig. 124). It is a flat rectangular-shaped stone flake (51 × 17 × 6mm) of high-quality work, probably completely preserved. Three edges are chipped, one edge is very sharp. The characteristic 'caramel' colour of the flint makes

875 For the general reasons why Egypt produced stone tools well into the Late Bronze Age (scarcity of copper and iron in Egypt), see Tillmann 2006; Tillmann 2007.

876 Cf. Giddy 1999, pls. 39–50; Prell 2011, passim.

877 Tillmann 2007, 313.

878 Cajetan Geiger kindly provided the identification of the material.

879 This compares well with Amarna, where flint, chert, agate and silicified wood were worked into blades as well, see Kemp and Stevens 2010b, 445–447.

880 Tillmann 2007, 69–72.

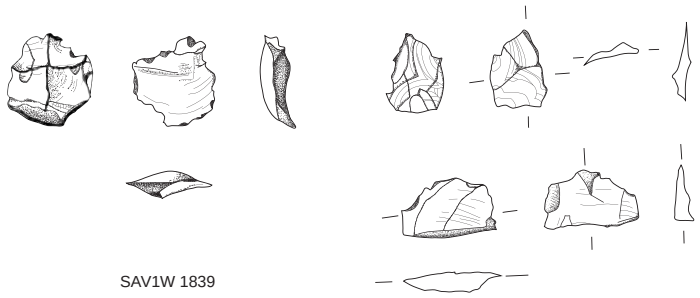

Fig. 122 SAV1W 1839, agate flakes. Scale 1:1

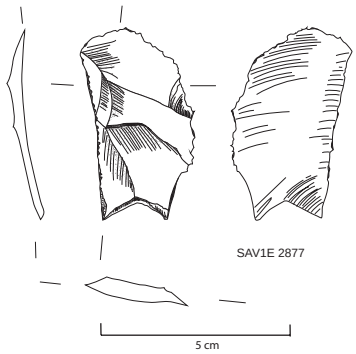

Fig. 123 SAV1E 2877, flint from Feature 75 at SAV1 East

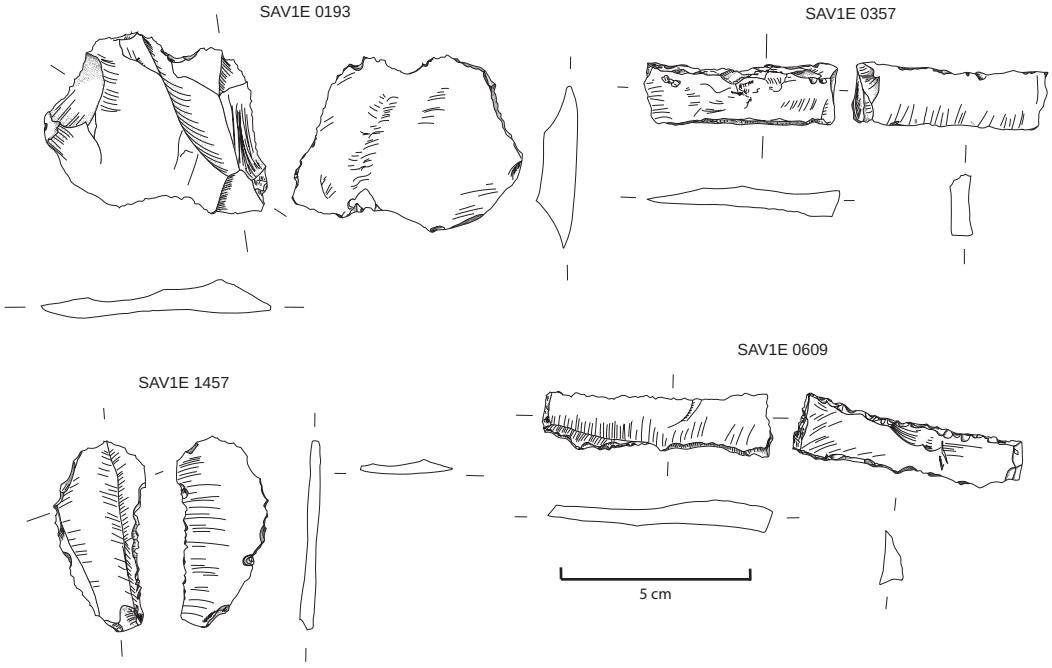

Fig. 124 Lithics from SAV1E

it likely that SAV1E 0357 was imported to Upper Nubia (Pl. 109). Such caramel-coloured flints are well-known from Amarna,[881] although it is unknown whether these represent local material.[882] Imported high-quality flints, presumably from Thebes, had already reached Nubia during the Kerma period.[883]

One possible scraper is attested from SAV1 East. SAV1E 2119 is semicircular in shape (49 × 48 × 7mm). Its cortex is medium brown, the inner colour is 5YR5/2 (pale brown). This tool has an errated edge along the circular end of the stone and was used as a blade or perhaps rather as a scraper.

Except for three pieces from SAV1 West which come from stratigraphical units close to the surface including much mixed material (SAV1W 0067, SAV1W 0080, SAV1W 0154), the dating to the 18th Dynasty seems straightforward for the other pieces listed in Table 25 (see Figs. 126–128). However, four pieces most probably represent Palaeolithic artefacts: SAV1W 0911, SAV1W 1154, SAV1W 1407 and SAV1W 1449.

881 See Stevens 2012, 235–243.

882 For Amarna as one of the significant New Kingdom flint production sites, see Tillmann 2007, 155 with references.

883 Bonnet 1990, 138, fig. 119; see Tillmann 2007, 154–155, fig. 136.

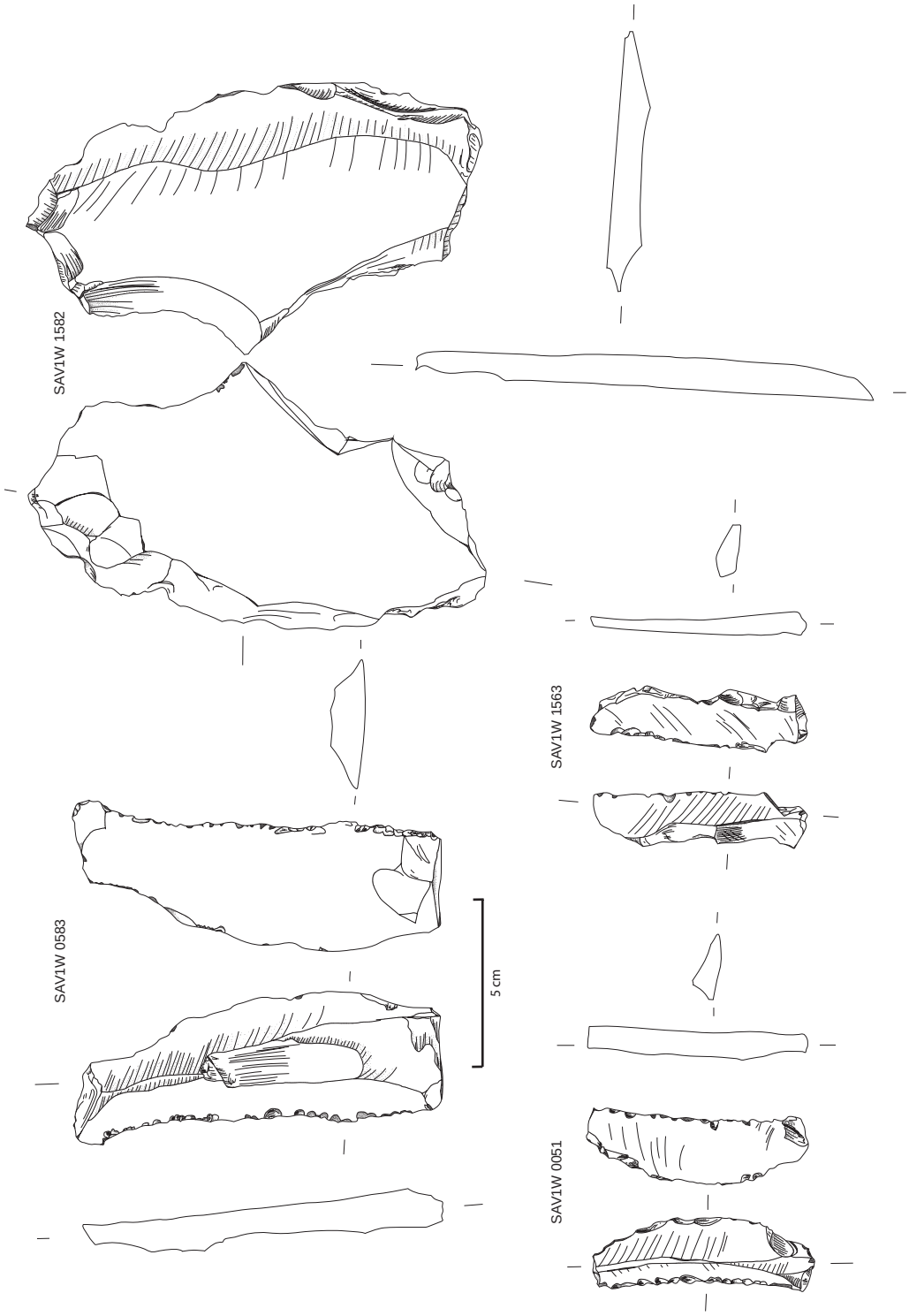

Fig. 125 Lithics from SAV1W

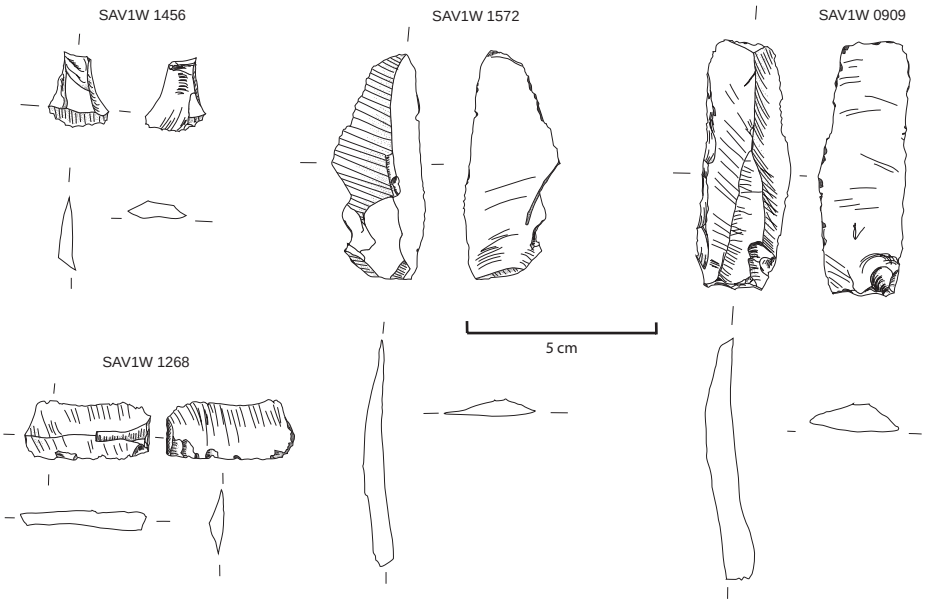

Fig. 126 Lithics from SAV1W

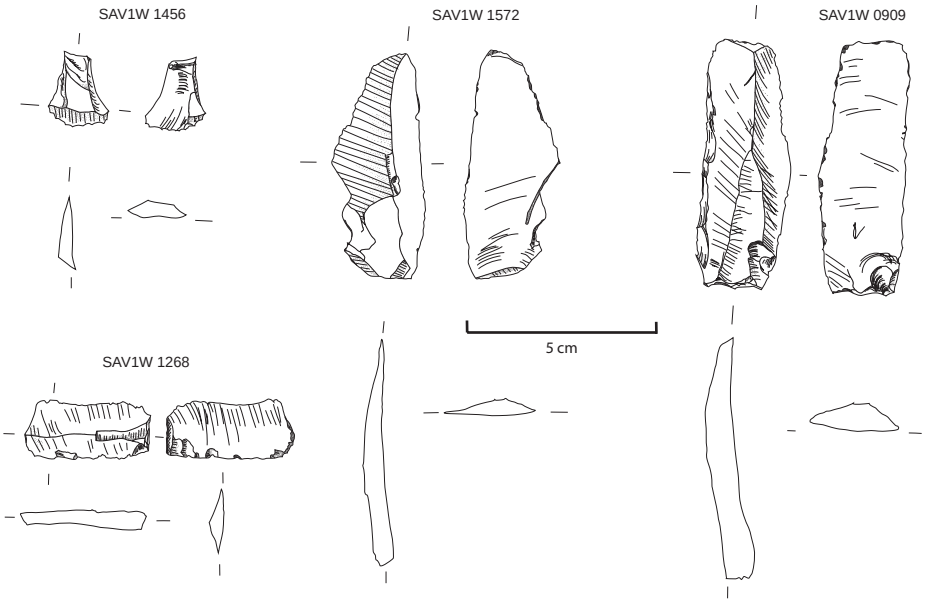

Fig. 127 Lithics from SAV1W

SAV1W 1449 is especially interesting since it was found in the upper filling of Feature 115, SU 731 (Fig. 128). This piece is a fragment of a flint blade, well weathered, thus suggesting that it might be Palaeolithic. Although Palaeolithic artefacts appear occasionally within the New Kingdom town, probably being part of the pebbles of the natural ground, SAV1W 1449 also raises the question whether some of these objects were also intentionally re-used/collected.[884]

Among the 18th Dynasty pieces of lithics from SAV1 West, SAV1W 0051 represents a sickle (Fig. 125). This flake of a flint pebble (10YR4/2 dark greyish brown) was worked into a sickle along

[884] A prehistoric flint was also found within an 18th Dynasty context at Amarna, see Stevens 2012, 240–243, no. 39877.

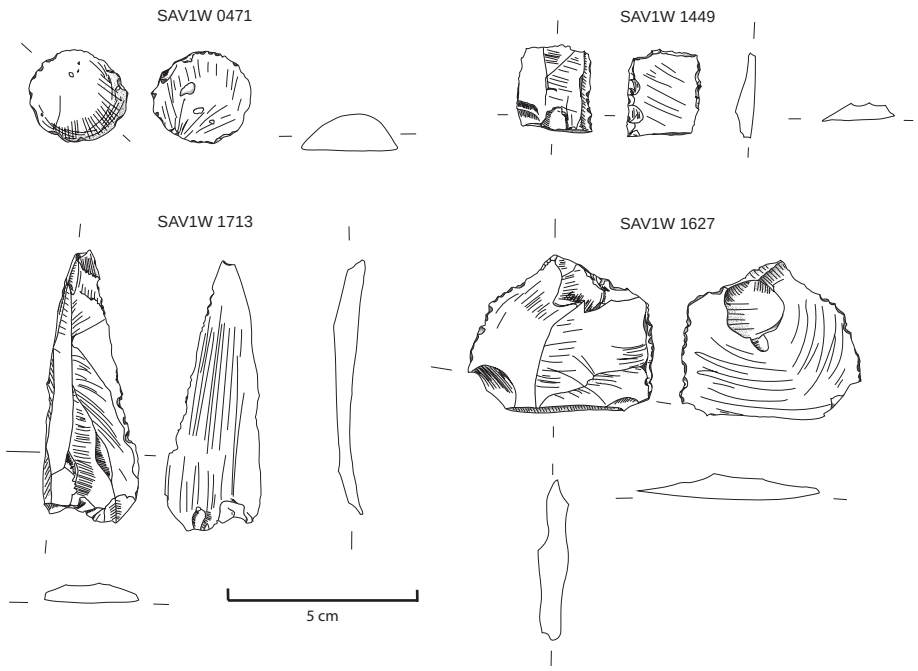

Fig. 128 Lithics from SAV1W

both long edges (66 × 7 × 20mm). Three pieces are illustrative for the use of the raw material chert/radiolarith[885] (SAV1W 0471, 0583 and 1582). SAV1W 0471 is 5YR4/4 moderate brown in colour (Fig. 128). This small semispherical-shaped stone object with a diameter of 24–26mm (and a height of 10mm) has an edge with several sharp spallings and was probably used as a scraper. Its complete surface is very smooth.

The majority of blades from SAV1 West was made of flint and comprise scrapers and blades (Figs. 126–128). SAV1W 1563 is a small flint blade (65 × 6 × 15mm), with shallow serration marks on one side (Fig. 125). Its raw material is quite common for the silices used at SAV1 West, being 10YR6/2 pale yellowish brown. SAV1W 1627 (Fig. 128) was probably used as a scraper. It is a small irregularly shaped flake of flint (48 × 8 × 42mm). There are signs of working on two edges. The piece ranges in colour from 10YR8/2 very pale orange to 10YR6/2 pale yellowish brown. Another blade from SAV1 West is SAV1W 1268. It is a small fragment of a flint blade with one serrated edge of 5YR5/2 pale brown colour (Fig. 126). SAV1W 1456 is made of a very distinctive orange flint (Fig. 126). The piece is a small fragment of a flint flake (20 × 16 × 5mm) which may have been used as a tool and has a serrated edge. Its raw material suggests that it was possibly imported (cf. SAV1E 0357).

A very small number of possible sickles or sickle blades were found at SAV1 West like SAV1W 0051 (Tab. 25). Another example if SAV1W 1713 (Fig. 128) of light brown to pale yellowish brown colour (10YR 6/2). It is a triangular flake of a flint pebble, worked into a blade or sickle along one long side. All in all, the considerably small number of sickles from the town area of Sai may be interpreted as a possible indication that grain harvest was not within the main activities of the occupants of New Kingdom Sai, but that grains were also imported to the site (cf. Chapter 5.1).[886]

To conclude, the small assemblage of lithics from SAV1 East and SAV1 West seem to illustrate that flint tools were primarily produced according to the local demand from locally/regionally available chert and flint pebbles/gravels.[887] Based on the finds from Feature 75, this seems to hold true already from the

885 Stone identification by Cajetan Geiger.

886 Cf. Tillmann 2007, 181. See also the more recent discussion by Jeuthe 2018, especially 290.

887 For local productions from "Schotterflint", see Tillmann 2007, 159.

early 18th Dynasty onwards. Only a very small quantity of the flint objects was imported from Egypt, most likely from Thebes and/or Amarna.[888]

Number of Object	Area, Location	SU	Feature	Type of Object	Material
SAV1E 0357	SQ3, 4.50 m W-E/0.5 m N-S	005		Lithic, tool	Stone (flint)
SAV1E 0609	SQ4C	1315		Lithic, blade	Stone (flint)
SAV1E 0654	SQ1B, 1.5m W-E/5m N-S	19	29	Lithic, tool	Stone (gneiss?)
SAV1E 0793	SQ4C	381		Lithic, blade	Stone (flint)
SAV1E 1475	SQ4, 4.0–5.7m W-E/4.5–6.5m N-S	105		Lithic, blade?	Stone (flint)
SAV1E 1527	SQ2; 0.5–1.8 N-S; W section	–	15	Lithic, sickle blade	stone (flint)
SAV1E 1962	SQ4, 1–2.7 W-E/3.7–5m N-S	223		Lithic, blade	Stone (flint)
SAV1E 2119	SQ4+4A, 0.5–3.5m W-E/7.5–10.3m N-S	227		Lithic, scraper	Stone (flint)
SAV1E 2348	SQ2	1318	15	Lithic, tool	Stone (flint)
SAV1E 2875	SQ4	462	75	Lithic, blade	Stone (flint)
SAV1E 2876	SQ4	461	75	Lithic, blade	Stone (flint)
SAV1E 2877	SQ4	461	75	Lithic, blade	Stone (flint)
SAV1E 2890	SQ4C	449		Lithic, blade	Stone (schist)
SAV1E 2895	SQ4C	473		Lithic, blade	Stone (quartz)
SAV1E 2896	SQ4C	473		Lithic, blade	Stone (flint)
SAV1W 0051	SQ1SE	840		Lithic, sickle	Stone (flint)
SAV1W 0067	SQ1	501		Lithic, blade	Stone (flint)
SAV1W 0080	SQ1	500		Lithic, blade	Stone (chert)
SAV1W 0154	SQ2, N-edge, 6m W	501		Lithic, blade	Stone (flint)
SAV1W 0471	SQ1 NW, 1m N-S/1.2m E-W	552		Lithic, scraper	Stone (chert)
SAV1W 0583	SQ1, 7.1m S-N/2.6m E-W	567		Lithic, blade	Stone (chert)
SAV1W 0909	SQ1S	612		Lithic, blade	Stone (flint)
SAV1W 0911	SQ1S	612		Lithic, scraper	Stone (chert)
SAV1W 1154	SQ1	664		Lithic, blade	Stone (quartz)
SAV1W 1268	SQ1S	706		Lithic, blade	Stone (flint)
SAV1W 1298	SQ1S	718		Lithic, blade	Stone (flint)
SAV1W 1407	SQ1 & E	722		Lithic, blade	Stone (chert/pebble)
SAV1W 1428	SQ1S	723		Lithic, blade	Stone (flint)
SAV1W 1449	SQ1, sieved material	731	115	Lithic, blade	Stone (flint)
SAV1W 1493	SQ1, sieved material	731	115	Lithic, flakes	Flint, Agate, Quartz, Silicified Wood
SAV1W 1453	SQ1S, sieved material	710		Lithic, unclear	Stone (flint)
SAV1W 1456	SQ1S, sieved material	710		Lithic, tool?	Stone (flint)
SAV1W 1545	SQ1SE	812		Lithic, blade?	Stone (flint)
SAV1W 1563	SQ1SE	831		Lithic, blade	Stone (flint)
SAV1W 1572	SQ1SE	834		Lithic, blade	Stone (flint)
SAV1W 1582	SQ1SE	834		Lithic, scraper?	Stone (chert)
SAV1W 1627	SQ1SE	855		Lithic, scraper?	Stone (flint)
SAV1W 1713	SQ1S/1SE	880		Lithic, blade/sickle?	Stone (flint)
SAV1W 1755	SQ1SE_E	916		Lithic, scraper	Stone (flint)
SAV1W 1806	SQ1	931		Lithic, blade?	Stone (flint)
SAV1W 1814	SQ1SE & SQ1SE_E	945		Lithic, blade	Stone (flint)
SAV1W 1819	SQ1S	977		Lithic, blade	Stone (flint)

Tab. 25 Lithics from SAV1 East and SAV1 West

888 Cf. Tillmann 2007, 151–163 for the flint sources in ancient Egypt.

	01	02	03	04	05	06	Σ
SAV1 W, SQ1	69	10	34	80	56	4	253
SAV1 W, SQ1/1S	4	0	4	0	2	0	10
SAV1 W, SQ1E	13	1	3	9	6	0	32
SAV1 W, SQ1&E	11	0	2	1	1	1	16
SAV1 W, SQ1NW	3	0	0	2	6	0	11
SAV1 W, SQ1W	15	2	7	9	5	0	38
SAV1 W, SQ1W&NW	1	0	0	1	4	0	6
SAV1 W, SQ1S	117	9	76	102	55	14	373
SAV1 W, SQ1S/1SE	0	2	0	0	0	2	4
SAV1 W, SQ1SE	22	2	3	15	1	20	63
SAV1 W, SQ1SE_E	2	0	0	2	0	1	5
SAV1 W, SQ1SE_E/1SE	0	0	0	2	0	1	3
SAV1 W, SQ2	5	5	9	8	8	2	37
	262	**31**	**138**	**231**	**144**	**45**	**851**

Horizontally main types – 01 = pounders, 02 = hammers, 03 = whetstones, 04 = grindstones, 05 = hand mills, 06 = other

Tab. 26 Distribution of macrolithics in sector SAV1 West

4.4.2 Macrolithics[889]

Introduction

In general, a considerable amount of macrolithics was unearthed in all sectors of the New Kingdom town (SAV1 North, SAV1 East and SAV1 West).[890] The following is a summary of the stone tools discovered between 2013 and 2017 in SAV1 West and SAV1 East. All in all, the variety of tools and material they consist of is limited. Mainly pounders and hammers, grindstones and hand mills as well as whet- and abrasive stones were found. As most common materials natural quartz boulders, sandstone and quartzite (silicified sandstone) can be noted. Many pieces show traces of burning on the surface. The range of forms and materials from both sectors excavated by the AcrossBorders project, SAV1 East and SAV1 West, is comparable, although more macrolithics were unearthed in the eastern sector (a total of 1,421 objects). The classification of the macrolithics from the New Kingdom town of Sai was established by Silvia Prell in 2015. All in all, the total number of macrolithics registered and recorded in the database is 2,272.[891] Thus, this category of objects represents 47% of all registered finds.

Macrolithics from SAV1 West

The distribution of the 851 registered macrolithics from SAV1 West shows a clear concentration in Square 1 and Square 1S (Tab. 26). Since these squares are the areas where the domestic architecture was unearthed, this comes as no surprise. Square 1S yielded with 373 stone objects the majority and 43% of all macrolithics from SAV1 West.

[889] This chapter is based on a written report by Silvia Prell, who studied the macrolithics from SAV1 East and SAV1 West during the 2015 field season (January 1–18, 2015), Prell 2015; the data were updated by means of the object database for the material excavated in 2016 and 2017.

[890] For SAV1 North, see Budka 2017j, 166–167. One pounder, SAV1NE 0010, was found in sector SAV1 Northeast.

[891] Because of the large amount of stone tools, the recording system was slightly adapted in 2016; only selected macrolithics were registered, others were just counted and noted in the field notebooks. These undiagnostic pieces comprise several dozen per sector and per season; they are not considered within this overview.

Pounders and hammers

Altogether 262 pounders derive from sector SAV1 West. These tools often consist of simple natural boulders, used as found (Pl. 110).[892] The outline and sections are often naturally oval, round, planoconvex or bar-shaped. The surface of the objects is mainly naturally even and smooth, a factor which is important for the good handling. Concentrations of percussion marks show the use as a tool. According to the shape of the boulder, they can be arranged circumferentially, especially if the pounder was used over a longer period. Very well worn pieces have only small remains of the original surface of the boulder left. But also examples exist which were barely used and show only few and small concentrations of percussion marks.

A few examples with a naturally very regular and smooth surface show faint scratches possibly pointing to a combined use of the object as pounder and polisher.[893] About a quarter of them consist from quartz boulders (white, yellow, red or brown outside, whitish inside), but also siliceous shale (greenish), sandstone (white, yellow, red), quartzite, flint and silicified wood are known materials. SAV1W 0254 shows clear traces of red pigment, most likely red ochre, showing its function as a crushing tool connected to paint production (Pl. 111).

31 intentionally shaped hammers are known from SAV1 West; most of them consist of quartzite (white, yellow, red). The forms are either spherical, cuboid, planoconvex or wheel-shaped (Pl. 112). The relatively small amount of intentionally shaped hammers is not astonishing considering the wide range of natural boulders present everywhere on site and most suitable for the task.

Whetstones/abrasive stones

138 whetstones, mainly made from sandstone (white, yellow, red), were registered from SAV1 West (Pl. 113). Most of them show grooves.[894] The groove of one object (SAV1W 0637) shows a v-shaped section and most likely was used for sharpening metal tools, although no traces of abraded metal could be found on the surface.[895] The other specimen show grooves with u-shaped section and are most likely connected either to bone[896] or wood working. Some whetstones are quite big and might have had an (additional) function as abrasive stone. However, especially concave surfaces point to a use as whetstone. Due to the relative softness of the used sandstone, well-used pieces might be very much reduced in their size. To be noted is an object used as whet-/abrasive stone which primarily had another function (SAV1W 0256). It was originally shaped to be a pivot stone, but obviously broke during the process and was never used as such. The completely abraded break shows the secondary use as a tool (Pl. 114).[897] One object worth mentioning consists of a piece of phyllite.[898] SAV1W 0467 (Pl. 115) is a whetstone from a long, flat slab and is broken on one side. Its edges show clear traces of abrasion.

Grindstones and hand mills

The 231 grindstones excavated from sector SAV1 West are mainly made from quartzite (red, yellow, white, pinkish), showing a medium to coarse graininess (Pl. 116); only a few pieces consist of sandstone. No complete object has been recovered. But because of the distinct planoconvex section most of the grindstones are showing, even small pieces of an edge can be assigned to the particular function. The outline is often oval, the grinding surface can be flat or concave.[899] The concave grinding surfaces show the long use of the object, where the grinding surface is already very much worn off. Several objects show clear traces of pecking on the grinding surface and are covered with percussion marks from wrinkling the surface after it

892 Cf. Prell 2011, 32–33.
893 Cf. Prell 2011, 34.
894 Cf. Kemp and Stevens 2010b, 436–441 and Prell 2011, 50–53.
895 For possible metal traces on the surface, cf. grindstone SAV1W 0289.
896 Prell 2011, 53, fig. 15.
897 Also broken grindstones were re-used as abrasive stone or combined tool, cf. e.g. SAV1W 0062, SAV1W 0418 or SAV1W 0490. Pieces of stone vessels with abraded breaks were also secondarily used as abrasive stone, e.g. SAV1W 0099.
898 For other tools made from phyllite, cf. Prell 2011, 65–66.
899 Similar forms are known from Amarna, Kemp and Stevens 2010b, 412–420, and Qantir, Prell 2011, 72–77.

got too smooth and even. The pounders might have been used amongst other things for this purpose. Some grindstones show a mortar-like layout (Pl. 117). Differing from the concave type, this form is desired and the objects are shaped in this specific way from the very beginning. Considering the possible function of the grindstones, other than for grinding wheat, a flat grindstone (SAV1W 0594) and a mortar-like grindstone show clear traces of red pigment on the grinding surface (SAV1W 0606, Pl. 117). The mortar-like forms are small in number;[900] a clear connection to gold production from quartz could not be established.[901] Several objects show, however, small golden particles on the surface,[902] but these particles turned out to be attached to all kinds of objects and were found as well in botanical samples or blown inside a corner of a room at SAV1 West. Therefore, the presence of those particles does not implicate the function and is has still to be determined, if the particles are actually gold or maybe pyrite or mica. Nevertheless, similar forms are known to be used for grinding the quartz to powder,[903] and the lack of actual evidence does not mean that the objects were not used for this purpose. An archaeological experiment connected to glass production in Qantir-Piramesse showed very well that the grindstones can be used to grind quartz to a fine powder.[904] Anvil slabs,[905] used for crushing the quartz, could not be established in the macrolithics from the area, even though the mortar-like forms might have been used for this purpose. Maybe a few slab-shaped objects, e.g. SAV1W 0281, SAV1W 0660 and SAV1W 0667 were used for this procedure. The latter grindstone has an oval shape (Pl. 118); its grinding surface on the front is smooth up to the surviving part of the edge. A couple of percussion marks, maybe from wrinkling the surface, are notable. SAV1W 0667 can be reconstructed to the common form of grindstones with a planoconvex cross-section.

To be noted is also a broken grindstone, which was secondarily shaped like a weight/anchor, showing an incomplete drilling on one side (Pl. 119). Obviously, the re-use of SAV1W 0289 was never finished. Such a secondary use of several objects from the New Kingdom town reveals that the stone material was relatively precious and broken pieces were re-used for different purposes.[906] Whether this re-use happened immediately or at a later stage/in a Post-New Kingdom period, must remain open for a multi-period site like SAV1 West. Some slab-like specimen, made from good quality quartzite with fine graininess, might originally be pieces of architecture, re-used as grindstone or hand mill. This is exemplified by SAV1W 0104 (Pl. 120), a double-sided grindstone which is broken on three sides. Judging from the remaining edge, the outline and sections can be reconstructed as rectangular; on the front and back a flat surface, which is smooth and velvety up to the edge, is notable. These surfaces and the good stone quality suggest that it once was a piece of architecture. Again, one has to speculate whether this re-use happened during the New Kingdom or in later times.

The 144 hand mills from SAV1 West are also mainly manufactured from quartzite, even if some pieces consisting of sandstone are known (Pl. 121). The outline is often oval as well, the grinding surface can be flat, convex or concave, according to the wear.[907] Sections are also mainly planoconvex. They come in different sizes and might be quite big. The differentiation to grindstones can be made by the nature of the surface treatment of the back: the convex back of hand mills is always smoothened, at least at the raised parts, to facilitate the grip. Several pieces are very worn down and only a few centimetres thick.

Other

The group 'other' comprises worked stones of unclear character, possibly multi-functional tools, polishing stones and pestles. SAV1W 0553 is a circular-shaped stone with a central perforation, probably

900 For the form, cf. Kemp and Stevens 2010b, 420–421.
901 Neither were bigger pestles found, known to have been used for the gold production, see Klemm and Klemm 2013, 422, fig. 6.79.
902 Cf. Klemm and Klemm 2013, 1–2 with fig. 1.1.
903 Cf. Klemm and Klemm 2013, 9 with fig. 1.7.
904 Prell 2011, 26, 78–79.
905 Cf. Klemm and Klemm 2013, 11 with fig. 1.9.
906 For the re-use of objects originally being no tool, cf. Prell 2011, 48.
907 For forms, cf. Kemp and Stevens 2010b, 423–432.

used as a small-sized weight (Fig. 129). Some large stone weights also derive from sector SAV1 West. According to the shape, some of them might as well be small anchors (e.g. SAV1W 0071) or tethering stones (SAV1W 1581). SAV1W 1581 (Pl. 122) is a large fragment of quartzite, broken at one end and rounded on the other. Perhaps it was used as a tethering stone for an animal. Since it derives from the filling of a Post-New Kingdom pit, its dating remains unclear. Some naturally very regular boulders, showing a smooth surface, were used as polishing stones, according to faint scratches on the surface.[908] In addition, some schist stones were also used as polishing stones (e.g. SAV1W 0492). In total, 28 pieces of polishing stones were registered from SAV1 West. A few pieces of small mortars were found as well. Related to the hammers discussed above are some pestles of small size which might have been used to crush pigments on palettes.[909]

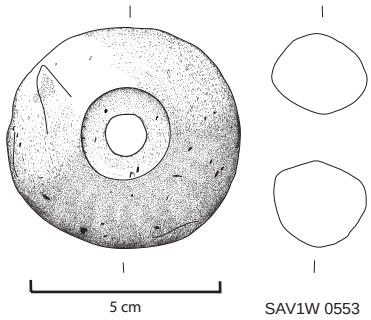

Fig. 129 SAV1W 0553, stone weight

One very peculiar stone object is SAV1W 1184 (Fig. 130).[910] This small worked stone of unknown function is naturally shaped like an hour glass. Numerous small linear incisions are present on the surface, attesting that it was really worked. Maybe this object is one of the evidence for 'material entanglement' on Sai – in Nubian cultures, natural stones were often collected and used in various contexts, especially within temples.[911] Although the date of SAV1W 1184 is unclear, it might, therefore, represent Nubian influence within the Egyptian New Kingdom town. However, the use of natural stones, primarily as votives, is also attested in Egypt from Early Dynastic times onwards[912] and in Egyptian contexts in Nubia. At Mirgissa several natural stones, maybe associated with the female body, were found in the sanctuary of Hathor and provide New Kingdom parallels from Nubia for our Sai example.[913] Similar objects are also reported from Ramesside Deir el-Medine, where natural pebbles and stones were partly painted to represent female figurines and some animals.[914]

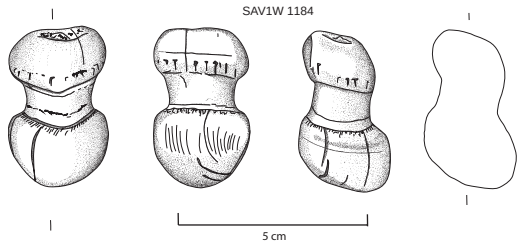

Fig. 130 SAV1W 1184, stone artefact

Macrolithics from SAV1 East

The distribution of the 1421 registered macrolithics from SAV1 East shows a clear concentration in the southern part of the sector, Squares 3, 4 and 4A (Tab. 27). These squares are the areas where most of the mud brick architecture and domestic remains other than Building A were unearthed. It seems, therefore, safe to assume that the stone objects are at least partly connected with household activities of the earliest building phase at SAV1 East. Square 4 yielded with 582 stone objects a total of 41% of all macrolithics from SAV1 East.

Forms and materials of the stone tools from SAV1 East are similar to objects deriving from SAV1 West and only a few special pieces will be mentioned here. An object made from quartzite (fine graininess) bearing three grooves on the front (SAV1E 1840, Pl. 123) is noteworthy. The general layout of this

908 Prell 2011, 56–61.
909 Cf. a nice assemblage from SAV1 North: Budka 2017j, 162, fig. 89.
910 See Griffin and Gundlach 2015b.
911 See Wildung 2016 with references.
912 Wildung 2016, 468 with references.
913 Karlin 1970, 328–330, especially the top most examples on fig. 28.
914 See Keimer 1940. The object most closely comparable to the Sai find (although much more elaborate and painted) is Keimer's no. 3, a female figure, see Keimer 1940, 7–9, fig. 3 and pl. VII.

	01	02	03	04	05	06	Σ
SAV1 E, SQ1	13	8	1	22	1	0	45
SAV1 E, SQ2	9	0	4	14	6	3	36
SAV1 E, SQ3	71	3	14	105	13	3	209
SAV1 E, SQ4	180	6	113	200	64	19	582
SAV1 E, SQ1/2	0	1	0	1	0	0	2
SAV1 E, SQ1A	1	3	0	5	0	0	9
SAV1 E, SQ1B	29	3	2	79	6	1	120
SAV1 E, SQ1A/2B	4	3	0	2	0	0	9
SAV1 E, SQ2A	2	0	0	2	0	0	4
SAV1 E, SQ 2B	13	13	0	18	0	1	45
SAV1 E, SQ3-4	2	0	1	2	1	0	6
SAV1 E, SQ4+2	2	0	0	0	0	0	2
SAV1 E, SQ4/4B	2	0	0	0	0	0	2
SAV1 E, SQ4+4A	67	1	21	39	29	4	161
SAV1 E, SQ4A	39	3	13	27	26	5	113
SAV1 E, SQ4B	9	1	2	5	3	1	21
SAV1 E, SQ4C	4	0	2	10	1	5	22
SAV1 E, SQ4C/4D	1	0	0	0	0	0	1
SAV1 E, SQ4D	6	2	2	4	1	7	22
SAV1 E, SQ4A+2A	4	1	2	3	0	0	10
	458	**48**	**177**	**538**	**151**	**49**	**1421**

Horizontally main types – 01 = pounders, 02 = hammers, 03 = whetstones, 04 = grindstones, 05 = hand mills, 06 = other

Tab. 27 Distribution of macrolithics in sector SAV1 East

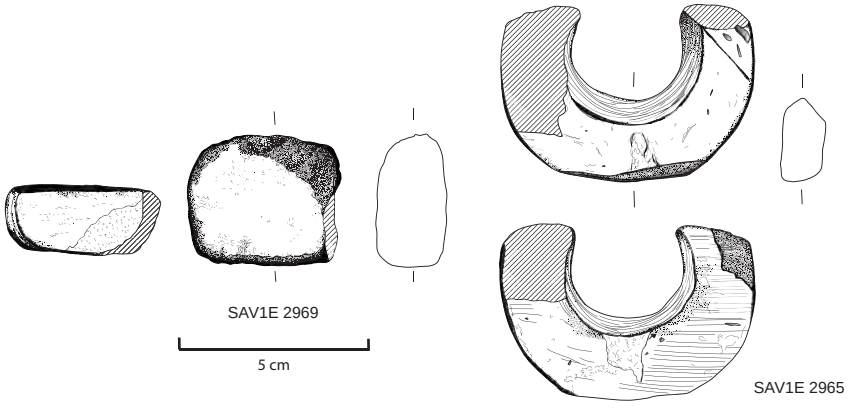

Fig. 131 SAV1E 2969 and SAV1E 2965, stone tools

implement can be compared to the tools used for polishing bone pins in Qantir-Piramesse.[915] No bone tools were found at SAV1 East, but at least two examples at SAV1 West (see above, Chapter 4.3.2).

To be noted is also a small mortar made of sandstone (SAV1E 1644),[916] nearly complete, with traces of the crushed material still attached to the inside, which looks like quartz powder (Pl. 124).

Although the majority of the stone tools at SAV1 East were made of quartz and quartzite, some pieces of schist are also known. Remarkable is SAV1E 1499 (Pl. 125), a large flat piece of schist (172 × 54 × 16mm) which was perhaps used as a polishing stone or a pestle. Traces of red pigment are visible

[915] Prell 2011, 65–66.
[916] Cf. Prell 2011, 89–90.

on both sides of the stone. Another polishing stone is SAV1E 2969 (Fig. 131). This small fragment of sandstone is broken at one end. All preserved sides and edges are worked smoothly and flat through use in polishing. Significant within the category 'other' of macrolithics is also SAV1E 2965, a presumable weight from Feature 85, thus of clear mid-18th Dynasty date (Fig. 131).

4.5 Selected find assemblages from silos at SAV1 West

by Julia Budka

As was described above (Chapter 3.3.3), the early building phases at SAV1 West are comparable to sector SAV1 North, in some respects also to sector SAV1 East, and comprise domestic buildings with storage installations. Three of these installations yielded important objects to characterise the object assemblage of SAV1 West during the early and mid-18th Dynasty and will be presented in the following.

4.5.1 Feature 115

The rectangular cellar within Structure C yielded several objects. While excavating Feature 115, SUs 731 and 732 were identified as its (almost completely) undisturbed fillings datable to the mid-18th Dynasty. Both SUs are very loose, fine silty filling material with a lot of ash. SU 731 was 50cm thick, SU 732 20cm thick, covering the base of the cellar. Both layers were sieved and yielded many finds, including a large number of beads. Further fillings of the cellar are in stratigraphical order from the top: SUs 726, 727, 728 and 729 (see Appendix). In the following, only the inventory from SUs 731 and 732 and selected pieces from upper levels will be discussed.

Unregistered finds from SU 731 include bones (0822/2015), molluscs fragments (0830/2015), charcoal (0823/2015), doum nuts (0830/2015), organic material (0820/2015, 0830/2015), wood (0830/2015), one schist fragment (0846/2015), chalk/plaster (2 pieces, 0830/2015) and pottery (0819/2015 and 0849/2015).

Find number 830/2015 represents the sieved material from SU 731 and included the following registered pieces: SAV1W 1436 (amulet, lotus blossom shaped, faience, Fig. 56), SAV1W 1437, SAV1W 1438, SAV1W 1439, SAV1W 1440, SAV1W 1441, SAV1W 1442, SAV1W 1443, SAV1W 1444 (various beads), SAV1W 1482, SAV1W 1483, SAV1W 1484, SAV1W 1485, SAV1W 1486, SAV1W 1487, SAV1W 1488 (7 clay stoppers), SAV1W 1491 (animal figurine, possibly a gazelle/ibex), SAV1W 1447, SAV1W 1448, SAV1W 1450, SAV1W 1489, SAV1W 1490, SAV1W 1493 (unidentified objects), SAV1W 1446, SAV1W 1494 (vessels, two pieces, one faience, one glazed ware), SAV1W 1492 (worked wood), SAV1W 1495 (seal), SAV1W 1496 (worked stone), SAV1W 1499 (lid), SAV1W 1525 (token/gaming piece), SAV1W 1445 (disc shaped object; token/gaming piece?), SAV1W 1449 (lithic blade) and SAV1W 1493 (flakes). Further registered finds are SAV1W 1418, the fragment of a faience Nun bowl, SAV1W 1478, a ceramic lid from a re-used 18th Dynasty pottery sherd, SAV1W 1427, a token/gaming piece of clay/mud as well as macrolithics: three pounders (SAV1W 1401, SAV1W 1402, SAV1W 1403) and one polishing stone (SAV1W 1404).

The small fragment of green glazed ware, SAV1W 1494, seems to be an intrusive object of Post-New Kingdom date; all other finds from SU 731 are clearly 18th Dynasty in date.

From the oldest filling of the cellar, SU 732, the following unregistered finds were documented: bones (one bag, 0841/2015, one bag, 0831/2015 and one piece, 0827/2015), one mollusc fragment (0840/2015), charcoal (0826/2015, 0831/2015, 0840/2015), organic material (0831/2015, 0840/2015), plaster (0840/2015), pottery (0825/2015 and 0839/2015) and four fragments of undecorated seals (0840/2015).

Find numbers 0831/2015 and 0840/2015 comprise finds from the sieving of the cellar filling SU 732: beads (numerous pieces, various forms, faience and stone, SAV1W 1411, SAV1W 1412, SAV1W 1413, SAV1W 1414, SAV1W 1415, SAV1W 1416, SAV1W 1417), one faience object (one fragment, original function unclear, SAV1W 1524), a snail shell used as a piece of jewellery/bead (SAV1W 1466), a seal impression (one piece, probably with the name of Thutmose III, SAV1W 1451, see above, Chapter 4.3.2) and one pounder (SAV1W 1467). Other finds from SU 732 are one small fragment of an unspecific animal

figurine (SAV1W 1465), one scraper from a re-used 18th Dynasty pot sherd (SAV1W 1519) as well as worked stones (SAV1W 1419, SAV1W 1421), the fragment of a grindstone (SAV1W 1420), one pounder (SAV1W 1399) and a whetstone (SAV1W 1400).

Find number 0848/2015 is the sieved content of the large in situ ceramic vessel 0838/2015 (see Chapter 4.2). One faience ring bead was registered (SAV1W 1406); bones (1 bag), organic material (one bag) and charcoal (one bag) remained unregistered.

All finds from SU 732 can be safely associated with the mid-18th Dynasty and are representative of a typical assemblage within one of the building units at SAV1 West like Structure C. A special find which also seems relevant for dating is seal impression SAV1W 1451 – as was mentioned above, seal impressions were only rarely found at SAV1 West, despite of sieving, and this stamped mud sealing is, therefore, exceptional for the sector. It supports a dating of the inventory of Feature 115 to the reign of Thutmose III.

Some objects are probably associated with Feature 115 and were found in the upper layers above SU 731 and 732. Remarkable among these finds is the wooden object SAV1W 1464 (Fig. 132). This nicely worked fragment of wood was perhaps used as a makeup applicator. It is long and slender with a bulbous end (5 × 6 × 74mm). Similar wooden applicators were found, for example, at Amarna.[917]

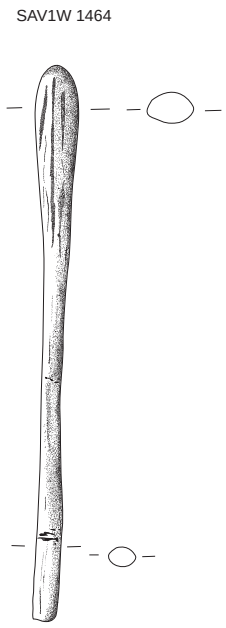

Fig. 132 SAV1W 1464, wooden makeup applicator (scale 1:1)

4.5.2 Feature 151

The oval silo within Structure E yielded several objects which are all from a closed context. Its silty filling was excavated as SU 908 (upper filling) and SU 909 (lower filling above the base). On top of SU 908 was the debris layer SU 907, which held one very interesting re-used architectural piece. SAV1W 1752 (Pl. 55) is a large fragment of a sandstone lintel, reworked at a later date for use as the base of a column. Though clearly once inscribed, only *nṯr-nfr nb-(tꜣ.wj)* now survives, in an area of 23 × 17.5cm. Remains of plaster are visible in the hieroglyphs. Based on the central location of the text, it appears that the inscription was hacked away after the column was already in place. The stone was seemingly used once more to close off the storage pit on which it was found, but this must have happened at a later stage.

The upper filling of Feature 151, SU 908, comprised the following unregistered finds: bones (071/2017), shell (one fragment, 089/2017), charcoal (068/2017), a doum nut (069/2017) and wood (067/2017). three and a half baskets of pottery (074/2017) were found, processed and dated to the Thutmoside era (most likely Thutmose III). The registered finds from SU 908 are two beads (one faience disc bead, SAV1W 1773; one faience ring bead, SAV1W 1774) and macrolithics (two pounders, SAV1W 1744, SAV1W 1745; one polishing stone, SAV1W 1746; one fragmented grindstone, SAV1W 1747).

The lower filling above the base of Feature 151, SU 909, yielded the following unregistered finds: bones (080/2017), shell (082/2017), botanical material (seeds, 084/2017), doum nuts (086/2017), wood (079/2017), charcoal (076/2017), some fragments of bronze (083/2017) and pottery (one basket and three bags, 075/2017). The pottery is again, like the material from SU 908, an unmixed assemblage datable to the mid-18th Dynasty.

Registered finds from SU 909 include several pieces of jewellery, among them a small cowroid bead/amulet of faience (SAV1W 1736, Fig. 103), various beads in diverse materials, including 30 faience ring beads (Fig. 133, SAV1W 1759, SAV1W 1760, SAV1W 1761, SAV1W 1763, SAV1W 1764, SAV1W 1765, SAV1W 1766, SAV1W 1767, SAV1W 1768, SAV1W 1770) and some bead fragments

[917] Kemp and Stevens 2010b, 193. This shape is also well-attested on Sai, at SAC5 from contemporaneous tombs, see Minault-Gout and Thill 2012, vol. 2, pl. 12, T14Ca60.

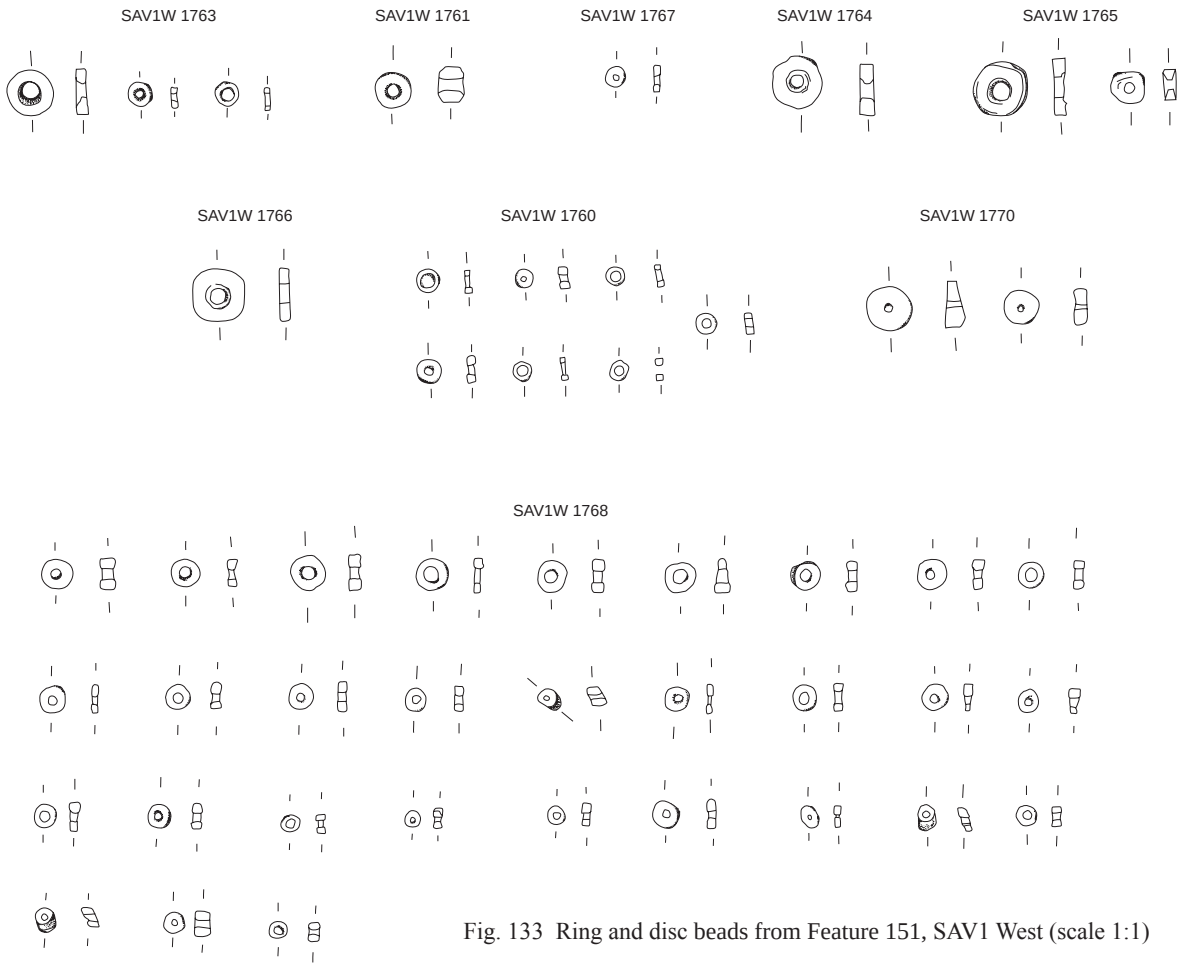

Fig. 133 Ring and disc beads from Feature 151, SAV1 West (scale 1:1)

(SAV1W 1762). Remarkable is a small bone tool, which was polished and is pointed at one end (SAV1W 1769, see above, Chapter 4.3.2, Fig. 67). Two mud seals were found (SAV1W 1777, SAV1W 1778, without impressions) and eight tiny fragments of metal with unclear form and function (SAV1W 1779). Finally, three small flakes of agate as proof of stone tool/lithic production were collected (SAV1W 1839, Fig. 122). The metal finds from Feature 151 are in particular remarkable, because metal was otherwise very rare in all sectors of the New Kingdom town of Sai.[918]

4.5.3 Feature 152

The rectangular cellar Feature 152 within Structure D yielded several objects. Its filling was excavated from top to bottom as SUs 917, 945, 947 and 952 (see Appendix). SU 917 is a debris layer of mixed character and will not be discussed here. SUs 945 and 947 are also debris layers, characterised by many brick fragments from Feature 152 and possibly surrounding walls. The only closed stratified context within Feature 152 was the brownish, silty layer above the pavement of the cellar, SU 952. However, this layer was not very rich of finds. It only yielded unregistered finds: bone (338/2017), charcoal (337/2017), wood (339/2017) and doum nuts (340/2017) as well as pottery (one bag, 336/2017; one small bag, 355/2017) and one unimpressed seal (clay/mud, 383/2017).

[918] At Amara West, a sector with metalworking waste and a kiln were found; see Spencer 2017, 330, fig. 7, 344–349, figs. 18–22.

Other finds derive from the debris layer above, SU 947. Within SU 947, a piece of textile (319/2017) illustrates the mixed character of this debris mentioned above. Aside from bone (317/2017), shell (325/2017), botanical material (341/2017), doum nut (318/2017), charcoal (316/2017) and wood (320/2017), two baskets of pottery were found (315/2017). One unimpressed mud seal was noted (342/2017) and a token/gaming piece from a re-used pottery sherd (SAV1W 1811). Several faience beads (one tubular bead, composed with adjoining ring beads, SAV1W 1812) were found and a small bronze ring of unclear function (SAV1W 1815).

All in all, due to the debris above and in Feature 152, this cellar was less interesting regarding its inventory. However, it may serve as a good example that organic materials dominate the material culture at SAV1 West.

4.6 Microscopic analysis of plaster and mortar[919]

by Julia Budka

4.6.1 Plaster

"*It is important to distinguish mortar from plaster. They do different things and this is reflected in composition*."[920]

Plasters are used as a coating for architectural surfaces such as walls and floors, improving the appearance of these structures and also its strength.[921] Plasters may also be used for furnishings and architectural fittings as well as to produce objects such as beads, figurines, or vessels.[922] Thin-section petrography is one of the standard procedures used to identify the various components of a plaster and their respective proportions. It is well-known that historic plasters may contain burnt lime, gypsum, clay, sand, water and organic materials. For Egypt, mostly the compositions of painted surfaces of Theban New Kingdom tombs have been studied. The mortar and plaster covering the rock surfaces were composed of gypsum and also contained limestone flakes.[923] Gypsum plaster was also identified for furnishings at Amarna.[924]

Microscopic analyses of historical plaster fragments can be useful to derive information on several aspects of their composition, such as the grain size, mineral impurities present in the sand or lime, textural characteristics of minerals, degree to which components such as shell were crushed during processing and others.[925] William Barnett has pointed out that optical mineralogy is generally the easiest and least-expensive method of distinguishing among gypsum, lime and clay in plasters.[926] These three components vary greatly in birefringence, indices of refraction and morphology. Yuval Goren and Paul Goldberg found that since thin sections provide information on grain textures and interrelationships, they were more useful than other techniques for reconstructing Neolithic lime plaster production technology in northern Israel.[927] With this information, they could deduce the environment in which the limestone must have formed and thus narrowed the possible locales where it could have been collected. For Egypt, studies by Dietrich and Rosemarie Klemm are relevant as comparison, although they were mostly conducted on mortars. Klemm and Klemm used thin sections to characterise mortar samples

919 Based on reports by Sayantani Neogi and Sean Taylor; Neogi and Taylor 2017a and 2017b.
920 Kemp 2000, 92.
921 Kemp 2000, 92. For plasters used in architectural contexts at SAV1 North, see Doyen 2017.
922 Cf. Kemp and Stevens 2010b, 249.
923 Lee and Quirke 2000, 117–118.
924 Kemp and Stevens 2010b, 249–250.
925 For the organic components of plaster and mortar, see Chapter 5.1. For the possible use of shells for plaster, see Chapter 5.3.
926 Barnett 1991.
927 Goren and Goldberg 1991.

from the pyramid districts of the Old Kingdom in Egypt.[928] A number of mortar samples from Sudan, covering the time span from the New Kingdom to Meroitic times, was recently analysed by standard techniques in material science.[929] In Amara West both modern and ancient mortars and plasters were studied with thin sections by Mathew Dalton.[930] His meticulous analysis and micromorphological characterisation of the plasters are especially useful for comparisons with Sai.[931]

A plaster fragment found during the 2016 season of excavation (SU 349 in Square 4C at SAV1 East) of the New Kingdom town at Sai Island was analysed for petrographic thin section analysis (Pl. 126).[932] This fragment of floor plaster is associated with the schist pavement found in scattered remains at SAV1 East (see Chapter 3.2.2). A date to the mid-18th Dynasty is firmly established based on the archaeological context. The study revealed that the plaster sample is quite homogenous with most of the mass made up of quartz, calcite, gypsum and very little plagioclase and feldspar. The quartz content is rather large. The aggregate content is over 60% and they were very close to each other. Quartz and calcite grain sizes ranged from 0.1mm to several mm and their shapes are sub-angular with low spherical property.

This sample seems to illustrate that both gypsum and lime were used in the making of plaster at New Kingdom Sai. However, this one sample is of course not statistically significant. Nevertheless and despite of certain *caveats*, this is in particular interesting as the use of gypsum implies the import of raw material: in Sudan, gypsum is found only along the Red Sea coast,[933] whereas in Egypt at several places, especially the Fayum,[934] but also the region of Amarna in Middle Egypt.[935] The use of lime for plaster on New Kingdom Sai could indicate an additional use of locally available sources for building materials, but would have to be confirmed by using further procedures.[936]

4.6.2 Mortar

Mortars as essential parts of the building architecture in ancient Egypt, especially the stone architecture as setting mortars, have received quite some attention and several studies of their mineralogical characteristics have been published in recent years.[937] In Sudan, research on mortars has focused on aspects of technological exchanges and developments, taking the history of building techniques in Egypt and New Kingdom Nubia into account.[938] One of the big questions discussed in this respect is the identification of binders of ancient mortars in Egypt and Sudan. Gypsum as binder is well attested in Pharaonic Egypt, but the occurrence of lime mortar was not known prior to Ptolemaic times.[939] Very similar are the findings in Sudan – the use of lime mortar is characteristic for the 1st century AD. The use of lime in setting mortar used in buildings in ancient Sudan still needs to be established, but seems to post-date the New Kingdom according to the present data.[940]

928 Klemm and Klemm 1991.
929 Feneuille et al. 2014.
930 Dalton 2017.
931 See especially the assessment of distinctive plastering practices in the ancient town of Amara West, Dalton 2017, 374–383.
932 Neogi and Taylor 2017b.
933 See Feneuille et al. 2014, 831.
934 See Heldal et al. 2009.
935 Harrell 2017. For painted gypsum plaster fragments from the town of Amarna, see Kemp and Stevens 2010b, 249–250.
936 Concerning mortars, there are no lime mortars before Ptolemaic/Meroitic times in Egypt/Sudan, see below, Chapter 4.6.2.
937 For an overview of basic publications on mortars in Egypt, see Dziedzic et al. 2015, 95–97. See also Kemp 2000, 92 with some references for mud brick architecture.
938 Feneuille et al. 2014.
939 Dziedzic et al. 2015, 94 with references. See also Aston et al. 2000, 22.
940 Feneuille et al. 2014, 831.

Materials and methods

Five samples of New Kingdom mortars from Sai were analysed as thin section by optical microscopy.[941] Two of these samples are on-site debris within the town area, one (SM05, 20°44.191´N, 30°19.912´E) from the southern town enclosure wall (south of M1 of SAF5, west of the southern gate, see Fig. 51, Chapter 3.7), and two more (SM13 and SM14) from Tomb SAC 5 area 2, Feature 2 (SU 104 and SU 105 respectively).[942] The petrographic microscope is an important tool in geology and archaeometry which can be used to identify sources of raw materials and to attribute stone artefacts to their geological source.[943] It is also an essential tool in building material science in order to study the composition, size and shape of mineral grains and matrices, their relationships and arrangement, their decay and the presence of pores, cracks, cements and directional textures.[944] Further applications for studying mortars are, among others, SEM (Scanning electron microscopy) and XRD (X-ray powder diffraction, see below).[945]

Since the mortars sampled from Sai fulfilled different functions within the built fabric, it was hoped that the analyses of these samples would broaden the knowledge on the nature and the availability of the raw materials, the craftsmanship and the working procedures as well as to determine the properties and durability of mortars if possible. For example, the presence of magnesian lime and/or reactive aggregate can impart a hydraulic set and, therefore, determine the quality of a mortar.[946]

Special care was taken during thin section preparation of the samples in order to preserve the material. The mortars were pre-consolidated by impregnation in a resin under vacuum. Thin sections were then cut with oils to avoid damaging water-soluble minerals in the mortars. They were polished to the standard thickness of 20µ, covered with a glass slip and examined with a petrographic microscope incorporating eye pieces of 2, 10, 20 and 40 magnifications using both natural and polarised light. They were analysed by Sean Taylor and Sayantani Neogi following the standard descriptive methods for ceramic petrography, particularly by Ian Whitbread[947] and Ian Freestone.[948]

Results and discussion

Mortar as used for laying bricks at a mud brick wall was investigated with the sample from the southern enclosure wall of the New Kingdom town (sample SM 05, Pl. 127). A fragment of a reddish mortar was collected just south of SAF5, south of M1, to the west of the southern gate. A similar red mortar was observed in the field within the governor's residence, SAF2, as part of its brick pavement, confirming the 18th Dynasty date of this bedding for mud bricks. The thin section analysis of this very red sample from the enclosure wall revealed that it has got inclusions of quartzite rock, is highly calcareous and has a lot of iron oxide. The numerous quartz particles are of different sizes and have been used as temper. Organic temper of this mortar was traceable by abundant pseudomorphs of plant tissues.

Composition of the matrix

The matrix of the mortar samples from Tomb 26 are mostly composed of both micritic and sparitic limestones (Pl. 128). The fine-grained micritic limestones appear dark in plane-polarised light, but brighter than the lime binder matrix and less bright than the sparitic limestone when seen under crossed-polarised light. In the fine-grained matrix the brightness under crossed polarisers is lower than for coarse calcite grains because of the interference by dispersion of the light by the grain boundaries. As the limestone

941 Neogi and Taylor 2017a.
942 For Tomb 26 and its ground plan, see Budka 2018e, 188, fig. 3.
943 Clough and Wooley 1985.
944 Pavía and Bolton 2000.
945 For methods examining mortars, see Dziedzic et al. 2015, 95–97.
946 Pavía et al. 2005.
947 Whitbread 1986; Whitbread 1989.
948 Freestone 1995.

aggregate particles are mainly well rounded, the sand can be considered to be mature with respect to sphericity but not to sorting. In the binder matrix of all of these mortars a lot of rather large, spherically-shaped air bubble pores can be seen, which are mostly interconnected by shrinking cracks. In these thin sections, the binder matrix of lime mortars shows a light brown colour when seen in plane-polarised light. Seen under crossed-polarised light, the lime binder matrix shows much brighter birefringence colours than those observed in thin sections. Some gypsum components can also be seen.

Some individual small particles are also clearly visible; these are probably calcite or maybe dolomite grains, as can be seen from their high interference colours. It seems that in no case all added hydraulic material has reacted and, hence, disappeared during the setting of the mortar. Thus, at least a few grains of the unreacted clinker material were always found. Hydraulic clinker particles are, however, usually much easier to detect in thin sections than in dispersions.

Typical additions

Some of the occasionally identified additions in the mortar samples from Sai are animal hairs, wood particles, fragments of fuel and plant fibres (see Chapter 5.1).[949] Though all of these materials can easily be recognised in thin sections, their sporadic presence, however, suggests that they are accidental, probably due to contamination from the kiln fuel.[950]

Petrofabric of lime binders vs. lime making technology

The petrographic analysis evidenced that the mortars studied possessed homogeneous, cohesive binders displaying a strong binder-aggregate bond and an absence of over-burned and under-burned lime particles. The lime binders are fine-grained, rarely displaying fractures. Evidence of aggregate-binder reaction was found in several mortars and the presence of ceramic fragments acting as pozzolans was also recorded. Petrographic analysis revealed that 85% of the mortars (4 out of 5 samples) studied display unweathered binders which continue fulfilling their role. In the mortars analysed, the fine-grained lime binders possess a highly specific surface. In addition, the absence of binder cracks indicates a low shrinkage. The lime's high specific surface and low shrinkage suggest that the raw limestone was soft-burned. According to Robert Boynton, lower burning temperatures and/or shorter burning duration (soft burning) yield the desirable soft-burned, highly reactive limes of low shrinkage and density and high porosity, whereas a high burning temperature and long calcining periods result in a hard-burned quicklime that has high shrinkage, high density, low porosity and low chemical reactivity.[951] Reactivity of lime refers to its quick ability to respond to chemical stimuli, e.g. reactive limes readily combine with water during slaking.

Conclusion

The fine-grained, cohesive petrofabrics of the lime binders studied in the mortars from Sai, displaying a perfect aggregate bond, an absence of over/under-burned lime particles and scarce fractures, suggest a high reactivity and water retention capacity as well as a low shrinkage for the lime. The strong binder cohesion and perfect aggregate-binder bond of most of the mortars analysed together with the presence of aggregate-binder reaction also indicate a high reactivity for the lime which also agrees with soft burning.

949 Cf. Cartwright 2008.

950 This is also the main difference of mortars from plasters which are rich in plant remains; see Cartwright 2008, 29 for a collection of material. See also Kemp 2000, 92.

951 Boynton 1980. In addition, high temperature burning of lime for binders is not attested before the Ptolemaic/Meroitic period in Egypt/Sudan, see Aston et al. 2000, 22. The use of lime in setting mortar still needs to be established for Northeast Africa, but probably happened in the Post-New Kingdom era, see Feneuille et al. 2014, 831.

Evidence of gypsum within the Sai mortars is especially interesting, since it points to the import of raw materials (see above, plaster). A good parallel comes from Dokki Gel: The gypsum used in the setting mortar at this site was proposed to come from Egypt.[952]

Petrographic analysis evidenced that the quality of the mortars analysed are comparable, both from the New Kingdom town site and Tomb 26 in the contemporaneous elite necropolis. Most of these mortars are good quality materials and were fabricated with non-hydraulic lime; their hydraulicity is due to the addition of ceramics. Petrographic evidence suggests that hydraulicity induced by the addition of ceramics is partially responsible for the good quality and performance of the mortar. The conclusions above are based on a single analytical technique (petrographic analysis), so they may not be taken as final statements. X-ray diffraction, X-ray fluorescence and porosity measurement as further standard techniques could provide additional information.[953]

Appendix: Lists of finds

by Veronica Hinterhuber

The List of finds is based on the original find lists created in the field from 2013 to 2017.

online – https://doi.org/10.1553/AcrossBorders2_Appendix_List-of-Finds

[952] Feneuille et al. 2014, 829.
[953] Cf. Feneuille et al. 2014.

Chapter 5: The environmental remains

As mentioned above (Chapter 1), work task 6 of the AcrossBorders project concentrated on landscape archaeology and environmental remains at Sai. Whereas the environmental settings of New Kingdom Sai were presented in Chapter 2, the present chapter focuses on various types of environmental remains. Botanical samples, zooarchaeological remains, in particular faunal remains (vertebrates and molluscs) as well as human remains from the New Kingdom town are presented here as contribution for reconstructing the living conditions on Sai in antiquity.[954]

Similar to the other work tasks of the AcrossBorders project, this line of research could also build upon recent advances in the field. In particular, research on agriculture, animal husbandry and food production has made much progress at most New Kingdom sites in Nubia in the last years and is still ongoing.[955] In the following, selected data, partly of preliminary character, about environmental remains from Sai Island will be presented. The botanical remains have been analysed with samples from SAV1 North, SAV1 East and SAV1 West as well as selected samples from the southern part of the New Kingdom town. The faunal remains are presented here as an overview, based on the collections of bones from SAV1 North and the large cellars at SAV1 East. The inventories of the latter will be published in detail elsewhere.[956] Molluscs have been identified from contexts at SAV1 East and SAV1 West and are presented by taxa in Chapter 5.3 (including very few specimens from SAC 5). Finally, human remains from the town area were investigated in 2015. Although the date of most of these bones seems to postdate the New Kingdom, the anthropological findings are presented here to complement the assessment of the environmental remains from the New Kingdom town of Sai (Chapter 5.4).

5.1 Mud bricks, cereals and the agricultural economy. Archaeobotanical investigations at the New Kingdom Town

by Frits Heinrich and Annette M. Hansen[957]

5.1.1 Introduction

Archaeobotany, or paleoethnobotany, is the study of subfossil plant materials, most notably seeds and fruits, from archaeological contexts in order to reconstruct past human – plant relationships. It is sometimes referred to as macro-archaeobotany to distinguish it from other disciplines that study plant remains, such as dendrology (the study of wood), anthracology (the study of charcoal), palynology (the study of pollen), phytolith analysis and starch grain analysis. Archaeobotanists study plant remains pre-

954 For recent work on the Holocene climate and environment and respective changes on Sai, including results from pollen analysis, see Hildebrand et al. 2018; Florenzano et al. 2019.

955 See, e.g., Cartwright and Ryan 2017.

956 Budka forthcoming b.

957 Frits Heinrich would like to thank Jaime van der Heul, who accompanied him as assistant during the 2015 field season. The authors also would like to thank Merit Hondelink (University of Groningen) for her assistance with microscopic photography and Remco Bronkhorst (University of Groningen) for photo-editing. Lastly, the authors wish to thank Julia Budka and the ERC AcrossBorders project for the logistical and financial support that made the participation in the project and this publication possible.

sent in anthropogenic contexts and as such archaeobotanical assemblages are directly related to human action: typically they are indicative of activities and behaviour regarding production and consumption, although signals from the wider environment may also be discerned. Ethnographic research (ethnobotany or ethnoarchaeobotany) aimed at documenting traditional agricultural practices is also a common element in archaeobotanical research.

During the 2015 field season archaeobotanical investigations were carried out at both the New Kingdom town on Sai Island and the Ottoman fortress that was later built on top of part of it (see Chapter 1.1). An ethnobotanical survey of wider Sai Island was also carried out. In this chapter we focus on the New Kingdom results, while the Ottoman period results and ethnobotanical study will be largely presented elsewhere, as will a study on the wood and charcoal remains.[958] Our primary aim is to characterise the agricultural and food economy of Sai during the New Kingdom and provide an insight into which crops were cultivated at the settlement and which wild plants were used. In addition to plant use for food, we will also reflect on other applications, such as fodder or fuel and construction materials. In line with the aims of the AcrossBorders project and this volume, we will also assess if the assemblage at New Kingdom Sai is typical when compared to contemporary Egyptian settlements, or if it discernibly reflects other influences. The Sai Island New Kingdom town was after all originally established as an Egyptian foothold in Nubia during the 18th Dynasty. It served as a springboard during the expansive wars into Kush and then quickly developed into a temple town.[959] While the social organisation of Nubian culture has often been interpreted from the perspective of connections with Egypt and sometimes led to an interpretation in favour of Egyptian technological superiority,[960] the agricultural and ecological realities of (Upper) Egypt and Nubia were indeed very similar.[961] On the other hand, it also has long been recognised that Nubia throughout history was an important corridor for the spread of various crops within Africa and between Africa, the wider Mediterranean and India;[962] it can, therefore, be envisioned that agricultural change through diffusion, provided it occurs, might well be visible in border regions such as at Sai Island.

Within our investigations we placed a focus on the study of mud or adobe architecture (besides mud bricks comprised of mud plasters and mortars). In Sudan and Egypt, as in many other arid regions throughout the world, the use of sundried mud bricks for construction has been ubiquitous for millennia and remains of importance today. The material has received considerable attention from archaeologists to study a variety of socioeconomic and technological aspects of early civilisations, including natural resource allocation, labour input, and social dynamics. Analyses of clay, loam, and other materials in mud bricks has added further insights into the logistics and economics of mud bricks and construction in general.[963] Analogous to pottery, a tempering agent is typically added to mud bricks in order to strengthen structural integrity. Besides products such as sand and ash, agricultural rest products (such as threshing remains) and domestic waste were (and are) commonly used for that purpose. Therefore, mud bricks may provide invaluable insights into agricultural production and domestic consumption, but also shed light on the weed ecology of arable fields and irrigation practices; thus making these architectural elements a proxy for the study of arable fields.[964] Mud bricks also have the advantage that they represent a more or less sealed context: although over time wind erosion will occur, and while some material might stick to the outside and a small degree of burrowing by insects is possible in the outer layers, the mud brick is uncontaminated on the inside. Therefore, the study of mud bricks has a rich tradition in archaeobotany.[965] Another interesting aspect of mud brick architecture is that the deposition of the bo-

958 See Heinrich et al. forthcoming and Hansen et al. forthcoming a respectively.
959 Budka 2017c; Budka 2017h, 15; see also Chapter 1.1.
960 Cf. Fuller 1997 on Meroitic Nubia.
961 Cf. Van Zeist 1987; Rowley-Conwy 1989; Fuller 1999; Fuller and Edwards 2001; Fahmy 2005; Ryan et al. 2012.
962 Germer 1985; Fuller and Boivin 2009; Zohary et al. 2012; cf. Watson 1983.
963 For Egypt, Kemp 2000 is seminal; for the Levant, see Homsher 2012 and Politis 1999; for Turkey, see Love 2012.
964 Cappers 2008.
965 E.g. Hopf 1983; Cartwright 1991; Chaix and Grant 1993; Smith 2003; Newton 2004; Cappers 2006; Cappers 2008; Cappers et al. 2009; Marinova et al. 2011; Ryan et al. 2012; Cappers and Neef 2012; Cappers et al. 2016.

tanical materials is largely intentional. The deposition of many other botanical materials in the archaeobotanical assemblage, even though they come from anthropogenic contexts and are ultimately the result of human action, is dependent on chance. Some materials are carelessly discarded (e.g. a date seed after the fleshy fruit is eaten), while many others survive because of minor accidents or economic inefficiencies. Chaff and finely chopped straw (together as a fraction referred to as *tibn* in Arabic), however, have a long tradition of being purposely added as a tempering agent, besides various other economic uses.[966] As tempering a mud brick with botanical materials is a deliberate action, it adds an additional dimension to studying agricultural decision making.[967] We will, therefore, investigate if meaningful differences between mud bricks and mud plasters and mortars exist between different structures within the Pharaonic settlement, while we will also make a preliminary comparison with the Ottoman mud brick architecture.

5.1.2 Sampling strategy

Archaeobotanical sampling at the Pharaonic settlement at Sai focused on three main types of samples: mud brick architecture (mud bricks, plasters, and mortars) from the main walls (from sectors SAV1, SAV1 West and SAV1 North), soil samples and loose/surface finds. Most loose/surface finds had been collected by the AcrossBorders fieldwork team over the previous seasons, while the soil samples were taken from domestic contexts during the 2015 field season. The mud brick material was collected by the archaeobotanical team in 2015. The focus on mud brick architecture allowed us to sample more or less evenly throughout the New Kingdom town as the architecture was still in place in previously excavated areas. Sample and context information for each sample is presented in Tabs. 28–30. For reasons of comparison, similar data on the Ottoman mud architecture is also provided in Tab. 28.

5.1.3 Sample processing

While loose/surface finds require no processing, mud bricks and soil samples do in order to separate the botanical materials from clay and soil. The volumes of the soil samples were measured and their weights were taken, after which they were dry-sieved over a 0.5mm sieve. Non-botanical archaeological remains (e.g. pottery) were kept for their respective specialists, while stones and sand were discarded; of the botanical residues the weights and volumes were taken. All mud bricks were photographed in situ and their locations were documented prior to removal from the walls; the visible sides were also brushed to avoid including potentially foreign material. Care was taken to, where possible, select complete mud bricks without damaging the structural integrity of the walls (Pls. 129, 130). The weight and dimensions of each mud brick were registered; of broken bricks only the dimensions that could be established with certainty were recorded (e.g. the width and height but not the length of a brick that had clearly broken in two pieces). Cut-offs were taken from complete mud bricks; they were removed with a saw and were then photographed, weighed and placed in storage for future reference or other types of research. The mud bricks were then placed in buckets filled with water and covered with fine-meshed cloth to prevent foreign materials from blowing in, after which they were left to soak overnight. The next day they were carefully poured over a 0.5mm sieve. Through the careful application of water under low pressure from above the entire brick could be processed. Pottery and other archaeological non-botanical materials that were visible were removed at this stage and stored for the relevant specialists. Subsequently, the residues were placed in fine-meshed cloth pouches and left to dry. When completely dried, the residues were dry-sieved over a 0.5mm sieve to remove the last sand and clay, after which the samples were weighed again and their volumes were taken. Mud brick mortars were only taken from in between in situ mud bricks,

966 Van der Veen 1999.

967 Some exceptions remain, however. A cereal kernel, for instance, is intended for human consumption, but often during processing some specimens are lost or farmers may deem it inefficient to collect every last specimen from the threshing remains. Incidental cereal kernels and florets are, therefore, encountered in mud architecture and ceramics, see Hansen et al. 2017.

Mud brick ID	Dimensions*			Weight MB	Weight botanics	Density or % botanics	Vol. botanics	Area	Feature/Quarter	Context type	Relative dating
	L	W	H								
MB1	41.5	21.0	12.0	11660.0	29.00	0.25	162.0	SAV1W	Feature 100, Enclosure Wall	Wall	New Kingdom
MB2	43.0	24.5	11.5	13420.0	46.00	0.34	160.0	SAV1W	Feature 100, Enclosure Wall	Wall	New Kingdom
MB3	40.0	21.5	9.0	9740.0	29.00	0.30	102.0	SAV1W	Feature behind 100	Wall	New Kingdom
MB4	21.5	18.5	10.0	4960.0	20.73	0.42	12.0	SAV1W	Feature behind 100	Wall	New Kingdom
MB5	39.0			9980.0	4.60	0.05	4.0	SAV1N	N4 Enclosure Wall	Wall	New Kingdom
MB6	41.0			4740.0	21.02	0.44	20.0	SAV1N	N4 Enclosure Wall	Wall	New Kingdom
MB7	39.0	18.0	10.0	8770.0	8.01	0.09	7.0	SAV1N	N3 Small Tower	Tower	New Kingdom
MB8	40.0	19.0	10.05	9110.0	5.71	0.06	6.0	SAV1N	N3 Small Tower	Tower	New Kingdom
MB9	31.0		8.0	5700.0	5.00	0.09	6.0	SAV1N	N2 Large Tower	Tower	New Kingdom
MB10	34.0	17.0	6.0	5800.0	6.85	0.12	12.0	SAV1N	N2 Large Tower, Tumble N	Tower	New Kingdom
MB11	41.0	16.0	7.0	6800.0	6.35	0.09	10.0	SAV1N	N2 Large Tower, Extension	Tower	New Kingdom
MB12	30.0	18.0	9.0	4710.0	20.00	0.42	50.0	SAV1N	1 Curve	Wall	New Kingdom
MB13	35.0	17.0	8.0	5220.0	32.00	0.61	74.0	SAV1N	1 Curve	Wall	New Kingdom
MB14	36.0	16.0	9.0	6400.0	12.49	0.20	15.0	SAV1N	22 (Round Wall)	Wall	New Kingdom
MB15	34.0	17.0	8.0	6470.0	64.00	0.99	110.0	SAV1N	27	Wall	New Kingdom
MB16	40.5	16.0	6.0	5740.0	15.45	0.27	45.0	SAV1N	N8, 34N	Wall	New Kingdom
MB17			10.5	7270.0	3.55	0.05	5.0	SAV1N	42S	Wall	New Kingdom
MB18	36.0	16.0	9.0	7770.0	1.53	0.02	1.50	SAV1N	11	Wall	New Kingdom
MB19	33.0	16.0	10.5	6570.0	0.88	0.01	1.0	SAV1N	N/A	N/A	Uncertain date

* Dimensions = cm; Weight MB = kilo*1000=gram; Weight botanics = gram; Density or % botanics=Weight botanics (g) /Weight MB (g)*100; Vol. botanics=ml

Tab. 28 Dimensions and context data for mud brick samples

Mud brick ID	Dimensions*			Weight MB	Weight botanics	Density or % botanics	Vol. botanics	Area	Feature/Quarter	Context type	Relative dating
	L	W	H								
MB20	33.0	17.0	10.5	4990.0	4.10	0.08	5.0	SAV1N	N/A	N/A	Uncertain date
MB21	33.0	16.0	10.0	5170.0	1.08	0.02	1.50	SAV1N	N/A	N/A	Uncertain date
MB22	33.0	16.0	10.0	6400.0	0.87	0.01	3.0	SAV1N	N/A	N/A	Uncertain date
MB23	32.0	15.0	9.0	5280.0	13.17	0.25	10.0	SAV1N	N/A	N/A	Uncertain date
MB24	36.0	18.5	9.0	7750.0	105.00	1.35	550.0	Ottoman Fortress	Interior Wall, Southern Area	Wall	Ottoman
MB25	39.0	23.0	9.0	9390.0	338.00	3.60	120.0	Ottoman Fortress	Southern Outer Wall	Wall	Ottoman
MB26	38.0	20.0	9.5	6980.0	3.67	0.05	15.0	SAV1	Southern Pharaonic Enclosure Wall	Wall	New Kingdom
MB27	40.0	16.5	8.0	6680.0	4.81	0.07	5.0	SAF2	Western Side, in Doorway	Wall	New Kingdom
MB28	40.0	18.0	9.0	8740.0	12.00	0.14	18.0	SAV1 Sur. Temple A	Structure N of Temple A	Wall	New Kingdom
MB29	31.0	16.0	11.0	5160.0	13.58	0.26	20.0	SAV1 Sur. Temple A	Temenos S of Temple A	Wall	New Kingdom
MB30	41.5	22.0	8.0	8620.0	355.00	4.12	1150.0	Ottoman Fortress	South-West Tower	Tower	Ottoman
MB31	39.0	26.0	10.5	11950.0	15.78	0.13	20.0	SAV1	1st Southern Magazine, Eastern wall	Wall	New Kingdom
MB32	36.0	16.5	10.0	8420.0	263.00	3.12	1000.0	Ottoman Fortress	North-West Tower	Tower	Ottoman
MB33	37.0	17.5	8.0	6400.0	10.14	0.16	10.0	SAV1	Northern Magazine	Wall	New Kingdom
MB34	Storage	Storage	Storage	4700.0	8.47	0.18	10.0	SAV1N	Eboulement A; Square 190/2260	Wall	New Kingdom

* Dimensions = cm; Weight MB = kilo*1000=gram; Weight botanics = gram; Density or % botanics = Weight botanics (g) /Weight MB (g)*100; Vol. botanics = ml

Tab. 28 *continued* Dimensions and context data for mud brick samples.

Mortar/ Plaster ID	Weight Mortar*	Weight botanics	Density or % botanics	Vol. botanics	Area	Feature/Quarter	Context type	Assoc. Mud bricks	Relative dating
MO1	1800.00	2.09	0.12	2.5	SAV1W	Feature 100, Enclosure Wall	Wall	MB1, MB2	New Kingdom
MO2	2820.00	3.33	0.12	3.0	SAV1N	N2 Large Tower, Tumble N	Tower	MB10	New Kingdom
MO3	1620.00	3.02	0.19	3.0	SAV1N	N2 Large Tower, Extension	Tower	MB11	New Kingdom
MO4	6000.00	2.99	0.05	5.0	SAV1N	1 Curve	Wall	MB12, MB13	New Kingdom
MO5	1380.00	80.0	5.80	106.0	SAV1N	27	Wall	MB15	New Kingdom
MO6	1310.00	4.43	0.34	5.0	SAV1N	N8, 34N	Wall	MB16	New Kingdom
MO7	920.00	3.27	0.36	3.0	SAV1N	11	Wall	MB18	New Kingdom
MO8	1860.00	42.0	2.26	150.0	Ottoman Fortress	Interior Wall, Southern Area	Wall	MB24	Ottoman
MO9	1181.00	130.0	11.01	350.0	Ottoman Fortress	Southern Outer Wall	Wall	MB25	Ottoman
MO10	1370.00	1.61	0.12	0.5	SAF2	Western Side, in Doorway	Wall	MB27	New Kingdom
MO11	1450.00	1.23	0.08	1.0	SAV1 Sur. Temple A	Structure N of Temple A	Wall	MB28	New Kingdom
MO12	1110.00	33.0	2.97	74.0	Ottoman Fortress	South-West Tower	Tower	MB30	Ottoman
MO13	2110.00	13.73	0.65	20.0	SAV1	1st Southern Magazine, Eastern wall	Wall	MB31	New Kingdom
MO14	750.00	1.50	0.20	1.0	SAV1	Northern Magazine	Wall	N/A	New Kingdom
P1	400.00	2.0	0.5	2.0	SAV1N	34S	Wall	N/A	New Kingdom
P2	1130.00	1.0	0.1	1.0	SAV1N	N17	Pit	N/A	New Kingdom
P3	300.00	1.0	0.3	1.0	SAV1 Sur. Temple A	Silo below Temple A	Plaster	N/A	New Kingdom
P4	1020.00	41.0	4.0	200.0	Ottoman Fortress	Interior Wall, near SW Tower	Wall	N/A	Ottoman

* Weight Mortar = g=kilo*1000; Weight botanics = gram; Density or % botanics = Weight botanics (g) /Weight MB (g)*100; Vol. botanics = ml

Tab. 29 Weight and context data for mortar and plaster samples

ID	Area	Location	SU	Find no.	Relative dating	Context function / feature*	Vol. soil	Vol. botanics	Weight sample	Weight botanics
S1	SAV1W	around Feature 100	N/A	N/A	Post-New Kingdom/Ottoman	Feature 100 = Enclosure Wall in SAV1 West	N/A	N/A	N/A	N/A
S2	SAV1W	SQ1	587	1366/2014	New Kingdom	Organic finds from loose debris	N/A	N/A	N/A	N/A
S3	SAV1W	SQ1	590	1376/2014	New Kingdom	Organic finds from loose sandy debris	N/A	N/A	N/A	N/A
S4	SAV1W	SQ1	588	1373/2014	New Kingdom	Sandy layer with some mud brick fragments	N/A	N/A	N/A	N/A
S5	SAV1W	SQ1	590	1377/2014	New Kingdom	Loose sandy debris	N/A	N/A	N/A	N/A
S7	SAV1W	SQ1	572	1324/2014	New Kingdom	Sandy debris adjacent to Enclosure Wall	N/A	N/A	N/A	N/A
S8	SAV1W	SQ1	584	1341/2014	(Post-)New Kingdom	Pit in SE corner of square; sandy filling; potentially mixed context	N/A	N/A	N/A	N/A
S10	SAV1W	SQ1	555	1208/2014	New Kingdom	Sandy filling from pit inside enclosure wall Feature 100	N/A	N/A	N/A	N/A
S11	SAV1W	SQ1	563	1244/2014	New Kingdom	Sandy filled pit layer; mixed material	N/A	N/A	N/A	N/A
S12	SAV1W	SQ1	511	662/2014	(Post-)New Kingdom	Debris layer above enclosure wall; mixed material	N/A	N/A	N/A	N/A
S13	SAV1W	SQ2	508	630/2014	Post-New Kingdom/ Ottoman	Debris of destroyed mud brick; mixed material	N/A	N/A	N/A	N/A
S14	SAV1W	SQ1W + NW	511	1202/2014	(Post-)New Kingdom	Debris layer above enclosure wall; mixed material	N/A	N/A	N/A	N/A
S15	SAV1W	SQ1, adjacent Feature 100	501	707/2014	(Post-)New Kingdom	Sandy layer close to Enclosure Wall	N/A	N/A	N/A	N/A
S16	SAV1W	SQ1	501	698/2014	New Kingdom	Sandy layer	N/A	N/A	N/A	N/A
S17	SAV1W	SQ2	516	825/2014	(Post-)New Kingdom	Mud brick debris; still mixed material	N/A	N/A	N/A	N/A
S18	SAV1W	SQ1W	522	847/2014	(Post-)New Kingdom	Sandy layer; possibly windblown sand; potentially Post-New Kingdom	N/A	N/A	N/A	N/A

* Context function/feature = e.g. floor, pit, hearth; Vol. Soil = ml; Vol. botanics = ml; Weight sample = gram; Weight botanics = gram

Tab. 30 Context descriptions and measurements for surface and soil samples

ID	Area	Location	SU	Find no.	Relative dating	Context function / feature*	Vol. soil	Vol. botanics	Weight sample	Weight botanics
S19	SAV1W	SQ1W	524	873/2014	(Post-)New Kingdom	Sandy layer with mud brick debris; Post-New Kingdom	N/A	N/A	N/A	N/A
S20	SAV1W	SQ1	536	774/2014	Post-New Kingdom	Debris layer with mud brick fragments; Post- New Kingdom	N/A	N/A	N/A	N/A
S21	SAV1W	SQ1W	529	882/2014	(Post-)New Kingdom	Charcoal from surface cleaning; date unclear	N/A	N/A	N/A	N/A
S22	SAV1W	SQ2	510	651/2014	New Kingdom	Debris layer with loose mud bricks; date unclear	N/A	N/A	N/A	N/A
S23	SAV1W	SQ1W	540	1019/2014	New Kingdom	Sandy layer W of Enclosure Wall	N/A	N/A	N/A	N/A
S24	SAV1W	SQ1W	534	914/2014	Post-New Kingdom	Compact mud brick pieces and much organic material	N/A	N/A	N/A	N/A
S25	SAV1W	SQ1	548	1130/2014	New Kingdom	Loose sandy debris	N/A	N/A	N/A	N/A
S26	SAV1E	SQ1B	051	2016/2014	(Post-)New Kingdom	SU 051 = sandy layer, with a lot of mud brick debris; potentially mixed material	N/A	N/A	N/A	N/A
S27	SAV1E	SQ4/4A	009	120/2014	Sub-recent	SQ4, 2,5-5,5 m W-E / 9-10 m N-S ; SQ4A 2,50-6,50 m W-E / 0-2 m N-S; dung with plant remains	N/A	N/A	N/A	N/A
S28	SAV1E	SQ1B	051	2034/2014	(Post-)New Kingdom	SU 051 = sandy layer, with a lot of mud brick debris; potentially mixed material	N/A	N/A	N/A	N/A
S29	SAV1E	SQ1B	049	2005/2014	New Kingdom	Loose sandy debris with mud bricks; mixed material	N/A	N/A	N/A	N/A
S30	SAV1E	SQ3	063	2157/2014	New Kingdom	In Feature 29 (pit); sandy filling below SU 060 and SU 20	N/A	N/A	N/A	N/A
S31	SAV1E	SQ4	079	2274/2014	(Post-)New Kingdom	Layer of debris of mud bricks in Feature 15; potentially mixed material	N/A	N/A	N/A	N/A
S32	SAV1E	SQ3	030	0395/2014	New Kingdom	Sandy material, partly loamy with mud brick debris; potentially mixed material	N/A	N/A	N/A	N/A

Context function/feature = e.g. floor, pit, hearth; Vol. Soil = ml; Vol. botanics = ml; Weight sample = gram; Weight botanics = gram

Tab. 30 *continued* Context descriptions and measurements for surface and soil samples

ID	Area	Location	SU	Find no.	Relative dating	Context function / feature*	Vol. soil	Vol. botanics	Weight sample	Weight botanics
S33	SAV1E	SQ4A	004	0132/2014	New Kingdom	Sandy filling of Feature 7 = pit; topmost layer and potentially mixed material	N/A	N/A	N/A	N/A
S34	SAV1E	SQ1B	018	0216/2014	(Post-)New Kingdom	Sandy filling of depression in NW corner of SQ1B; potentially mixed material	N/A	N/A	N/A	N/A
S35	SAV1E	SQ3	015	0175/2014	(Post-)New Kingdom	Sandy mixed surface material; disturbed context	N/A	N/A	N/A	N/A
OR1	SAV1W	SQ1S	733	0844/2015	18th Dynasty	Rest of silty material below the wall (SU 712) in W part on top of SU 724 (ashy layer)	5.0	5.0	3.0	3.0
CH1	SAV1E	SQ2B, 7–8m to E, debris around Feature 27, before Pl. 5	N/A	326/2013	Post-New Kingdom/Ottoman	Finds associated with Feature 27, an organic basket. These finds are Post-New Kingdom and potentially Ottoman in date	40.0	40.0	13.0	13.0
CH2	SAV1W	SQ1, NW Corner	502	0624/2014	(Post-)New Kingdom	Mixed finds from a debris layer	81.0	81.0	17.0	17.0
CH3	SAV1W	SQ1S, Pr. 13	682		18th Dynasty	Ashy layer from horizon below SU 681	68.0	68.0	40.0	40.0
CH4	SAV1W	SQ1, Pr. 18	707		18th Dynasty	Probe of Sampling area: Profile 18 (not yet excavated)	7.0	1.0	9.0	1.0
CH5	SAV1W	SQ1	716	0812/2015	18th Dynasty	Below brick wall (SU 712) in NE part of SQ1S; E-area	120.0	120.0	46.0	46.0
CH6	SAV1E	Feature 15	321	1677/2015	18th Dynasty	Cellar (Feature 15)	100.0	100.0	33.0	33.0
CH7	SAV1E	Feature 15	321	1677a/2015	18th Dynasty	Cellar (Feature 15)	500.0	71.0	466.0	41.0
W1	SAV1N	25N	Wall	N/A	New Kingdom	Debris layer; mixed wood fragments; potentially mixed material	N/A	N/A	N/A	N/A
W2	SAV1N	33N	Wall	N/A	New Kingdom	Debris layer; mixed wood fragments; potentially mixed material	N/A	N/A	N/A	N/A

Context function/feature = e.g. floor, pit, hearth; Vol. Soil = ml; Vol. botanics = ml; Weight sample = gram; Weight botanics = gram

Tab. 30 *continued* Context descriptions and measurements for surface and soil samples

ID	Area	Location	SU	Find no.	Relative dating	Context function / feature*	Vol. soil	Vol. botanics	Weight sample	Weight botanics
W3	SAV1W	SQ1A	587	1366/2014	New Kingdom	Debris layer; mixed wood fragments; potentially mixed material	N/A	N/A	N/A	N/A
W4	SAV1W	SQ1A	556	1275/2014	New Kingdom	Debris layer; mixed wood fragments; potentially mixed material	N/A	N/A	N/A	N/A
W6	SAV1E	SQ1B	040	511/2014	(Post-)New Kingdom	Debris layer; mixed wood fragments; potentially mixed material	N/A	N/A	N/A	N/A
W7	SAV1E	SQ1B	051	2026/2014	Post-New Kingdom	2026/2014 = basketry; SU 051 = sandy layer, with a lot of mud brick debris; potentially mixed material	N/A	N/A	N/A	N/A
OL1	SAV1W	SQ1S	609	N/A	New Kingdom	Organic layer Subsample 1/2 + 2/2 added together	750.0	22.0	812.0	15.0
O1A + O1B	SAV1 Sur. Temple A	Temenos S of Temple A	N/A	N/A	New Kingdom	From a mortar	N/A	N/A	N/A	N/A
O5	SAV1E	SQ2, Feature 14, in Find Number 40	N/A	49/2013	Early 18th Dynasty	Charcoal within pot SAV1E 49/2013	N/A	N/A	N/A	N/A

Context function/feature = e.g. floor, pit, hearth; Vol. Soil = ml; Vol. botanics = ml; Weight sample = gram; Weight botanics = gram

Tab. 30 *continued* Context descriptions and measurements for surface and soil samples

typically from beneath a sampled mud brick. Mud brick plaster, which appears as clearly distinguishable thick 'sheets' on walls (Pl. 131) was loosened using a knife or trowel and carefully removed. The processing protocol for mortars and plasters was largely identical to that for mud bricks, with the exception that neither cut-offs were made nor dimensions taken.

5.1.4 The samples

From the New Kingdom town 30 mud bricks, 11 mortars, 3 plasters, 9 soil samples and 34 loose/surface finds were studied. In Tab. 29 the recorded metrics, relative dating and context information is provided for the mud bricks, while Tabs. 30 and 31 provide the same information for the mud plasters and mud mortars and for the soil samples and loose/surface finds respectively. Some remarks as to dating, context, possible biases and some other observations shall be made here. A few of the mud bricks encountered at Sai had surface markings; some had grooves made with fingers (MB21 and MB22) and others marks made by fingers impressed from above (MB28 with two fingers, MB19 and MB20 with three fingers) (Pl. 132).[968] While not quite formal production stamps,[969] the markings may have had an administrative or logistical meaning[970] and we will assess if this group of marked bricks stands out in any way. It should also be noted that the dimensions of MB24, a fragment of a mud brick that had been collected in a previous season and was in storage, could not be recorded due to its fragmentary nature. The occasional inclusion of pottery as temper aided the relative dating of some mud bricks. With respect to the loose/surface finds, it was ascertained that some finds are possibly of Post-Pharaonic origin or are sub-recent, which cannot always be conclusively established through visual evaluation in desiccated materials (see Tab. 30). Lastly, a bias typically exists with respect to loose/surface finds as they are handpicked by non-botanists; larger remains that can be more easily spotted in the field and can be easily recognised as botanical tend to be overrepresented in such material (e.g. large fruits). Tabs. 31, 32 and 33 provide the results of the botanical analyses of the different categories of samples and give an overview of the taxa and plant parts present in each sample as well as their quantifications.

5.1.5 Archaeobotanical analysis

The archaeobotanical analysis of the samples was conducted at the Laboratory for Palaeobotany and Palynology at the Groningen Institute of Archaeology at Groningen University, the Netherlands, using a standard binocular light microscope. As aids in the archaeobotanical identification, the institute's modern and archaeological reference collection as well as the identification manuals and plant atlases by Mark Nesbitt, René T.J. Cappers et al., René T.J. Cappers and Reinder Neef, Reinder Neef et al. and René T.J. Cappers and Renée M. Bekker were used; their use for specific identifications is cited in the text.[971] For general ecological reference the *Flora of Egypt* by Loutfy Boulos was used.[972] Before proceeding to the results, we will briefly reflect on some terminological issues and biases in archaeobotanical research (5.1.5.1), followed by a note on preservation conditions at Sai (5.1.5.2).

5.1.5.1 On crops and taxa and the absence of certain crops from the assemblage

The classification system for organisms that biologists use is taxonomy: any rank or grouping within taxonomy is referred to as a taxon (plural: taxa), such as family, genus, species or subspecies. In the common parlance of agriculture and trade (and likewise in the history and archaeology of these subjects), the grouping of plants is typically practical and based on similarities in use (e.g. 'food crops', 'fruit trees', 'vegetables').

968 For the marks on mud bricks from Sai, see Doyen 2017, 25–28 with references.
969 Cf. Kemp 2000, 89.
970 See Doyen 2017, 26 with examples given in fn. 77.
971 Nesbitt 2006; Cappers et al. 2009; Cappers and Neef 2012; Neef et al. 2012; Cappers and Bekker 2013.
972 Boulos 1999–2005.

			Mud brick ID	**MB1**	**MB2**	**MB3**	**MB4**
			Area	SAV1W	SAV1W	SAV1W	SAV1W
			Feature / Quarter	Feature 100, Enclosure Wall	Feature 100, Enclosure Wall	Feature behind 100	Feature behind 100
			Context Type	Wall	Wall	Wall	Wall
			Date	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Acacia sp.	*Acacia* sp.	Gum	N/A				
Acacia nilotica	Nile acacia	Seed	Charred				
Acacia nilotica	Nile acacia	Seed	Desiccated				
cf. *Acacia nilotica*	Nile acacia	Fruit	Desiccated				
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated		5	7	
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred				
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated			32	
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated				
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated				
Boraginaceae	Borage	Seed	Desiccated				
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred				
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated				
Centaurea sp.	Centaury	Fruit	Charred			1	
Centaurea sp.	Centaury	Fruit	Mineralised				
Citrullus lanatus	Watermelon	Seed	Desiccated				
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated				
Cyperaceae Type 1	Sedge family	Seed	Desiccated			1	
Cyperaceae Type 2	Sedge family	Seed	Desiccated			5	
Echium sp.	*Echium* sp.	Seed	Mineralised	1	10	1	
Fabaceae	Legume family	Leaf	Desiccated	7		13	
Fabaceae	Legume family	Seed	Charred		59	1	
Fabaceae	Legume family	Seed	Modern			27	
Hordeum vulgare hulled	Barley	Floret	Charred				
Hordeum vulgare hulled	Barley	Floret	Desiccated	12	14	1	
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred				
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated				
Hordeum vulgare	Barley	Rachis (node + internode)	Charred				
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated	351	586	33	
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated		3		
Hordeum vulgare ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated	14	122	7	
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated				
Hyphaene thebaica	Doum palm	Endocarp	Charred				

Tab. 31 Identification and quantification of archaeobotanical remains in mud brick samples

cf. *Hyphaene thebaica*	Doum palm	Fragmented endocarp	Charred				
Palmae	Palm family	Wood	Charred				
Panicum cf. *turgidum/ miliaceum*	Thaman/broomcorn millet	Fruit	Desiccated				
cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated				
Papaveraceae	Poppy family	Seed	Charred			9	
Phalaris sp.	Canary grass	Fruit	Charred				
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated				
Poaceae	Grass family	Fruit	Desiccated			6	
Poaceae	Grass family	Infructescence	Desiccated				
Poaceae	Grass family	Palea/Lemma	Desiccated			3	
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated			2	
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated			19	
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated				
Triticeae	Cereal indet.	Seed	Charred				
Triticeae	Cereal indet.	Seed	Desiccated	4	3	1	
Triticeae	Cereal indet.	Palea/Lemma	Desiccated		2		
Triticeae	Cereal indet.	Straw	Desiccated	++++			
Triticeae	Cereal indet.	Culm nodes	Charred			1	
Triticeae	Cereal indet.	Culm nodes	Desiccated	31	46	23	
Triticeae	Cereal indet.	Culm base	Charred			2	
Triticeae	Cereal indet.	Culm base	Desiccated			6	
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated				
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred				
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated		7		
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred				
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated				
Indeterminate							
Calyx	N/A	Calyx	Desiccated				
Fruit indet.	N/A	Fruit	Charred	+	++	+	
Fruit indet.	N/A	Fruit	Desiccated	+	++	++++	+
Leaf	N/A	Leaf	Desiccated				
Pedicel	N/A	Pedicel	Desiccated			4	
Root/Rhizome	N/A	Root/Rhizome	Desiccated			3	
Wood TBI	N/A	Wood	Charred	+	+		++
Wood TBI	N/A	Wood	Desiccated		+		+
Other finds							
Animal bone	N/A	N/A	Desiccated	+			+
Animal dung indeterminate	N/A	N/A	Desiccated				+
Capra sp. / *Ovis* sp. dung	Sheep/Goat	N/A	Desiccated		+		
Faience or glaze fragments	N/A	N/A	N/A				

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

			Mud brick ID	**MB5**	**MB6**	**MB7**	**MB8**	**MB9**
			Area	SAV1N	SAV1N	SAV1N	SAV1N	SAV1N
			Feature / Quarter	N4 Enclosure Wall	N4 Enclosure Wall	N3 Small Tower	N3 Small Tower	N2 Large Tower
			Context Type	Wall	Wall	Tower	Tower	Tower
			Date	New Kingdom	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Desiccated	1				
cf. *Acacia nilotica*	Nile acacia	Fruit	Desiccated					
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated					
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred					
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated	4				
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated					
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated					
Boraginaceae	Borage	Seed	Desiccated					
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred					
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated					
Cyperaceae Type 1	Sedge family	Seed	Desiccated					
Cyperaceae Type 2	Sedge family	Seed	Desiccated					
Echium sp.	*Echium* sp.	Seed	Mineralised					
Fabaceae	Legume family	Leaf	Desiccated	11		13	3	1
Fabaceae	Legume family	Seed	Charred					
Fabaceae	Legume family	Seed	Modern					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Floret	Desiccated					
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred					
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated				1	
Hordeum vulgare	Barley	Rachis (node + internode)	Charred			1		
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated					
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated					
Hordeum vulgare ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated					
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp	Charred					

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

cf. *Hyphaene thebaica*	Doum palm	Fragmented endocarp	Charred					
Palmae	Palm family	Wood	Charred		+			
Panicum cf. *turgidum/ miliaceum*	Thaman/broomcorn millet	Fruit	Desiccated				1	
cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated					
Papaveraceae	Poppy family	Seed	Charred					
Phalaris sp.	Canary grass	Fruit	Charred					
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated					
Poaceae	Grass family	Fruit	Desiccated	20				
Poaceae	Grass family	Infructescence	Desiccated					
Poaceae	Grass family	Palea/Lemma	Desiccated					
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated					
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated					
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated					
Triticeae	Cereal indet.	Seed	Charred				1	
Triticeae	Cereal indet.	Seed	Desiccated	2				
Triticeae	Cereal indet.	Palea/Lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Desiccated	++	+	++	++	++
Triticeae	Cereal indet.	Culm nodes	Charred			1		
Triticeae	Cereal indet.	Culm nodes	Desiccated				1	
Triticeae	Cereal indet.	Culm base	Charred					
Triticeae	Cereal indet.	Culm base	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated					
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred					
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated				3	
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred					
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated					
Indeterminate								
Calyx	N/A	Calyx	Desiccated					
Fruit indet.	N/A	Fruit	Charred					
Fruit indet.	N/A	Fruit	Desiccated	++	+		+	
Leaf	N/A	Leaf	Desiccated					++
Pedicel	N/A	Pedicel	Desiccated	2				
Root/Rhizome	N/A	Root/Rhizome	Desiccated					
Wood TBI	N/A	Wood	Charred	++	++	++	++	+++
Wood TBI	N/A	Wood	Desiccated		++	++		++
Other finds								
Animal bone	N/A	N/A	Desiccated	+		+	+	+
Animal dung indeterminate	N/A	N/A	Desiccated	+	++			+
Capra sp. / *Ovis* sp. dung	Sheep/Goat	N/A	Desiccated					
Faience or glaze fragments	N/A	N/A	N/A					

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

			Mud brick ID	**MB10**	**MB11**	**MB12**	**MB13**
			Area	SAV1N	SAV1N	SAV1N	SAV1N
			Feature / Quarter	N2 Large Tower, tumble N	N2 Large Tower, extension	1 Curve	1 Curve
			Context Type	Tower	Tower	Wall	Wall
			Date	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Acacia sp.	*Acacia* sp.	Gum	N/A				
Acacia nilotica	Nile acacia	Seed	Charred				
Acacia nilotica	Nile acacia	Seed	Desiccated		1		
cf. *Acacia nilotica*	Nile acacia	Fruit	Desiccated				
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated				
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred			1	
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated	1			
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated				
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated			1	
Boraginaceae	Borage	Seed	Desiccated				
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred				
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated				
Centaurea sp.	Centaury	Fruit	Charred				
Centaurea sp.	Centaury	Fruit	Mineralised				2
Citrullus lanatus	Watermelon	Seed	Desiccated		1	3	
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated				
Cyperaceae Type 1	Sedge family	Seed	Desiccated				
Cyperaceae Type 2	Sedge family	Seed	Desiccated				
Echium sp.	*Echium* sp.	Seed	Mineralised			1	
Fabaceae	Legume family	Leaf	Desiccated	2	2	26	10
Fabaceae	Legume family	Seed	Charred				
Fabaceae	Legume family	Seed	Modern				
Hordeum vulgare hulled	Barley	Floret	Charred				3
Hordeum vulgare hulled	Barley	Floret	Desiccated				
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred				2
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated				
Hordeum vulgare	Barley	Rachis (node + internode)	Charred	5	2	3	5
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated			10	1
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated				
Hordeum vulgare ssp. vulgare	6-row barley	Rachis (node + internode)	Desiccated				
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated				
Hyphaene thebaica	Doum palm	Endocarp	Charred				1

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

cf. *Hyphaene thebaica*	Doum palm	Fragmented endocarp	Charred				
Palmae	Palm family	Wood	Charred				
Panicum cf. *turgidum/ miliaceum*	Thaman/ broomcorn millet	Fruit	Desiccated			1	
cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated				
Papaveraceae	Poppy family	Seed	Charred				
Phalaris sp.	Canary grass	Fruit	Charred				
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated		1		
Poaceae	Grass family	Fruit	Desiccated	1		2	
Poaceae	Grass family	Infructescence	Desiccated			1	
Poaceae	Grass family	Palea/Lemma	Desiccated				
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated				
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated				
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated				
Triticeae	Cereal indet.	Seed	Charred	1	2	3	2
Triticeae	Cereal indet.	Seed	Desiccated			1	
Triticeae	Cereal indet.	Palea/Lemma	Desiccated	1			
Triticeae	Cereal indet.	Straw	Desiccated	++	++	+++	
Triticeae	Cereal indet.	Culm nodes	Charred			1	
Triticeae	Cereal indet.	Culm nodes	Desiccated	1		4	
Triticeae	Cereal indet.	Culm base	Charred				
Triticeae	Cereal indet.	Culm base	Desiccated				
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated				
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred				2
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated	1			
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred	1	1	1	2
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated				
Indeterminate							
Calyx	N/A	Calyx	Desiccated				
Fruit indet.	N/A	Fruit	Charred	+		+	+
Fruit indet.	N/A	Fruit	Desiccated	+	+	+++	+
Leaf	N/A	Leaf	Desiccated			++	
Pedicel	N/A	Pedicel	Desiccated			1	
Root/Rhizome	N/A	Root/Rhizome	Desiccated			1	
Wood TBI	N/A	Wood	Charred	+++	+++	++++	+++
Wood TBI	N/A	Wood	Desiccated	+++		++	+
Other finds							
Animal bone	N/A	N/A	Desiccated	++	++	+	+
Animal dung indeterminate	N/A	N/A	Desiccated	+++	+		++
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated			++	
Faience or glaze fragments	N/A	N/A	N/A			+	

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

			Mud brick ID	**MB14**	**MB15**	**MB16**	**MB17**	**MB18**
			Area	SAV1N	SAV1N	SAV1N	SAV1N	SAV1N
			Feature / Quarter	22 (Round Wall)	27	N8, 34N	42S	11
			Context Type	Wall	Wall	Wall	Wall	Wall
			Date	New Kingdom	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A	+			+	+
Acacia nilotica	Nile acacia	Seed	Charred	1				
Acacia nilotica	Nile acacia	Seed	Desiccated					
cf. *Acacia nilotica*	Nile acacia	Fruit	Desiccated					
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated					
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred					
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated		1			
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated		2			
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated					
Boraginaceae	Borage	Seed	Desiccated				8	
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred					
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated					
Cyperaceae Type 1	Sedge family	Seed	Desiccated					
Cyperaceae Type 2	Sedge family	Seed	Desiccated					
Echium sp.	*Echium* sp.	Seed	Mineralised				1	
Fabaceae	Legume family	Leaf	Desiccated	125	1		4	9
Fabaceae	Legume family	Seed	Charred					
Fabaceae	Legume family	Seed	Modern					
Hordeum vulgare hulled	Barley	Floret	Charred				1	
Hordeum vulgare hulled	Barley	Floret	Desiccated	1	2			
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred					
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated	2				
Hordeum vulgare	Barley	Rachis (node + internode)	Charred	2				
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated	4	33	92		
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated					
Hordeum vulgare ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated		20			
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp	Charred			1		

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

cf. *Hyphaenethebaica*	Doum palm	Fragmented endocarp	Charred	1		1	1	
Palmae	Palm family	Wood	Charred	++				
Panicum cf. *turgidum/ miliaceum*	Thaman/ broomcorn millet	Fruit	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated	1				
Papaveraceae	Poppy family	Seed	Charred					
Phalaris sp.	Canary grass	Fruit	Charred	1				
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated					
Poaceae	Grass family	Fruit	Desiccated					
Poaceae	Grass family	Infructescence	Desiccated					
Poaceae	Grass family	Palea/Lemma	Desiccated		1			
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated					
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated					
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated					
Triticeae	Cereal indet.	Seed	Charred	2		1	2	
Triticeae	Cereal indet.	Seed	Desiccated	1				
Triticeae	Cereal indet.	Palea/Lemma	Desiccated		1			
Triticeae	Cereal indet.	Straw	Desiccated	+++	++++	++++	+	++
Triticeae	Cereal indet.	Culm nodes	Charred					
Triticeae	Cereal indet.	Culm nodes	Desiccated		3	9		3
Triticeae	Cereal indet.	Culm base	Charred					
Triticeae	Cereal indet.	Culm base	Desiccated		1			
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated		1			
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred				1	
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred				1	
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated					
Indeterminate								
Calyx	N/A	Calyx	Desiccated	6				
Fruit indet.	N/A	Fruit	Charred			+	+	
Fruit indet.	N/A	Fruit	Desiccated	+++	+		+	+
Leaf	N/A	Leaf	Desiccated					
Pedicel	N/A	Pedicel	Desiccated					
Root/Rhizome	N/A	Root/Rhizome	Desiccated		1			
Wood TBI	N/A	Wood	Charred	+++	++	+++	++++	++
Wood TBI	N/A	Wood	Desiccated	+++	++	+++	++	
Other finds								
Animal bone	N/A	N/A	Desiccated	+			+	
Animal dung indeterminate	N/A	N/A	Desiccated	+++			++	+
Capra sp. / *Ovis* sp. dung	Sheep/Goat	N/A	Desiccated		+			
Faience or glaze fragments	N/A	N/A	N/A					

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

			Mud brick ID	**MB19**	**MB20**	**MB21**	**MB22**	**MB23**
			Area	SAV1N	SAV1N	SAV1N	SAV1N	SAV1N
			Feature / Quarter	N/A	N/A	N/A	N/A	N/A
			Context Type	N/A	N/A	N/A	N/A	N/A
			Date	Uncertain Date	Uncertain Date	Uncertain Date	Uncertain Date	Uncertain Date
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Desiccated					
cf. Acacia nilotica	Nile acacia	Fruit	Desiccated					
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated					
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred					
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated					
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated					
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated					
Boraginaceae	Borage	Seed	Desiccated					
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred			7		
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated			10	1	
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated					
Cyperaceae Type 1	Sedge family	Seed	Desiccated					
Cyperaceae Type 2	Sedge family	Seed	Desiccated					
Echium sp.	*Echium* sp.	Seed	Mineralised					
Fabaceae	Legume family	Leaf	Desiccated	20	17	48	34	8
Fabaceae	Legume family	Seed	Charred					
Fabaceae	Legume family	Seed	Modern					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Floret	Desiccated					
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred					
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated					
Hordeum vulgare	Barley	Rachis (node + internode)	Charred		6			
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated					
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated					
Hordeum vulgare ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated					
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp	Charred					

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

cf. *Hyphaene thebaica*	Doum palm	Fragmented endocarp	Charred					1
Palmae	Palm family	Wood	Charred					
Panicum cf. *turgidum/ miliaceum*	Thaman/ broomcorn millet	Fruit	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated					
Papaveraceae	Poppy family	Seed	Charred					
Phalaris sp.	Canary grass	Fruit	Charred					
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated					
Poaceae	Grass family	Fruit	Desiccated			2	4	
Poaceae	Grass family	Infructescence	Desiccated					
Poaceae	Grass family	Palea/Lemma	Desiccated					
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated					
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated					
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated					
Triticeae	Cereal indet.	Seed	Charred		1			
Triticeae	Cereal indet.	Seed	Desiccated					
Triticeae	Cereal indet.	Palea/Lemma	Desiccated	1		1		3
Triticeae	Cereal indet.	Straw	Desiccated	++	++	++	+++	+++
Triticeae	Cereal indet.	Culm nodes	Charred					
Triticeae	Cereal indet.	Culm nodes	Desiccated					
Triticeae	Cereal indet.	Culm base	Charred					
Triticeae	Cereal indet.	Culm base	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated		3		2	
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated					
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred					
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred					
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated					
Indeterminate								
Calyx	N/A	Calyx	Desiccated					
Fruit indet.	N/A	Fruit	Charred	+				
Fruit indet.	N/A	Fruit	Desiccated	+	+	+		++
Leaf	N/A	Leaf	Desiccated			++		
Pedicel	N/A	Pedicel	Desiccated					
Root/Rhizome	N/A	Root/Rhizome	Desiccated					
Wood TBI	N/A	Wood	Charred		+	+		++
Wood TBI	N/A	Wood	Desiccated				+++	
Other finds								
Animal bone	N/A	N/A	Desiccated					
Animal dung indeterminate	N/A	N/A	Desiccated					+
Capra sp. / *Ovis* sp. dung	Sheep/Goat	N/A	Desiccated		+	+		
Faience or glaze fragments	N/A	N/A	N/A					

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

			Mud brick ID	**MB26**	**MB27**	**MB28**	**MB29**
			Area	SAV1	SAF2	SAV1 Sur. Temple A	SAV1 Sur. Temple A
			Feature / Quarter	Southern Pharaonic Enclosure Wall	Western side, in doorway	Structure N of Temple A	Temenos' South of Temple A
			Context Type	Wall	Wall	Wall	Wall
			Date	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Acacia sp.	*Acacia* sp.	Gum	N/A				++++
Acacia nilotica	Nile acacia	Seed	Charred				
Acacia nilotica	Nile acacia	Seed	Desiccated				
cf. *Acacia nilotica*	Nile acacia	Fruit	Desiccated				
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated				
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred				
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated				
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated				
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated				
Boraginaceae	Borage	Seed	Desiccated		3		
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred				
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated				
Centaurea sp.	Centaury	Fruit	Charred				
Centaurea sp.	Centaury	Fruit	Mineralised			1	
Citrullus lanatus	Watermelon	Seed	Desiccated				
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated		1		
Cyperaceae Type 1	Sedge family	Seed	Desiccated				
Cyperaceae Type 2	Sedge family	Seed	Desiccated				
Echium sp.	*Echium* sp.	Seed	Mineralised		1		
Fabaceae	Legume family	Leaf	Desiccated	9	18	6	8
Fabaceae	Legume family	Seed	Charred				
Fabaceae	Legume family	Seed	Modern				
Hordeum vulgare hulled	Barley	Floret	Charred				
Hordeum vulgare hulled	Barley	Floret	Desiccated		2		
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred				
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated				
Hordeum vulgare	Barley	Rachis (node + internode)	Charred				
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated	83	1		
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated				
Hordeum vulgare ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated				
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated	2			

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

Hyphaene thebaica	Doum palm	Endocarp	Charred				
cf. *Hyphaene thebaica*	Doum palm	Fragmented endocarp	Charred				
Palmae	Palm family	Wood	Charred			+	
Panicum cf. *turgidum/ miliaceum*	Thaman/ broomcorn millet	Fruit	Desiccated				
cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated	1			
Papaveraceae	Poppy family	Seed	Charred				
Phalaris sp.	Canary grass	Fruit	Charred				
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated				
Poaceae	Grass family	Fruit	Desiccated		3		
Poaceae	Grass family	Infructescence	Desiccated		1		
Poaceae	Grass family	Palea/Lemma	Desiccated	10			1
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated				
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated				
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated	2			
Triticeae	Cereal indet.	Seed	Charred				
Triticeae	Cereal indet.	Seed	Desiccated				
Triticeae	Cereal indet.	Palea/Lemma	Desiccated	1			
Triticeae	Cereal indet.	Straw	Desiccated		++	++	++
Triticeae	Cereal indet.	Culm nodes	Charred				
Triticeae	Cereal indet.	Culm nodes	Desiccated	31	1		
Triticeae	Cereal indet.	Culm base	Charred				
Triticeae	Cereal indet.	Culm base	Desiccated				
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated				
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred				
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred				
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated		1		
Indeterminate							
Calyx	N/A	Calyx	Desiccated				
Fruit indet.	N/A	Fruit	Charred		+		
Fruit indet.	N/A	Fruit	Desiccated	++	++	+	
Leaf	N/A	Leaf	Desiccated		+		
Pedicel	N/A	Pedicel	Desiccated		2		
Root/Rhizome	N/A	Root/Rhizome	Desiccated				
Wood TBI	N/A	Wood	Charred		++	++	
Wood TBI	N/A	Wood	Desiccated		++	+	+
Other finds							
Animal bone	N/A	N/A	Desiccated			+	+
Animal dung indeterminate	N/A	N/A	Desiccated				++
Capra sp. / *Ovis* sp. dung	Sheep/Goat	N/A	Desiccated		+		
Faience or glaze fragments	N/A	N/A	N/A				

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

			Mud brick ID	**MB31**	**MB33**	**MB34**
			Area	SAV1	SAV1	SAV1N
			Feature / Quarter	1st Southern magazine, eastern wall	Northern magazine	Eboulement A; Square 190/2260
			Context Type	Wall	Wall	Wall
			Date	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**			
Acacia sp.	*Acacia* sp.	Gum	N/A			+
Acacia nilotica	Nile acacia	Seed	Charred			
Acacia nilotica	Nile acacia	Seed	Desiccated			
cf. *Acacia nilotica*	Nile acacia	Fruit	Desiccated		1	
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated			
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred			
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated			
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated			
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated			
Boraginaceae	Borage	Seed	Desiccated			
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred			
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated			
Centaurea sp.	Centaury	Fruit	Charred			
Centaurea sp.	Centaury	Fruit	Mineralised			
Citrullus lanatus	Watermelon	Seed	Desiccated			
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated			
Cyperaceae Type 1	Sedge family	Seed	Desiccated			
Cyperaceae Type 2	Sedge family	Seed	Desiccated			
Echium sp.	*Echium* sp.	Seed	Mineralised			
Fabaceae	Legume family	Leaf	Desiccated		3	
Fabaceae	Legume family	Seed	Charred			
Fabaceae	Legume family	Seed	Modern			
Hordeum vulgare hulled	Barley	Floret	Charred			
Hordeum vulgare hulled	Barley	Floret	Desiccated			
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred			
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated			
Hordeum vulgare	Barley	Rachis (node + internode)	Charred			1
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated			
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated			
Hordeum vulgare ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated			
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated			
Hyphaene thebaica	Doum palm	Endocarp	Charred			

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

cf. *Hyphaene thebaica*	Doum palm	Fragmented endocarp	Charred			
Palmae	Palm family	Wood	Charred			
Panicum cf. *turgidum/ miliaceum*	Thaman/ broomcrn millet	Fruit	Desiccated			
cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated			
Papaveraceae	Poppy family	Seed	Charred			
Phalaris sp.	Canary grass	Fruit	Charred			
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated			
Poaceae	Grass family	Fruit	Desiccated			
Poaceae	Grass family	Infructescence	Desiccated			
Poaceae	Grass family	Palea/Lemma	Desiccated			
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated			
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated			
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated			
Triticeae	Cereal indet.	Seed	Charred			
Triticeae	Cereal indet.	Seed	Desiccated			
Triticeae	Cereal indet.	Palea/Lemma	Desiccated		1	
Triticeae	Cereal indet.	Straw	Desiccated		++	++
Triticeae	Cereal indet.	Culm nodes	Charred			
Triticeae	Cereal indet.	Culm nodes	Desiccated			
Triticeae	Cereal indet.	Culm base	Charred			
Triticeae	Cereal indet.	Culm base	Desiccated			
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated		5	
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated			
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred			
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated			
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred			
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated			
Indeterminate						
Calyx	N/A	Calyx	Desiccated			
Fruit indet.	N/A	Fruit	Charred			
Fruit indet.	N/A	Fruit	Desiccated	+		
Leaf	N/A	Leaf	Desiccated			
Pedicel	N/A	Pedicel	Desiccated			
Root/Rhizome	N/A	Root/Rhizome	Desiccated			
Wood TBI	N/A	Wood	Charred	+++	++	++
Wood TBI	N/A	Wood	Desiccated	+		
Other finds						
Animal bone	N/A	N/A	Desiccated	+	+	
Animal dung indeterminate	N/A	N/A	Desiccated		+	
Capra sp. / *Ovis* sp. dung	Sheep/Goat	N/A	Desiccated			
Faience or glaze fragments	N/A	N/A	N/A			

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

Scientific Name	English Common Name	Plant Part	Preservation	Total count per taxa	Ubiquity (% of samples)
Acacia sp.	*Acacia* sp.	Gum	N/A		16.67
Acacia nilotica	Nile acacia	Seed	Charred	1	3.33
Acacia nilotica	Nile acacia	Seed	Desiccated	2	6.67
cf. *Acacia nilotica*	Nile acacia	Fruit	Desiccated	1	3.33
Aizoaceae, cf. *Aizoon* sp.	Carpetweed family, cf. *Aizoon* sp.	Fruit w/seeds	Desiccated	12	6.67
cf. *Ambrosia maritima*	*Ambrosia maritima*	Whole fruit	Charred	1	3.33
Ambrosia maritima	*Ambrosia maritima*	Whole fruit	Desiccated	38	13.33
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated	2	3.33
cf. *Ambrosia maritima*	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated	1	3.33
Boraginaceae	Borage	Seed	Desiccated	11	6.67
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Charred	7	3.33
Boraginaceae (cf. *Echium* sp.)	Borage	Seed	Desiccated	11	6.67
Centaurea sp.	Centaury	Fruit	Charred	1	3.33
Centaurea sp.	Centaury	Fruit	Mineralised	3	6.67
Citrullus lanatus	Watermelon	Seed	Desiccated	4	6.67
cf. Citrullus lanatus	Watermelon	Seed	Desiccated	1	3.33
Cyperaceae Type 1	Sedge family	Seed	Desiccated	1	3.33
Cyperaceae Type 2	Sedge family	Seed	Desiccated	5	3.33
Echium sp.	*Echium* sp.	Seed	Mineralised	15	20
Fabaceae	Legume family	Leaf	Desiccated	398	80
Fabaceae	Legume family	Seed	Charred	60	6.67
Fabaceae	Legume family	Seed	Modern	27	3.33
Hordeum vulgare hulled	Barley	Floret	Charred	4	6.67
Hordeum vulgare hulled	Barley	Floret	Desiccated	32	20
cf. *Hordeum vulgare* hulled	Barley	Floret	Charred	2	3.33
cf. *Hordeum vulgare* hulled	Barley	Floret	Desiccated	3	6.67
Hordeum vulgare	Barley	Rachis (node + internode)	Charred	25	26.67
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated	1194	33.33
Hordeum vulgare with smut	Barley	Rachis (node + internode)	Desiccated	3	3.33
Hordeum vulgare ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated	163	13.33
cf. *Hordeum vulgare* ssp. *vulgare*	6-row barley	Rachis (node + internode)	Desiccated	2	3.33
Hyphaene thebaica	Doum palm	Endocarp	Charred	2	6.67
cf. *Hyphaene thebaica*	Doum palm	Fragmented endocarp	Charred	4	13.33
Palmae	Palm family	Wood	Charred		10
Panicum cf. *turgidum/ miliaceum*	Thaman/ broomcorn millet	Fruit	Desiccated	2	6.67

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

cf. *Panicum* sp.	Panicgrass	Palea/Lemma	Desiccated	2	6.67
Papaveraceae	Poppy family	Seed	Charred	9	3.33
Phalaris sp.	Canary grass	Fruit	Charred	1	3.33
cf. *Phoenix dactylifera*	Date palm	Pedicel	Desiccated	1	3.33
Poaceae	Grass family	Fruit	Desiccated	38	23.33
Poaceae	Grass family	Infructescence	Desiccated	2	6.67
Poaceae	Grass family	Palea/Lemma	Desiccated	15	13.33
Portulaca cf. *nitida*	*Portulaca nitida*	Seed	Desiccated	2	3.33
Sorghum halepense	Johnson grass	Palea/Lemma	Desiccated	19	3.33
cf. *Sorghum halepense*	Johnson grass	Palea/Lemma	Desiccated	2	3.33
Triticeae	Cereal indet.	Seed	Charred	15	30
Triticeae	Cereal indet.	Seed	Desiccated	12	20
Triticeae	Cereal indet.	Palea/Lemma	Desiccated	11	26.67
Triticeae	Cereal indet.	Straw	Desiccated		80
Triticeae	Cereal indet.	Culm nodes	Charred	3	10
Triticeae	Cereal indet.	Culm nodes	Desiccated	153	36.67
Triticeae	Cereal indet.	Culm base	Charred	2	3.33
Triticeae	Cereal indet.	Culm base	Desiccated	7	6.67
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (node + internode)	Desiccated	10	10
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Desiccated	1	3.33
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred	3	6.67
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Desiccated	11	10
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (= glume bases + internode)	Charred	6	16.67
cf. *Urtica pilulifera*	Roman nettle	Seed	Desiccated		3.33
Indeterminate					
Calyx	N/A	Calyx	Desiccated	6	3.33
Fruit indet.	N/A	Fruit	Charred		33.33
Fruit indet.	N/A	Fruit	Desiccated		76.67
Leaf	N/A	Leaf	Desiccated		13.33
Pedicel	N/A	Pedicel	Desiccated	9	13.33
Root/Rhizome	N/A	Root/Rhizome	Desiccated	5	10
Wood TBI	N/A	Wood	Charred		83.33
Wood TBI	N/A	Wood	Desiccated		56.67
Other finds					
Animal bone	N/A	N/A	Desiccated		53.33
Animal dung indeterminate	N/A	N/A	Desiccated		43.33
Capra sp. / *Ovis* sp. dung	Sheep/Goat	N/A	Desiccated		20
Faience or glaze fragments	N/A	N/A	N/A		3.33

Tab. 31 *continued* Identification and quantification of archaeobotanical remains in mud brick samples

			Mortar ID	**MO1**	**MO2**	**MO3**	**MO4**
			Area	SAV1W	SAV1N	SAV1N	SAV1N
			Feature / Quarter	Feature 100, Enclosure Wall	N2 Large Tower, tumble N	N2 Large Tower, extension	1 Curve
			Context Type	Wall	Tower	Tower	Wall
			Date	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Acacia sp.	*Acacia* sp.	Gum	N/A				
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Desiccated				
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Charred				
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated				1
Centaurea sp.	Centaury	Fruit	Charred				1
Citrullus lanatus	Watermelon	Seed	Desiccated				
Citrullus lanatus	Watermelon	Fragment of seed	Desiccated				
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated				
Fabaceae	Legume family	Leaf	Desiccated	3		2	4
Ficus cf. *sycamorus*	Sycamore fig	Fruit	Desiccated				3
Hordeum vulgare hulled	Barley	Floret	Charred				
Hordeum vulgare	Barley	Rachis (node + internode)	Charred		2		
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated				9
Palmae	Palm family	Wood	Charred				
cf. *Panicum* sp.	Panicgrass	Spikelet	Desiccated				
Phalaris sp.	Canary grass	Fruit	Charred				
cf. *Phalaris* sp.	Canary grass	Fruit	Charred				
Poaceae	Grass family	Fruit	Modern		1		
Poaceae	Grass family	Fruit	Charred				
Silene sp.	Catchfly	Fruit	Desiccated				1
Triticeae	Cereal indet.	Seed	Charred				
Triticeae	Cereal indet.	Palea/lemma	Charred		1		
Triticeae	Cereal indet.	Straw	Charred		+		
Triticeae	Cereal indet.	Straw	Desiccated	+++	++	++	+++
Triticeae	Cereal indet.	Culm nodes	Charred				
Triticeae	Cereal indet.	Culm nodes	Desiccated				2
Triticum cf. *turgidum* ssp. *dicoccon*	cf. Emmer wheat	Palea/Lemma	Desiccated				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred				
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (=glume bases + internode)	Charred				
Indeterminate							
Calyx	N/A	Calyx	Desiccated		1	1	
Flower + calyx	N/A	Flower + calyx	Modern		1		1
Fruit w/many seeds	N/A	Fruit	Desiccated / Modern	1			

Tab. 32 Identification and quantification of archaeobotanical remains in mortar and plaster samples

Fruit indet.	N/A	Fruit	Charred	+			
Fruit indet.	N/A	Fruit	Desiccated		++		++
Indeterminate	N/A	N/A	Desiccated		+		
Leaf	N/A	Leaf	Desiccated				
Leaf	N/A	Leaf	Modern	+			
Wood TBI	N/A	Wood	Charred	+	++	++	++
Wood TBI	N/A	Wood	Desiccated		+		++
Other finds							
Animal bone	N/A	N/A	Desiccated		+		+
Animal dung	N/A	N/A	Desiccated				
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred				
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated		+		++
Faience fragments	N/A	N/A	N/A				
Pottery undiagnostic	N/A	N/A	N/A				

			Mortar ID	**MO5**	**MO6**	**MO7**	**MO10**
			Area	SAV1N	SAV1N	SAV1N	SAF2
			Feature / Quarter	27	N8, 34N	11	Western side, in doorway
			Context Type	Wall	Wall	Wall	Wall
			Date	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Acacia sp.	*Acacia* sp.	Gum	N/A	+			
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Desiccated	16			
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Charred	1			
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated	14			
Centaurea sp.	Centaury	Fruit	Charred				
Citrullus lanatus	Watermelon	Seed	Desiccated	1			
Citrullus lanatus	Watermelon	Fragment of seed	Desiccated				
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated				
Fabaceae	Legume family	Leaf	Desiccated		1		
Ficus cf. *sycamorus*	Sycamore fig	Fruit	Desiccated				
Hordeum vulgare hulled	Barley	Floret	Charred	4			
Hordeum vulgare	Barley	Rachis (node + internode)	Charred	7			
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated	1			
Palmae	Palm family	Wood	Charred				
cf. *Panicum* sp.	Panicgrass	Spikelet	Desiccated				
Phalaris sp.	Canary grass	Fruit	Charred	1			
cf. *Phalaris* sp.	Canary grass	Fruit	Charred	1			
Poaceae	Grass family	Fruit	Modern				
Poaceae	Grass family	Fruit	Charred	1		1	
Silene sp.	Catchfly	Fruit	Desiccated				
Triticeae	Cereal indet.	Seed	Charred	4	1		

Tab. 32 *continued* Identification and quantification of archaeobotanical remains in mortar and plaster samples

Triticeae	Cereal indet.	Palea/lemma	Charred				
Triticeae	Cereal indet.	Straw	Charred	++			
Triticeae	Cereal indet.	Straw	Desiccated	+++	+++	++	++
Triticeae	Cereal indet.	Culm nodes	Charred	1			
Triticeae	Cereal indet.	Culm nodes	Desiccated	1			
Triticum cf. *turgidum* ssp. *dicoccon*	Emmer wheat	Palea/Lemma	Desiccated		1		
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred	1			
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred	1			
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (=glume bases + internode)	Charred		2		
Indeterminate							
Calyx	N/A	Calyx	Desiccated	1			
Flower + calyx	N/A	Flower + calyx	Modern				
Fruit w/many seeds	N/A	Fruit	Desiccated / Modern				
Fruit indet.	N/A	Fruit	Charred	+			
Fruit indet.	N/A	Fruit	Desiccated	++			+
Indeterminate	N/A	N/A	Desiccated				
Leaf	N/A	Leaf	Desiccated				
Leaf	N/A	Leaf	Modern				
Wood TBI	N/A	Wood	Charred	+++	++	++	++
Wood TBI	N/A	Wood	Desiccated	++	++		
Other finds							
Animal bone	N/A	N/A	Desiccated	+++	+	++	
Animal dung	N/A	N/A	Desiccated	++	++		+
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred			1	
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated	++			
Faience fragments	N/A	N/A	N/A	+			
Pottery undiagnostic	N/A	N/A	N/A	+			

			Mortar ID	**MO11**	**MO13**	**MO14**
			Area	SAV1 Sur. Temple A	SAV1	SAV1
			Feature / Quarter	Structure N of Temple A	1st Southern magazine, eastern wall	Northern magazine
			Context Type	Wall	Wall	Wall
			Date	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**			
Acacia sp.	*Acacia* sp.	Gum	N/A			
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Desiccated			
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Charred			
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated			
Centaurea sp.	Centaury	Fruit	Charred		1	
Citrullus lanatus	Watermelon	Seed	Desiccated			

Tab. 32 *continued* Identification and quantification of archaeobotanical remains in mortar and plaster samples

Citrullus lanatus	Watermelon	Fragment of seed	Desiccated			
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated			
Fabaceae	Legume family	Leaf	Desiccated		10	
Ficus cf. *sycamorus*	Sycamore fig	Fruit	Desiccated			
Hordeum vulgare hulled	Barley	Floret	Charred			
Hordeum vulgare	Barley	Rachis (node + internode)	Charred			
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated			
Palmae	Palm family	Wood	Charred		+	
cf. *Panicum* sp.	Panicgrass	Spikelet	Desiccated			
Phalaris sp.	Canary grass	Fruit	Charred			
cf. *Phalaris* sp.	Canary grass	Fruit	Charred			
Poaceae	Grass family	Fruit	Modern			
Poaceae	Grass family	Fruit	Charred			
Silene sp.	Catchfly	Fruit	Desiccated			
Triticeae	Cereal indet.	Seed	Charred	1	1	+
Triticeae	Cereal indet.	Palea/lemma	Charred			
Triticeae	Cereal indet.	Straw	Charred			
Triticeae	Cereal indet.	Straw	Desiccated	+++	++	++
Triticeae	Cereal indet.	Culm nodes	Charred			
Triticeae	Cereal indet.	Culm nodes	Desiccated			
Triticum cf. *turgidum* ssp. *dicoccon*	Emmer wheat	Palea/Lemma	Desiccated			
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred		1	
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred			
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (=glume bases + internode)	Charred		8	
Indeterminate						
Calyx	N/A	Calyx	Desiccated			
Flower + calyx	N/A	Flower + calyx	Modern			
Fruit w/many seeds	N/A	Fruit	Desiccated / Modern			
Fruit indet.	N/A	Fruit	Charred	+		+
Fruit indet.	N/A	Fruit	Desiccated	++	++	+
Indeterminate	N/A	N/A	Desiccated			
Leaf	N/A	Leaf	Desiccated			
Leaf	N/A	Leaf	Modern			
Wood TBI	N/A	Wood	Charred	++	+++	++
Wood TBI	N/A	Wood	Desiccated			
Other finds						
Animal bone	N/A	N/A	Desiccated	+	+++	
Animal dung	N/A	N/A	Desiccated	+	++	
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred			
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated			
Faience fragments	N/A	N/A	N/A			
Pottery undiagnostic	N/A	N/A	N/A			

Tab. 32 *continued* Identification and quantification of archaeobotanical remains in mortar and plaster samples

			Mortar ID	**P1**	**P2**	**P3**
			Area	SAV1N	SAV1N	SAV1 Sur. Temple A
			Feature / Quarter	34S	N17	Silo below Temple A
			Context Type	Wall	Pit	Plaster
			Date	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**			
Acacia sp.	*Acacia* sp.	Gum	N/A			
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Desiccated			
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Charred			
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated			
Centaurea sp.	Centaury	Fruit	Charred			
Citrullus lanatus	Watermelon	Seed	Desiccated		1	2
Citrullus lanatus	Watermelon	Fragment of seed	Desiccated			+
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated		1	
Fabaceae	Legume family	Leaf	Desiccated			
Ficus cf. *sycamorus*	Sycamore fig	Fruit	Desiccated			
Hordeum vulgare hulled	Barley	Floret	Charred			1
Hordeum vulgare	Barley	Rachis (node + internode)	Charred			
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated			
Palmae	Palm family	Wood	Charred			
cf. *Panicum* sp.	Panicgrass	Spikelet	Desiccated			1
Phalaris sp.	Canary grass	Fruit	Charred			
cf. *Phalaris* sp.	Canary grass	Fruit	Charred			
Poaceae	Grass family	Fruit	Modern			
Poaceae	Grass family	Fruit	Charred			
Silene sp.	Catchfly	Fruit	Desiccated			
Triticeae	Cereal indet.	Seed	Charred			
Triticeae	Cereal indet.	Palea/lemma	Charred			
Triticeae	Cereal indet.	Straw	Charred			
Triticeae	Cereal indet.	Straw	Desiccated			++
Triticeae	Cereal indet.	Culm nodes	Charred			
Triticeae	Cereal indet.	Culm nodes	Desiccated			2
Triticum cf. *turgidum* ssp. *dicoccon*	Emmer wheat	Palea/Lemma	Desiccated			1
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred			
cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred			
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (=glume bases + internode)	Charred			
Indeterminate						
Calyx	N/A	Calyx	Desiccated			
Flower + calyx	N/A	Flower + calyx	Modern			
Fruit w/many seeds	N/A	Fruit	Desiccated / Modern			

Tab. 32 *continued* Identification and quantification of archaeobotanical remains in mortar and plaster samples

Fruit indet.	N/A	Fruit	Charred			
Fruit indet.	N/A	Fruit	Desiccated			++
Indeterminate	N/A	N/A	Desiccated			
Leaf	N/A	Leaf	Desiccated			+
Leaf	N/A	Leaf	Modern			
Wood TBI	N/A	Wood	Charred	++	++	++
Wood TBI	N/A	Wood	Desiccated	+	+	++
Other finds						
Animal bone	N/A	N/A	Desiccated	+	+	++
Animal dung	N/A	N/A	Desiccated			+
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred			
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated			
Faience fragments	N/A	N/A	N/A			
Pottery undiagnostic	N/A	N/A	N/A			

Scientific Name	English Common Name	Plant Part	Preservation	Total count per taxa	Ubiquity (% of samples)
Acacia sp.	*Acacia* sp.	Gum	N/A		7.1
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Desiccated	16	7.1
Ambrosia maritima	*Ambrosia maritima*	Complete fruit	Charred	1	7.1
Ambrosia maritima	*Ambrosia maritima*	Fragment of fruit (3 = 1)	Desiccated	15	14.3
Centaurea sp.	Centaury	Fruit	Charred	2	14.3
Citrullus lanatus	Watermelon	Seed	Desiccated	4	21.4
Citrullus lanatus	Watermelon	Fragment of seed	Desiccated		7.1
cf. *Citrullus lanatus*	Watermelon	Seed	Desiccated	1	7.1
Fabaceae	Legume family	Leaf	Desiccated	20	35.7
Ficus cf. *sycamorus*	Sycamore fig	Fruit	Desiccated	3	7.1
Hordeum vulgare hulled	Barley	Floret	Charred	5	14.3
Hordeum vulgare	Barley	Rachis (node + internode)	Charred	9	14.3
Hordeum vulgare	Barley	Rachis (node + internode)	Desiccated	10	14.3
Palmae	Palm family	Wood	Charred		7.1
cf. *Panicum* sp.	Panicgrass	Spikelet	Desiccated	1	7.1
Phalaris sp.	Canary grass	Fruit	Charred	1	7.1
cf. *Phalaris* sp.	Canary grass	Fruit	Charred	1	7.1
Poaceae	Grass family	Fruit	Modern	1	7.1
Poaceae	Grass family	Fruit	Charred	2	14.3
Silene sp.	Catchfly	Fruit	Desiccated	1	7.1
Triticeae	Cereal indet.	Seed	Charred	7	35.7
Triticeae	Cereal indet.	Palea/lemma	Charred	1	7.1
Triticeae	Cereal indet.	Straw	Charred		14.3
Triticeae	Cereal indet.	Straw	Desiccated		85.7
Triticeae	Cereal indet.	Culm nodes	Charred	1	7.1
Triticeae	Cereal indet.	Culm nodes	Desiccated	5	21.4
Triticum cf. *turgidum* ssp. *dicoccon*	Emmer wheat	Palea/Lemma	Desiccated	2	14.3
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred	2	14.3

Tab. 32 *continued* Identification and quantification of archaeobotanical remains in mortar and plaster samples

cf. *Triticum turgidum* ssp. *dicoccon*	Emmer wheat	Seed	Charred	1	7.1
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (=glume bases + inter-node)	Charred	10	14.3
Indeterminate					
Calyx	N/A	Calyx	Desiccated	3	21.4
Flower + calyx	N/A	Flower + calyx	Modern	2	14.3
Fruit w/many seeds	N/A	Fruit	Desiccated / Modern	1	7.1
Fruit indet.	N/A	Fruit	Charred		28.6
Fruit indet.	N/A	Fruit	Desiccated		57.1
Indeterminate	N/A	N/A	Desiccated		7.1
Leaf	N/A	Leaf	Desiccated		7.1
Leaf	N/A	Leaf	Modern		7.1
Wood TBI	N/A	Wood	Charred		100
Wood TBI	N/A	Wood	Desiccated		50
Other finds					
Animal bone	N/A	N/A	Desiccated		71.4
Animal dung	N/A	N/A	Desiccated		42.9
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred	1	7.1
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated		21.4
Faience fragments	N/A	N/A	N/A		7.1
Pottery undiagnostic	N/A	N/A	N/A		7.1

Tab. 32 *continued* Identification and quantification of archaeobotanical remains in mortar and plaster samples

			ID	S1	S2	S3	S4	S5
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	Around feature 100	SQ1	SQ1	SQ1	SQ1
			SU	N/A	587	590	588	590
			Find no.	N/A	1366 / 2014	1376 / 2014	1373 / 2014	1377 / 2014
			Relative Dating	Post-New Kingdom/ Ottoman	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					
cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated		2	1	1	
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated			+		
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Charred		+			
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated		+			
Hyphaene thebaica	Doum palm	Seed	Charred		1	1	2	
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					+
Palmae	Palm family	Fiber	Desiccated					

Tab. 33 Identification and quantification of archaeobotanical remains in surface and soil samples

Palmae	Palm family	Leaf/fibre basketry	Desiccated					
Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated					
Palmae	Palm family	Wood	Charred					
cf. Palmae/ cf. P*apyrus* sp.	Palm family/ papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructicense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern					

			ID	**S1**	**S2**	**S3**	**S4**	**S5**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	Around Feature 100	SQ1	SQ1	SQ1	SQ1
			SU	N/A	587	590	588	590
			Find no.	N/A	1366 / 2014	1376 / 2014	1373 / 2014	1377 / 2014
			Relative Dating	Post-New Kingdom/ Ottoman	New Kingdom	New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred	3				
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated	1				
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated					
Wood TBI	N/A	Wood	Charred					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Other materials								
Animal bone			N/A					
Animal dung			Modern					
Animal / human dung			Desiccated					
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated	1				
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated					
Human hair, lock of wig	Lock of wig		Desiccated					

			ID	**S6**	**S7**	**S8**	**S9**	**S10**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1	SQ1	SQ1	SQ2	SQ1
			SU	563	572	584	575	555
			Find no.	1300 / 2014	1324 / 2014	1341 / 2014	327 / 2014	1208 / 2014
			Relative Dating	Modern	New Kingdom	(Post-) New Kingdom	Modern	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					
cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred			1		

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated		2			1
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred			2		2
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					2
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated					
Palmae	Palm family	Leaf/fibre basketry	Desiccated					
Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated		0.5 ml			
Palmae	Palm family	Wood	Charred					
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern	1				

			ID	**S6**	**S7**	**S8**	**S9**	**S10**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1	SQ1	SQ1	SQ2	SQ1
			SU	563	572	584	575	555
			Find no.	1300 / 2014	1324 / 2014	1341 / 2014	327 / 2014	1208 / 2014
			Relative Dating	Modern	New Kingdom	(Post-) New Kingdom	Modern	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred		1			
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated		1			
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated					
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A					
Animal dung			Modern				1	
Animal / human dung			Desiccated					
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated					
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated					
Human hair, lock of wig	Lock of wig		Desiccated					

			ID	**S11**	**S12**	**S13**	**S14**	**S15**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1	SQ1	SQ2	SQ1W + NW	SQ1, adj. F100
			SU	563	511	508	511	501
			Find no.	1244 / 2014	662 / 2014	630 / 2014	1202 / 2014	707 / 2014
			Relative Dating	New Kingdom	(Post-) New Kingdom	Post- New Kingdom/ Ottoman	(Post-) New Kingdom	(Post-) New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					
cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated					3
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					3
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred				1	
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated					
Palmae	Palm family	Leaf/fibre basketry	Desiccated					
Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated					+
Palmae	Palm family	Wood	Charred					
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated	1				
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern					1

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

			ID	S11	S12	S13	S14	S15
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1	SQ1	SQ2	SQ1W + NW	SQ1, adj. F100
			SU	563	511	508	511	501
			Find no.	1244 / 2014	662 / 2014	630 / 2014	1202 / 2014	707 / 2014
			Relative Dating	New Kingdom	(Post-) New Kingdom	(Post-) New Kingdom/ Ottoman	(Post-) New Kingdom	(Post-) New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred					
Phoenix dactylifera	Date palm	Seed	Desiccated			6		
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated			3		
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated					
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A					
Animal dung			Modern					
Animal / human dung			Desiccated					2
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred		1		1	
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated		1		3	
Carnivore dung			Desiccated				++	
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated				++	
Human hair, lock of wig	Lock of wig		Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

			ID	S16	S17	S18	S19	S20
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1	SQ2	SQ1W	SQ1W	SQ1
			SU	501	516	522	524	536
			Find no.	698 / 2014	825 / 2014	847 / 2014	873 / 2014	774 / 2014
			Relative Dating	New Kingdom	(Post-) New Kingdom	(Post-) New Kingdom	(Post-) New Kingdom	Post-New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					
cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					
cf. Hordeum sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated		1			1
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred	++				
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred					
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated					
Palmae	Palm family	Leaf/fibre basketry	Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated					
Palmae	Palm family	Wood	Charred					
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern					

			ID	**S16**	**S17**	**S18**	**S19**	**S20**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1	SQ2	SQ1W	SQ1W	SQ1
			SU	501	516	522	524	536
			Find no.	698 /2014	825 / 2014	847 / 2014	873 / 2014	774 / 2014
			Relative Dating	New Kingdom	(Post-) New Kingdom	(Post-) New Kingdom	(Post-) New Kingdom	Post-New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					1
Phoenix dactylifera	Date palm	Seed	Charred					
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated		1			
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated	+				
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Animal dung			Modern					
Animal / human dung			Desiccated	++				
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated					
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated				+	
Human hair, lock of wig	Lock of wig		Desiccated			+		

			ID	**S21**	**S22**	**S23**	**S24**	**S25**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1W	SQ2	SQ1W	SQ1W	SQ1
			SU	529	510	540	534	548
			Find no.	882 / 2014	651 / 2014	1019 / 2014	914 / 2014	1130 / 2014
			Relative Dating	(Post-) New Kingdom	New Kingdom	New Kingdom	Post-New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					
cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred	+				
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred					
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated					
Palmae	Palm family	Leaf/fibre basketry	Desiccated					
Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated					
Palmae	Palm family	Wood	Charred					
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern					

			ID	**S21**	**S22**	**S23**	**S24**	**S25**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1W	SQ2	SQ1W	SQ1W	SQ1
			SU	529	510	540	534	548
			Find no.	882 / 2014	651 / 2014	1019 / 2014	914 / 2014	1130 / 2014
			Relative Dating	(Post-) New Kingdom	New Kingdom	New Kingdom	Post-New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred	3				
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated					
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					+
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated					
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A					
Animal dung			Modern					
Animal / human dung			Desiccated					
Animal leather / hide			Desiccated		+			
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred	3				
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated					
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated				+	
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated			++	+	
Human hair, lock of wig	Lock of wig		Desiccated					

			ID	**S21**	**S22**	**S23**	**S24**	**S25**
			Area	SAV1W	SAV1W	SAV1W	SAV1W	SAV1W
			Location	SQ1W	SQ2	SQ1W	SQ1W	SQ1
			SU	529	510	540	534	548
			Find no.	882 / 2014	651 / 2014	1019 / 2014	914 / 2014	1130 / 2014
			Relative Dating	(Post-) New Kingdom	New Kingdom	New Kingdom	Post-New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred	3				
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated					
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					+
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated					
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A					
Animal dung			Modern					
Animal / human dung			Desiccated					
Animal leather / hide			Desiccated		+			
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred	3				
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated					
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated				+	
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated			++	+	
Human hair, lock of wig	Lock of wig		Desiccated					

			ID	**S26**	**S27**	**S28**	**S29**	**S30**
			Area	SAV1E	SAV1E	SAV1E	SAV1E	SAV1E
			Location	SQ1B	SQ4 / 4A	SQ1B	SQ1B	SQ3
			SU	051	009	051	049	063
			Find no.	2016 / 2014	120 / 2014	2034 / 2014	2005 / 2014	2157 / 2014
			Relative Dating	(Post-) New Kingdom	Sub-recent	(Post-) New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					
cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated			1		
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated			1		
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated	+				
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred					
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated					
Palmae	Palm family	Leaf/fibre basketry	Desiccated					
Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated			+		
Palmae	Palm family	Wood	Charred					
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated				1	
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated				+	
Pennisetum sp.	Fountain grass	Seed	Desiccated				1	
Pennisetum sp.	Fountain grass	Spikelet	Desiccated				+++	
Pennisetum sp.	Fountain grass	Rachis	Desiccated				+	
Phoenix dactylifera	Date palm	Complete fruit	Modern					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

			ID	S26	S27	S28	S29	S30
			Area	SAV1E	SAV1E	SAV1E	SAV1E	SAV1E
			Location	SQ1B	SQ4 / 4A	SQ1B	SQ1B	SQ3
			SU	051	009	051	049	063
			Find no.	2016 / 2014	120 / 2014	2034 / 2014	2005 / 2014	2157 / 2014
			Relative Dating	(Post-) New Kingdom	Sub-recent	(Post-) New Kingdom	New Kingdom	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred			1		
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated	1				
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					+
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					1
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated			+	++	
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A			+		
Animal dung			Modern					
Animal / human dung			Desiccated					
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated			3		
Carnivore dung			Desiccated		+			
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated					+
Human hair, lock of wig	Lock of wig		Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

			ID	S31	S32	S33	S34	S35
			Area	SAV1E	SAV1E	SAV1E	SAV1E	SAV1E
			Location	SQ4	SQ3	SQ4A	SQ1B	SQ3
			SU	079	030	004	018	015
			Find no.	2274 / 2014	395 / 2014	132 / 2014	216 / 2014	175 / 2014
			Relative Dating	(Post-) New Kingdom	New Kingdom	New Kingdom	(Post-) New Kingdom	(Post-) New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					
cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*)	Cucumber	Seed	Desiccated					
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred					
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated	+				
Palmae	Palm family	Leaf/fibre basketry	Desiccated					
Palmae	Palm family	Leaf fragment	Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Palmae	Palm family	Wood	Desiccated					+
Palmae	Palm family	Wood	Charred					
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					++
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					++
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern					

			ID	**S31**	**S32**	**S33**	**S34**	**S35**
			Area	SAV1E	SAV1E	SAV1E	SAV1E	SAV1E
			Location	SQ4	SQ3	SQ4A	SQ1B	SQ3
			SU	079	030	004	018	015
			Find no.	2274 / 2014	395 / 2014	132 / 2014	216 / 2014	175 / 2014
			Relative Dating	(Post-) New Kingdom	New Kingdom	New Kingdom	(Post-) New Kingdom	(Post-) New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred					
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated		1			
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					+
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated					+
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A					
Animal dung			Modern					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Animal / human dung			Desiccated					
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated					
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated				+++	
Human hair, lock of wig	Lock of wig		Desiccated					

			ID	**OR1**	**CH1**	**CH2**	**CH3**
			Area	SAV1W	SAV1E	SAV1W	SAV1W
			Location	Sq. 1S	Square 2B, 7–8m to E, debris around Feature 27, before Pl. 5	Sq. 1, NW Corner	Sq. 1S, Pr. 13
			SU	733		502	682
			Find no.	0844 / 2015	326 / 2013	0624 / 2014	
			Relative Dating	18th Dynasty	Post-New Kingdom / Ottoman	(Post-) New Kingdom	18th Dynasty
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Acacia sp.	*Acacia* sp.	Gum	N/A				
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated				
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated				
Acacia nilotica	Nile acacia	Seed	Charred				
cf. *Acacia nilotica*	Nile acacia	Seed	Charred				
Acacia nilotica	Nile acacia	Seed	Mineralised				
Centaurea sp.	Centaury	Fruit	Charred				
Centaurea sp.	Centaury	Fruit	Mineralised				
Citrullus lanatus	Watermelon	Seed	Desiccated	1			
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated				2
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated				
Hordeum vulgare hulled	Barley	Floret	Charred				3
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated				
Hordeum vulgare	Barley	Rachis (internode + node)	Charred				23
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated				3
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred				
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated				
Hyphaene thebaica	Doum palm	Complete fruit	Charred				
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated				
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred				
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated				
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred	+	+		+

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Hyphaene thebaica	Doum palm	Mesocarp	Charred				
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated				
Hyphaene thebaica	Doum palm	Seed	Charred				
Indeterminate		Endocarp (fragment)	Desiccated				++
Indeterminate			Desiccated				
Lathyrus sativus	Grass pea	Seed	Charred				
Lolium temulentum	Darnel	Fruit	Charred				
cf. *Lolium temulentum*	Darnel	Fruit	Charred				
Palmae	Palm family	Fiber/binding	Desiccated				
Palmae	Palm family	Fiber	Desiccated				
Palmae	Palm family	Leaf/fibre basketry	Desiccated				
Palmae	Palm family	Leaf fragment	Desiccated				
Palmae	Palm family	Wood	Desiccated	+			
Palmae	Palm family	Wood	Charred				
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated				
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated				
Pennisetum sp.	Fountain grass	Infructescense	Desiccated				
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated				
Pennisetum sp.	Fountain grass	Seed	Desiccated				
Pennisetum sp.	Fountain grass	Spikelet	Desiccated				
Pennisetum sp.	Fountain grass	Rachis	Desiccated				
Phoenix dactylifera	Date palm	Complete fruit	Modern				

			ID	**OR1**	**CH1**	**CH2**	**CH3**
			Area	SAV1W	SAV1E	SAV1W	SAV1W
			Location	Sq. 1S	Square 2B, 7–8m to E, debris around Feature 27, before Pl. 5	Sq. 1, NW Corner	Sq. 1S, Pr. 13
			SU	733		502	682
			Find no.	0844 / 2015	326 /2013	0624 / 2014	
			Relative Dating	18th Dynasty	Post-New Kingdom / Ottoman	(Post-) New Kingdom	18th Dynasty
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern				
Phoenix dactylifera	Date palm	Seed	Charred				
Phoenix dactylifera	Date palm	Seed	Desiccated				
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated	1			
Poaceae	Grass family	Fruit	Charred				3
Poaceae	Grass family	Palea/lemma	Modern				
Triticeae	Cereal indet.	Seed	Charred				4
Triticeae	Cereal indet.	Culm node	Charred				3
Triticeae	Cereal indet.	Palea/lemma	Charred				+
Triticeae	Cereal indet.	Palea/lemma	Desiccated				
Triticeae	Cereal indet.	Straw	Charred				+
Triticeae	Cereal indet.	Straw	Desiccated				++
Triticum sp.	Wheat indet.	Seed	Charred				2

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred				7
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated				1
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated				
Vitis vinifera	Grape	Seed	Desiccated				
Wood TBI	N/A	Wood	Desiccated	+			
Wood TBI	N/A	Wood	Charred		+		
Other materials							
Animal bone			N/A				+
Animal dung			Modern				
Animal / human dung			Desiccated				
Animal leather / hide			Desiccated				
Bead			N/A				
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred				
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated				
Carnivore dung			Desiccated				
Herbivore dung with hulled barley and barley rachis			Desiccated				
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated				
Human hair, lock of wig	Lock of wig		Desiccated				

			ID	**CH4**	**CH5**	**CH6**	**CH7**	**W1**
			Area	SAV1W	SAV1W	SAV1E	SAV1E	SAV1N
			Location	Sq. 1, Pr. 18	Sq. 1	Feature 15	Feature 15	25N
			SU	707	716	321	321	Wall
			Find no.		0812 / 2015	1677 / 2015	1677a / 2015	N/A
			Relative Dating	18th Dynasty	18th Dynasty	18th Dynasty	18th Dynasty	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred				15	
cf. *Acacia nilotica*	Nile acacia	Seed	Charred				4	
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred				1	
Centaurea sp.	Centaury	Fruit	Mineralised				1	
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred				77	
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred				36	

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred				24	
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated				1	
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred		+		++	
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred					
Indeterminate		Endocarp (fragment)	Desiccated				++	
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred				1	
Lolium temulentum	Darnel	Fruit	Charred				12	
cf. *Lolium temulentum*	Darnel	Fruit	Charred				1	
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated					
Palmae	Palm family	Leaf/fibre basketry	Desiccated					
Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated					+
Palmae	Palm family	Wood	Charred			+	++	
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern					

			ID	**CH4**	**CH5**	**CH6**	**CH7**	**W1**
			Area	SAV1W	SAV1W	SAV1E	SAV1E	SAV1N
			Location	Sq. 1, Pr. 18	Sq. 1	Feature 15	Feature 15	25N
			SU	707	716	321	321	Wall
			Find no.		0812 / 2015	1677 / 2015	1677a / 2015	N/A
			Relative Dating	18th Dynasty	18th Dynasty	18th Dynasty	18th Dynasty	New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred					
Phoenix dactylifera	Date palm	Seed	Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Phoenix dactylifera	Date palm	Gnawed seed	Desiccated					
Poaceae	Grass family	Fruit	Charred				18	
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred				110	
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred				20	
Triticeae	Cereal indet.	Straw	Desiccated				1	
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred				72	
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred				17	
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated		++			
Wood TBI	N/A	Wood	Charred	+	+++	++	+++	
Other materials								
Animal bone			N/A		+		++	
Animal dung			Modern					
Animal / human dung			Desiccated					
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred				7	
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated					
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated					
Human hair, lock of wig	Lock of wig		Desiccated					

			ID	**W2**	**W3**	**W4**	**W6**	**W7**
			Area	SAV1N	SAV1W	SAV1W	SAV1E	SAV1E
			Location	33N	SQ1A	SQ1A	SQ1B	SQ1B
			SU	Wall	587	556	040	051
			Find no.	N/A	1366 / 2014	1275 / 2014	511 / 2014	2026 / 2014
			Relative Dating	New Kingdom	New Kingdom	New Kingdom	(Post-) New Kingdom	Post-New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Acacia sp.	*Acacia* sp.	Gum	N/A					
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated					
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated					
Acacia nilotica	Nile acacia	Seed	Charred					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

cf. *Acacia nilotica*	Nile acacia	Seed	Charred					
Acacia nilotica	Nile acacia	Seed	Mineralised					
Centaurea sp.	Centaury	Fruit	Charred					
Centaurea sp.	Centaury	Fruit	Mineralised					
Citrullus lanatus	Watermelon	Seed	Desiccated					
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated					
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated					
Hordeum vulgare hulled	Barley	Floret	Charred					
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated					
Hordeum vulgare	Barley	Rachis (internode + node)	Charred					
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred					
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated					
Hyphaene thebaica	Doum palm	Complete fruit	Charred					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated					
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Charred					
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated					
Hyphaene thebaica	Doum palm	Seed	Charred					
Indeterminate		Endocarp (fragment)	Desiccated					
Indeterminate			Desiccated					
Lathyrus sativus	Grass pea	Seed	Charred					
Lolium temulentum	Darnel	Fruit	Charred					
cf. *Lolium temulentum*	Darnel	Fruit	Charred					
Palmae	Palm family	Fiber/binding	Desiccated					
Palmae	Palm family	Fiber	Desiccated					
Palmae	Palm family	Leaf/fibre basketry	Desiccated					+
Palmae	Palm family	Leaf fragment	Desiccated					
Palmae	Palm family	Wood	Desiccated	+				
Palmae	Palm family	Wood	Charred					
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated					
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Infructescense	Desiccated					
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated					
Pennisetum sp.	Fountain grass	Seed	Desiccated					
Pennisetum sp.	Fountain grass	Spikelet	Desiccated					
Pennisetum sp.	Fountain grass	Rachis	Desiccated					
Phoenix dactylifera	Date palm	Complete fruit	Modern					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

			ID	W2	W3	W4	W6	W7
			Area	SAV1N	SAV1W	SAV1W	SAV1E	SAV1E
			Location	33N	SQ1A	SQ1A	SQ1B	SQ1B
			SU	Wall	587	556	040	051
			Find no.	N/A	1366 / 2014	1275 / 2014	511 / 2014	2026 / 2014
			Relative Dating	New Kingdom	New Kingdom	New Kingdom	(Post-) New Kingdom	Post-New Kingdom
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**					
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern					
Phoenix dactylifera	Date palm	Seed	Charred					
Phoenix dactylifera	Date palm	Seed	Desiccated					
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated					
Poaceae	Grass family	Fruit	Charred					
Poaceae	Grass family	Palea/lemma	Modern					
Triticeae	Cereal indet.	Seed	Charred					
Triticeae	Cereal indet.	Culm node	Charred					
Triticeae	Cereal indet.	Palea/lemma	Charred					
Triticeae	Cereal indet.	Palea/lemma	Desiccated					
Triticeae	Cereal indet.	Straw	Charred					
Triticeae	Cereal indet.	Straw	Desiccated					
Triticum sp.	Wheat indet.	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred					
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated					
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated					
Vitis vinifera	Grape	Seed	Desiccated					
Wood TBI	N/A	Wood	Desiccated		+	+	+	
Wood TBI	N/A	Wood	Charred					
Other materials								
Animal bone			N/A					
Animal dung			Modern					
Animal / human dung			Desiccated					
Animal leather / hide			Desiccated					
Bead			N/A					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred					
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated					
Carnivore dung			Desiccated					
Herbivore dung with hulled barley and barley rachis			Desiccated					
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated					
Human hair, lock of wig	Lock of wig		Desiccated					

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

			ID	OL1	O1A	O1B	O5
			Area	SAV1W	SAV1 Sur. Temple A	Ibed. O1A	SAV1E
			Location	SQ1 S			Square 2, Feature 14, in Find No. 40
			SU	609	Temenos' South of Temple A		
			Find no. pottery	N/A			49/2013
			Relative Dating	New Kingdom	New Kingdom		Early 18th Dynasty
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Acacia sp.	*Acacia* sp.	Gum	N/A		63 ml	5 ml	
Acacia nilotica	Nile acacia	Segment of fruit	Desiccated	1			57
Acacia nilotica	Nile acacia	Fruit fragments	Desiccated				+++
Acacia nilotica	Nile acacia	Seed	Charred				
cf. *Acacia nilotica*	Nile acacia	Seed	Charred				
Acacia nilotica	Nile acacia	Seed	Mineralised				2
Centaurea sp.	Centaury	Fruit	Charred				
Centaurea sp.	Centaury	Fruit	Mineralised				
Citrullus lanatus	Watermelon	Seed	Desiccated				
Cucumis cf. *sativus*	Cucumber	Seed	Desiccated				
cf. *Hordeum* sp.	Barley	Palea/lemma	Desiccated	1			
Hordeum vulgare hulled	Barley	Floret	Charred				
Hordeum vulgare hulled	Barley	Palea/lemma	Desiccated				
Hordeum vulgare	Barley	Rachis (internode + node)	Charred				
Hordeum vulgare	Barley	Rachis (internode + node)	Desiccated	2			
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Charred				
Hordeum vulgare ssp. *spontaneum*	Wild barley	Fruit	Desiccated				
Hyphaene thebaica	Doum palm	Complete fruit	Charred				
Hyphaene thebaica	Doum palm	Endocarp (complete)	Desiccated				
Hyphaene thebaica	Doum palm	Endocarp (complete)	Charred				
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Desiccated				
Hyphaene thebaica	Doum palm	Endocarp (fragments)	Charred				
Hyphaene thebaica	Doum palm	Mesocarp	Charred				
Hyphaene thebaica	Doum palm	Mesocarp	Desiccated				
Hyphaene thebaica	Doum palm	Seed	Charred				
Indeterminate		Endocarp (fragment)	Desiccated				
Indeterminate			Desiccated				
Lathyrus sativus	Grass pea	Seed	Charred				
Lolium temulentum	Darnel	Fruit	Charred				
cf. *Lolium temulentum*	Darnel	Fruit	Charred				
Palmae	Palm family	Fiber/binding	Desiccated				
Palmae	Palm family	Fiber	Desiccated				
Palmae	Palm family	Leaf/fibre basketry	Desiccated				

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Palmae	Palm family	Leaf fragment	Desiccated	+			
Palmae	Palm family	Wood	Desiccated				
Palmae	Palm family	Wood	Charred				+
cf. Palmae / cf. *Papyrus* sp.	Palm family / papyrus	Leaf, tied	Desiccated				
cf. *Panicum* sp.	Panicgrass	Palea/lemma	Desiccated	1			
Pennisetum sp.	Fountain grass	Infructescense	Desiccated				
Pennisetum sp.	Fountain grass	Palea/lemma	Desiccated				
Pennisetum sp.	Fountain grass	Seed	Desiccated				
Pennisetum sp.	Fountain grass	Spikelet	Desiccated	2			
Pennisetum sp.	Fountain grass	Rachis	Desiccated				
Phoenix dactylifera	Date palm	Complete fruit	Modern				

			ID	**OL1**	**O1A**	**O1B**	**O5**
			Area	SAV1W	SAV1 Sur. Temple A	Ibed. O1A	SAV1E
			Location	SQ1S			Square 2, Feature 14, in Find No. 40
			SU	609	Temenos South of Temple A		
			Find no. pottery	N/A			49 / 2013
			Relative Dating	New Kingdom	New Kingdom		Early 18th Dynasty
Scientific Name	**English Common Name**	**Plant Part**	**Preservation**				
Phoenix dactylifera	Date palm	Complete fruit, charred	Modern				
Phoenix dactylifera	Date palm	Seed	Charred				
Phoenix dactylifera	Date palm	Seed	Desiccated				
Phoenix dactylifera	Date palm	Gnawed seed	Desiccated	2			
Poaceae	Grass family	Fruit	Charred				
Poaceae	Grass family	Palea/lemma	Modern	17			
Triticeae	Cereal indet.	Seed	Charred	1			
Triticeae	Cereal indet.	Culm node	Charred				
Triticeae	Cereal indet.	Palea/lemma	Charred				
Triticeae	Cereal indet.	Palea/lemma	Desiccated	+			
Triticeae	Cereal indet.	Straw	Charred	+			
Triticeae	Cereal indet.	Straw	Desiccated	+++			
Triticum sp.	Wheat indet.	Seed	Charred				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Seed	Charred				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Charred				
Triticum turgidum ssp. *dicoccon*	Emmer wheat	Rachis/spikelet fork (glume bases + internode)	Desiccated				
Triticum aestivum ssp. *aestivum*	Bread wheat	Rachis (internode + node)	Desiccated				
Vitis vinifera	Grape	Seed	Desiccated	3			
Wood TBI	N/A	Wood	Desiccated	+			++
Wood TBI	N/A	Wood	Charred	+++			++
Other materials							
Animal bone			N/A	+			++

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Animal dung			Modern				
Animal / human dung			Desiccated				
Animal leather / hide			Desiccated				
Bead			N/A	1			
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Charred				
Capra sp. / *Ovis* sp. dung	Sheep/Goat		Desiccated	1			
Carnivore dung			Desiccated				
Herbivore dung with hulled barley and barley rachis			Desiccated				
Herbivore dung with cf. *Panicum* sp.		Palea/lemma	Desiccated	+			
Human hair, lock of wig	Lock of wig		Desiccated				

Tab. 33 *continued* Identification and quantification of archaeobotanical remains in surface and soil samples

Below we discuss the encountered taxa grouped according to the latter system, as this is most practical and makes most sense from the economic historical perspective. It should be noted that in this system some overlap may exist, especially if a single taxon provides several different products humans use. The date palm, for instance, is both a fruit tree (because of its eponymous fruit) and also a fibre crop if its leaves are used for making basketry.

Another issue is the use of common or trade names for plants and their products by historians and general archaeologists, which can sometimes be oversimplifying or misrepresenting the complexity of agricultural decision making. While terms such as 'wheat' and 'barley' have their uses, they strictly refer to cultivated species and subspecies within genera *Triticum* and *Hordeum* and not to any specific crop a historical actor/farmer would have cultivated. For the farmer and therefore for the study of ancient agriculture, in wheat it is at the subspecies level that economically relevant differences between crops occur. For instance, bread wheat (*Triticum aestivum* ssp. *aestivum*) and spelt wheat (*Triticum aestivum* ssp. *spelta*) are both subspecies of *Triticum aestivum* – a species of wheat for which there is no common name, precisely because the economic relevance lies at the subspecies level.[973] Similarly, the term millet is problematic, as it may refer to a number of (small-seeded) cereal crops rather than to a specific taxon. Examples of 'millets' include common millet (*Panicum miliaceum*) and pearl millet (*Penissetum glaucum*); sorghum (*Sorghum bicolor*), while it shares characteristics with most millets, is typically considered a separate crop. Millets come from various genera and their domestication history, origin and diffusion are diverse and still not fully understood.[974] In the discussion on the spread and rise to importance of millets and sorghum, Sudan has played an important role, which is why we will pay particular attention to any possible millet and sorghum finds. Such finds would also be of importance with respect to cropping regimes: whereas wheats and barleys are winter crops in Egypt and Sudan, millets and sorghum are summer crops. Another reason for their importance is that in stable isotope studies reconstructing human and animal diets in Sudan, sorghum and millets have featured prominently in the debate. Whereas most other crops (both cereals such as wheats and barleys but also pulses, vegetables, fruit trees et cetera) use the so-called C_3 photosynthesis pathway, millets and sorghum use the C_4 pathway, which allows them to conduct photosynthesis more efficiently under arid conditions. The isotopic makeup of the carbon in the plant tissue is affected by the type of photosynthesis pathway, as are the tissues of the animal or human consuming the plant: their tissues are less depleted in $\delta^{13}C$ if a substantial amount of dietary protein is derived from C_4 plants. Isotopic studies of human and animal remains from various locales and peri-

973 See Heinrich 2019 for an in depth discussion.
974 See Fuller 2015; cf. Miller et al. 2016

ods have a tradition of finding stronger C_4 signals in Nubia than Egypt.[975] A complicating factor is that human $\delta^{13}C$ levels are not only affected by the plants they consume, but also by values of the animals whose animal products (e.g. milk, cheese, and meat) they consume. Such animals need not have eaten C_4 crops, but could have grazed or browsed on the many wild C_4 grasses that occur in Egypt and Sudan.[976]

This brings us to another point. While binominal names and the word 'plant' are economically neutral, many other words we use with respect to agriculture and plants are not. Terms such as 'crop', 'weed', 'wild plant' and 'economic plant' are typically context dependent. We will follow the conventions suggested by Frits Heinrich,[977] and will understand a crop as any plant that was cultivated by humans, while wild plants will be defined as plants that were not cultivated. Both crops and wild plants can be economic plants, although for the latter group this is contingent on whether they were actually gathered and used by humans. Weeds are plants that from the human perspective occur in the wrong place and/or at the wrong time, typically within an arable field where they are not wanted. The same species that on the field or in the garden would be considered a weed, might be called a wild plant when it occurs somewhere in the landscape where it does not bother us. Archaeologically, we cannot always discern to which group an individual specimen belongs, although certain taxa can be confidently associated with the ecology of arable fields or with specific agricultural activities, such as irrigation, so we may with great likelihood infer that they were weeds. Lastly, we should note that not all economic plants have an equal chance of being preserved – their survivability is largely contingent on which plant part was used in which way by humans.[978] Leafy vegetables, such as lettuce, spinach or cabbage, for instance, are commonly eaten in many societies but typically do not survive the human digestive tract, or at least not in a recognisable form. As their seeds are neither stored in great quantities, nor are commonly present in domestic or food preparation contexts, these crops are rarely found. There is a relationship between survivability and the preservation conditions prevalent in the archaeological context: softer tissues have a better chance of surviving in wet, anaerobic conditions, while desiccation tends to be conducive to preserving large overall numbers of seeds as the absence of moisture prevents rotting. The observation that a crop or group of crops is absent from an archaeobotanical assemblage does not necessarily mean it did not occur; archaeobotanical evidence follows from presence, not absence.

5.1.5.2 Preservation conditions of the material

Most of the material within the Sai archaeobotanical assemblage was preserved in a desiccated state, which is common in arid regions such as Sudan and Egypt. Some of the material was charred or carbonised, which is also common and indicates the remains were purposely or accidently exposed to fire at some point. A few specimens of wild plants were preserved in a mineralised state, most interesting being two seeds of Nile acacia (*Acacia nilotica*, see Pl. 134.1a–b). They originated from sample O5, an incomplete ceramic vessel part of a trash deposit in a bin at SAV1 East (Feature 14, see Chapter 3.2). The mineralisation of specimens is uncommon in arid environments as it requires wet conditions; mineralised botanical specimens, for instance, are more commonly found in cesspits from medieval Western Europe. Due to the context and the fact that some of the other botanicals in the vessel were desiccated or charred, it stands to reason the seeds were part of a secondary fill and had mineralised elsewhere.

5.1.6 Results: The Sai archaeobotanical assemblage

In the sections 5.1.6.1 through 5.1.6.4 the results of the analyses of the samples will be presented per crop group. We will discuss the archaeobotanical materials encountered in the Sai assemblage and re-

975 See Thompson et al. 2008 and references for an overview and discussion. Cf. Touzeau et al. 2014
976 Copley et al. 2004; Thompson et al. 2008.
977 Cf. Heinrich forthcoming.
978 Cf. Fahmy 2005; Walker et al. 2017.

flect on their possible uses. Pictures of examples of each identified taxon were included in a 'mini plant atlas' in the Plates section for reference and verifiability.

5.1.6.1 Cereals

All cereal crops are cultivated members of the grasses family (Poaceae) and they are the eponymous 'grain crops'. Cereals formed the base of most premodern agricultural systems, economies and diets,[979] and are still of enormous importance. Cereals and cereal processing products would have been ubiquitous in any ancient settlement and this ubiquity is reflected in the widespread presence of cereals in archaeobotanical samples. An important categorisation of cereals can be made with respect to them morphologically being either considered 'hulled' or 'naked' (sometimes the terms glume (wheats) and free-threshing cereals are used). In naked cereals the chaff, in which the kernel is held, comes off easily during the threshing process. The chaff of hulled cereals does not come off during the threshing process and an additional step is required: dehusking. This process often only takes place not too long prior to consumption as dehusking might damage the kernels and cause spoilage. Often hulled cereals are, therefore, transported and stored in their husk; this was likely also the case throughout Dynastic Egypt,[980] and the same tradition of storing hulled cereals and dehusking them piecemeal as needed seems to have applied to Nubia.[981] The choice for either a hulled or naked cereal may have great economic and logistical consequences, for instance, as the inedible parts of hulled cereals take up space and their bulky chaff reduces the density of a volume of grain.[982] Recent work has pointed out that taking into consideration the differences between hulled and naked cereals is also of importance in quantifying and interpreting ancient volumes and prices.[983]

The cereals encountered at Sai were barley (*Hordeum vulgare*) and emmer wheat (*Triticum turgidum* ssp. *dicoccon*), the former occurring more frequently in quantities of kernels and rachis. These are also the cereals commonly attested at contemporary New Kingdom sites in Nubia.[984] Four types of barley can be distinguished: the 2-row variety (*Hordeum vulgare* ssp. *distichum)* and the 6-row variety (*Hordeum vulgare* ssp. *vulgare*), both of which may occur as a hulled or naked form. All barley kernels encountered at Sai were hulled, which means that the palea and lemma were still attached to the kernel; this complete unit is referred to as a floret (Pl. 134.2). The presence of desiccated rachis with three complete glume bases and broad outer glumes, typical of 6-row barley (Pl. 134.3a–b), allowed a more precise identification. Not all barley rachis, however, could be identified to the sub-species level because of rough breakage of the glumes (Pl. 134.4). Hence hulled 6-row barley was the only sub-species positively attested in the assemblage. For ancient Egypt this type of barley is sometimes considered to have most commonly occurred,[985] although hulled 2-row barley has also been found.[986] In the Kerma period tombs on Sai, Jean Erroux encountered both 2-row and 6-row hulled barleys.[987] Therefore, we cannot with certainty exclude the possibility of a continued presence of 2-row barley. A few of the desiccated barley rachis fragments showed clear signs of suffering from smut of barley (Pl. 134.5a–b[988]). This disease, which may occur as either 'loose' or 'covered' smut is caused by the fungi *Ustilago nuda* and *Ustilago hordei* respectively, both of which infest barley in particular.[989] Before chemical seed treatment was developed in the modern

979 Cf. Heinrich 2019.
980 Nesbitt and Samuel 1996, 50; Murray 2000, 527.
981 Van Zeist 1987, 253.
982 Heinrich 2017.
983 For New Kingdom examples, see Heinrich and van Pelt 2017a, 2017b; Van Pelt and Heinrich 2019.
984 See Ryan 2017 and Ryan et al. 2012 for Amara West and Kahlheber 2013 on the Gala Abu Ahmed fortress.
985 Cappers and Neef 2012, 408; Cappers et al. 2014.
986 E.g. Thanheiser et al. 2002, 302.
987 Erroux also distinguished a now no longer recognised 4-row type of barley, which was probably a specimen of the 6-row type, see Erroux 1980. See also Chaix 1984, 32, who at Kerma speaks of *orge polystique*.
988 Cf. the pictures in Neef et al. 2012, 397.
989 A third, less common yet very similar type of smut that affects barley is false loose barley (*Ustilago nigra*), see Mathre 1997. Furthermore, it should be noted that there are great similarities between loose smut of barley and loose smut of wheat

era, the disease was common anywhere where barley was cultivated and could cause significant yield losses.[990] Previous finds of barley infected with *Ustilago hordei* originate from Greco-Roman Egypt at Berenike,[991] Karanis[992] and Myos Hormos,[993] and at Deir'Alla from Iron Age Jordan,[994] while spores of that species have also been encountered in English and Danish bog bodies from the Iron Age and Roman periods.[995] As loose smut has not been attested archaeologically and is moreover far less common,[996] we tentatively suggest that we are dealing with signs of *Ustilago hordei*, leading to a provisional identification as *Ustilago* cf. *hordei*.[997] The finds in Egypt had led to the conclusion that *Ustilago hordei* was introduced in Egypt during the Greco-Roman period, although both René T.J. Cappers and Marijke Van der Veen have urged that Pharaonic material should be (re-)assessed to see if there is earlier evidence for this pest. With the attestation of *Ustilago* cf. *hordei* infected barley at New Kingdom Sai, this conclusion indeed needs revision, as the *terminus ante quem* for the introduction of smut of barley into the Nile valley is pushed back one millennium. To our knowledge, our samples at Sai also represent the earliest recorded archaeological attestation of smut of barley, covered or loose.[998] Its presence suggests that local farmers likely suffered some yield losses because of smut.

Emmer wheat is a hulled wheat (Pl. 134.6a–c);[999] in the Sai botanical assemblage emmer grain kernels, rachis (including complete spikelet forks (glume bases plus their internode, Pl. 134.7), and palea/lemma were encountered.[1000] In addition, very few desiccated bread wheat rachis (nodes and internodes, *Triticum aestivum* ssp. *aestivum*) were encountered (Pl. 134.8). We believe that these are examples of modern, or at least Post-Pharaonic, contamination. Cappers has suggested that bread wheat played no role in Egypt until the 20th century AD;[1001] at Sai we have clear evidence for its presence alongside hard wheat (*Triticum turgidum* ssp. *durum*) during the Ottoman period,[1002] but a Pharaonic presence seems unlikely.

In the Sai archaeobotanical assemblage several other grasses were encountered in small quantities; it was not always possible to identify these to the species level but sometimes only to the genus level. Among these was wild sorghum (*Sorghum halepense*) of which the chaff was encountered (Pl. 134.9);[1003] this likely represents a wild grass growing in the landscape. The earliest attestation of cultivated sorghum (*Sorghum bicolor*) in Sudan dates from the Jebel Mokram Cultural Group (1500–500 BCE) and originates from Kassala in eastern Sudan;[1004] in the Nile valley cultivated sorghum is possibly attested from the Napatan period and certainly from the Meroitic period onwards.[1005] Elsewhere in Egypt culti-

(*Ustilago tritici*), whose genetic relationship is not perfectly understood and which are sometimes considered different varieties of the same species, exclusively focusing on their respective hosts.

990 Mathre 1997. Cf. Cappers 1999; Cappers 2006, 90–91; Van der Veen 2011, 145; Cappers et al. 2012 references there.

991 Cappers 2006, 90–91.

992 Cappers and Hamdy 2007, 168–169.

993 Van der Veen 2011, 145 who also found evidence of infection in the Islamic period at the same site (Quseir al-Qadim).

994 Cappers et al. 2012; Neef et al 2012, 397. This was encountered on charred barley rachis.

995 The spores of *Ustilago hordei* were found in the stomach contents of Late Iron Age/Roman bog bodies in Denmark and England, see Van der Sanden 1996, 110. Cf. Cappers 2006, 90–91.

996 Mathre 1997.

997 Further analyses will be conducted to assess if a closer identification of the pathogen that affected the encountered barley rachis can be made.

998 It is not unlikely that the pathogens themselves are much older, possibly originating from early fields or preceding agriculture and originating from thick wild stands of grasses, and it is not unlikely that earlier finds will be encountered in the future.

999 Cf. Cappers and Neef 2012, 304–310.

1000 For a further discussion on the terminology of cereal rachis, we refer to Cappers et al. 2009; Cappers and Neef 2012; Neef et al. 2012.

1001 Cappers 2006, 130; Cappers and Neef 2012, 408; Cappers et al. 2014.

1002 Heinrich et al. forthcoming. Clapham and Rowley-Conwy 2007, 160 suggest its presence from the Late Meroitic period onwards at Qasr Ibrim.

1003 For archaeological parallels, see for instance Cappers 2006 and Cappers et al. 2007.

1004 Beldados and Costantini 2011.

1005 Cf. Fuller 2015, 37–38; Fuller 2004, for Qasr Ibrim, see Clapham and Rowley-Conwy 2007.

vated sorghum has been noted at early Roman Berenike and Myos Hormos,[1006] although Van der Veen has argued the early period finds there represent contamination and that only the Late Roman finds are reliable.[1007] Other finds of cultivated sorghum in Egypt from before the Byzantine and Islamic periods originate from the Roman period Kharga oasis and Late Antique Kom el-Nana.[1008] Another grass we encountered at Sai belongs to *Pennisetum* sp., of which we found a single seed and a fragment of an infructescence with intact palea/lemma within the same sample (Pl. 134.10a–d), but it could not be identified to species level. While the genus includes the crop pearl millet (*Pennisetum glaucum*), it also encompasses many wild species, some of which are attested in Sudan from the Neolithic onwards, as several species are native.[1009] Based on its morphology, *Pennisetum glaucum* could be excluded as a possible identification for the infructescence and seed.[1010] Several other identification options of wild Pennisetums remain, although it was not possible to conclusively identify them with the reference material available to us. We therefore, and due to the occurrence in only a single sample, suggest the encountered material represents a wild species within the genus. In Sudan the crop pearl millet is only attested from the Post-Meroitic period onwards,[1011] while in the Egyptian Dakleh oasis and at Qasr Ibrim it is attested for the Roman period.[1012] Early finds of domesticated pearl millet come from early 2nd millennium BCE Mauritania, where it was probably domesticated, and India, while 1st millennium BCE finds are known from the Libyan Fezzan.[1013] Van der Veen observed that parallel to cultivated sorghum the archaeobotanical archive remains largely silent with respect to *Pennisetum glaucum* in East Africa, which she attributes to a lack of botanical studies in the region.[1014] An alternative explanation for their absence might be that the species moved through the area but were, perhaps after some experimentation, not adopted. In the Nile valley agriculture is dependent on the Nile floods, which creates an agricultural 'timetable' well suited to the cultivation of winter crops and much less to the cultivation of the C_4 summer crops, such as millets and sorghum. Simply put, although these crops are more drought-resistant than wheats and barleys, they require water at a time when it is scarcer and irrigation is more difficult because of the lower water level of the Nile. This would have made a shift to such crops unattractive before the introduction of more efficient and effective water-lifting technology such as the *saqqyia* from Roman Egypt.[1015] The early adoption of pearl millet and sorghum in the oases of Egypt's Western Desert and the Libyan Fezzan might then be explained from the fact that their water sources are stable year round and independent from the Nile floods.[1016]

Two desiccated fruits encountered at Sai could be either *Panicum turgidum* or *Panicum miliaceum* (Pl. 134.11a–b, Pl. 134.12a–b, Pl. 134.13a–b, Pl. 134.14 a–b). *Panicum* sp. is a genus of grasses, which besides various wild grasses includes the (originally East Asian) crop common (or broomcorn) millet (*Panicum miliaceum*), with regards to which there is some controversy as to the time of its introduction in Sudan.[1017] The only find in Sudan and Egypt contemporary to Sai of *Panicum miliaceum* originates from the Kerma period necropolis at Ukma West, although this may have been a misidentification.[1018]

[1006] Cappers 2006, 156; Van der Veen 2011, 103.
[1007] Van der Veen 2011, 103.
[1008] Newton et al. 2005 and Smith 2003 (cf. the pictures on pages 38–41, 43) respectively.
[1009] Boulos 1999–2005; Fuller 2015, 37.
[1010] Cf. the photographs in Cappers et al. 2009, 1169–1170.
[1011] See Fuller 2015, 38. Cf. Clapham and Rowley-Conwy 2007, 159–160 who also note it at Roman Qasr Ibrim.
[1012] Thanheiser et al. 2002, 302; Clapham and Rowley-Conwy 2007, 159–160. Although the crop originated from West Africa and was diffused to India early on, Van der Veen 2011.
[1013] For a discussion, see Fuller 2003; Fuller et al. 2007; Fuller and Boivin 2009 and Van der Veen 2011. For Libya, see Pelling 2005 and 2008.
[1014] Van der Veen 2011, 104.
[1015] See, for instance, Clapham and Rowley-Conwy 2007, 163 who indeed link the crop shift in the Meroitic/Post-Meroitic periods to this introduction.
[1016] See Heinrich forthcoming for a discussion.
[1017] Fuller and Boivin 2009 for an overview.
[1018] Van Zeist 1987, 250, 252. The original specimens are no longer available for study. In the photographs in Van Zeist's paper it is visible that the specimens are more oval/elongated, like *Panicum turgidum*, rather than rounder like *Panicum mili-*

From the Napatan and Meroitic periods there are only two archaeobotanical attestations of it.[1019] Archaeologically, *Panicum turgidum* has for instance been attested at various sites in the Egyptian Western Desert from the New Kingdom onwards.[1020] As to the literary sources, in his *Geographica*, the Greek geographer Strabo (64 BCE – 24 CE), who himself visited Nubia in the Meroitic period, mentioned that besides barley, millet was locally eaten (Strab. 17.2.2).[1021] At and near present day Sai *Panicum turgidum*, a desert bunchgrass in Egyptian Arabic referred to as *thaman*, naturally occurs.[1022] *Panicum* sp. chaff was also observed in (possibly Post-New Kingdom) animal dung (S14 and S19, Pl. 134.15a–b), likely as a result of animal browsing.[1023] We therefore suggest the specimens in the assemblage likely represent the wild grass *Panicum turgidum*. Of foxtail millet (*Setaria italica*), for which finds from the Napatan through the Early Christian periods have been reported solely at Qasr Ibrim,[1024] we have no evidence at Sai, nor of any of the wild species in the genus *Setaria* sp. which occur in Sudan.[1025] Other grasses encountered in the Sai assemblage include wild barley (*Hordeum vulgare* ssp. *spontaneum*) (Pl. 134.16a–b),[1026] canary grass (*Phalaris* sp.) (Pl. 134.17)[1027] and darnel (*Lolium temulentum*) (Pl. 134.18),[1028] which are common arable weeds.[1029] They likely grew among the cereals and were unintentionally collected alongside the crop during the harvest. Farmers often do not bother to remove all weeds from their harvest during crop processing as this can be a labour-intensive process – especially if the weed seeds are comparable in size to the grains and hard to sieve out.[1030]

Of the two cereals encountered at Sai, barley appears to have been more abundant than emmer wheat. This is similar to the situation at nearby and contemporary Amara West.[1031] It is often suggested by historians that barley primarily served as an ingredient of beer and as animal fodder. The dominance of barley in Egyptian archaeobotanical assemblages until the New Kingdom – when emmer wheat becomes dominant[1032] – has led this view to be challenged by botanists who emphasise barley's role as primarily a human food.[1033] Experimental studies have moreover shown that barley is as suitable as emmer wheat for the production of the unleavened breads made in bread moulds common in the era.[1034] The apparent dominance of barley over emmer wheat at New Kingdom Sai seems to contrast with what has been observed in New Kingdom Egypt. Crop shifts, however, do not happen overnight; the transition from

aceum. Van Zeist, besides properly depicting the specimens, meticulously described their morphology and his argumentation for reaching his identification. We can, therefore, reconstruct that Van Zeist did not consider *Panicum turgidum* as an option as he only compared *Panicum miliaceum* with *Echinochloa* sp. (cockspur grass). At the start of the article, with a type of academic courage rarely seen today, Van Zeist cautioned his inexperience with/lack of reference material from the area in his collection at that time, which may explain this. It is, therefore, well possible that these specimens were in fact *Panicum turgidum*, yet without the specimens themselves this remains inconclusive.

1019 Fuller 2015, 38. Cf. Clapham and Rowley-Conwy 2007, 159.

1020 Cappers et al. 2007, 134.

1021 Strabo uses κέγχρον. This crop name is typically translated as common millet (*Panicum miliaceum*). When discussing his home region of Pontus in Anatolia (Strab. 12.3.15) he mentions it is grown there as well (although some translators then interpret it as sorghum), alongside ἔλυμος, a word that, like μελίνη, tends to be translated as foxtail millet (*Setaria italica*). For a discussion, see Heinrich, forthcoming. Cf. Heinrich and Wilkins 2013/2014 on the general difficulties of linking historical crop names to botanical taxa.

1022 Heinrich, personal observation.

1023 Cf. Cappers 2006, 210 for a photograph of heavily grazed *Panicum turgidum* in the Eastern Desert in Egypt.

1024 Clapham and Rowley-Conwy 2007, 160 – the authors mention this re-identification of specimens previously identified as *Panicum miliaceum* by Rowley-Conwy 1989, even though argumentation for the re-identification or pictures are not provided.

1025 See Boulos 1999–2005; cf. Beldados and Costantini 2011.

1026 Cf. description and drawings in Nesbitt 2006, 85–86.

1027 Cf. description and drawings in Nesbitt 2006, 74.

1028 Cf. description and drawings in Nesbitt 2006, 54–56.

1029 Walker et al. 2017.

1030 Jasny 1942; Jasny 1950; cf. Heinrich 2019.

1031 Ryan 2017.

1032 Cf. Murray 2000; Cappers and Neef 2012, 408.

1033 For an overview of the discussion, see Cappers et al. 2014.

1034 Cappers et al. 2014.

barley to emmer wheat as the dominant cereal in Egypt would have occurred gradually and the Sai assemblage might just be situated at the beginning of this development. Of the introduction of new cereal crops or the disappearance of others, no clear signs can be observed as compared to the Pre-Kerma and Kerma periods. While Jean Erroux only encountered barley at Sai, Francis Geus, Elisabeth Hildebrand and Elena Garcea and Elisabeth Hildebrand also encountered emmer wheat.[1035] This pattern of the cultivation of both emmer wheat and barley also seems to apply to wider Nubia for these periods.[1036] The Sai assemblage furthermore supports Peter Rowley-Conwy's thesis that the expansion of the Egyptian crop curriculum towards including C_4 crops, such as the millets and sorghum, occurred after the Pharaonic period.[1037]

5.1.6.2 Pulses and other Fabaceae

All grain crops in the family of the Fabaceae are counted among the pulses.[1038] It has been argued that the role of pulses in ancient diets and nutrition has often been underestimated in archaeology and economic history.[1039] In archaeobotanical assemblages pulses are often physically underrepresented. Unlike cereals they are not commonly represented by their threshing remains or other processing products, but generally solely by their seeds. Smaller seeded pulses, of which specimens are more easily lost during crop processing or food preparation, such as lentil (*Lens culinaris*), are typically more predominant in botanical assemblages than larger pulses.[1040] At Pharaonic Sai the only pulse encountered was a single charred specimen of grass pea (*Lathyrus sativus*) (Pl. 134.19). Due to its resistance to both floods and droughts, this crop in some places served as a famine or emergency crop. Overconsumption during famines led to recurring outbreaks of the neurodegenerative disease neurolathyrism due to the presence of neurotoxins. In southern Europe and East Africa outbreaks continued well into the 20th century CE. At normal consumption levels the crop is harmless and it is still used in certain traditional dishes in Italy and Spain.[1041] The only other (potential) attestation of grass pea in Sudan is from Kushite Kawa,[1042] while in Egypt its presence was noted at Greco-Roman Berenike and Myos Hormos.[1043] At New Kingdom Amara West the encountered pulses were lentil and pea (*Pisum sativum*).[1044] The scarcity of pulses in the assemblage at Sai does not necessarily imply that they were absent or unimportant.

In addition to pulses and legumes, the family of the Fabaceae also includes leguminous trees. The most common of those on present day Sai Island is the Nile acacia (*Acacia nilotica*). In addition to the mineralised seeds of this tree we mentioned above, both charred and desiccated seeds were encountered as well as desiccated fragments of the fruit (colloquially: 'the pod'; Pl. 134.20a–b and Pl. 134.21). The pods of Nile acacia have an application as a tanning agent,[1045] while both its leaves and pods may serve as animal fodder or be browsed, especially by goats. Both charred and desiccated wood remains of acacia were common throughout the assemblage, but they, and their potential roles as fuel source, timber as well as the use of the tree's thorny branches for animal enclosures, will be discussed elsewhere.[1046]

The mud architecture samples MB14, MB17, MB18, MB29, MB34, and MO5 contained amounts of a substance we tentatively interpret as gum arabic. The main concentration of this material was found in a strip between two layers of mud bricks in the temenos wall south of Temple A (Pl. 133). Two samples

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1035 Erroux 1980; Geus 2003; Geus 2004b; Hildebrand 2007; Garcea and Hildebrand 2009.
1036 Fuller 2015, 37; Out et al. 2016.
1037 Rowley-Conwy 1989; Clapham and Rowley-Conwy 2007.
1038 'Grain crops' should be understood here as crops of which the seeds are used.
1039 Hansen and Heinrich 2019.
1040 Cappers and Neef 2012, 397.
1041 For an overview, see Hansen and Heinrich 2019.
1042 Fuller 2004, 71, cf. *Lathyrus* sp.
1043 Cappers 2006, 157–158; Van der Veen 2011, 145.
1044 Ryan 2017; Ryan et al. 2012, 104.
1045 Van Zeist 1987, 254.
1046 Hansen et al. forthcoming a.

(O1A and O1B) of the concentrated material were taken; the material has a translucent orange to reddish colour and an amorphous structure (Pl. 134.22). When cut, Acacia trees produce a sap to close off the wound that, once it is hardened, is called gum and which is different from resins.[1047] While *Acacia senegal* in present day Sudan is most prized for the quantity and quality of its gum, numerous species providing varying qualities of gum have been used up to the recent past.[1048] Applications for the gum range from use in paints, glazes, adhesives and glues and cosmetics to burning it for fragrance (similar to incense), which might still be observed in many shops in Khartoum. Judging from its context, it could be envisioned that the encountered material was leftover or spillage of paint-making or general settlement waste that ended up in the mud mortar produced on site as the bricks were laid. Further analyses using SEM microscopy may with greater certainty identify the material.[1049]

5.1.6.3 Fruits and fruit trees

Both in the loose/surface finds and mud brick samples the remains of fruit crops were encountered. Among the loose/surface finds of the doum palm (*Hyphaene thebaica*) were most prevalent; both charred seeds and desiccated endocarps were found as well as a rarer find of a complete charred fruit in which the endocarp and seed are still present (Pl. 134.23a–c).[1050] The dried rinds of the fruit can be used for producing molasses-like substances, the unripe kernel can be pounded and ground into a flour,[1051] while the sweet-tart mesocarp (i.e. the fruit flesh) is eaten as a sweet snack by children. Philippa Ryan noted that at present day nearby Ernetta Island doum palms are rare due to clearing in the 1950s;[1052] also on Sai Island only a handful of trees was counted during the ethnobotanical survey.[1053] It is possible that some of the encountered specimens of doum palm represent a Post-Pharaonic or sub-recent signal. Another fruit tree present in the assemblage is the date palm (*Phoenix dactylifera*) of which modest numbers of both charred and desiccated seeds and a desiccated pedicel were encountered (Pl. 134.24a–c); some of the specimens show signs of gnawing by animals (likely small rodents, such as mice) who typically avoid the tannin rich centre of the seed (Pl. 134.24a). The leaves (and sometimes petioles or leaf stalks) of the date palm have been widely used in the production of basketry and other containers, while (cosmetic) fencing and roofing made of palm leaves also has a long tradition; furthermore, the wood is used in construction and as fuel. While today date palm is ubiquitous on Sai Island and the production of its fruit commercially important, the comparatively small number of specimens found might suggest that this was not yet the case in the New Kingdom. For what it is worth, Strabo, writing during the Meroitic period, mentions that (unlike in Egypt) the date palm (and fruit trees in general) was very rare in Kush and only present in 'royal gardens'.[1054] The last fruit tree encountered in the Sai assemblage was the sycamore fig (*Ficus* cf. *sycamorus*), of which a few desiccated fruits were found (Pl. 134.25). It was not as common in our samples as at Amara West.[1055] A fruit that was common in the Sai samples was watermelon (*Citrullus lanatus*), of which both whole and fragmented desiccated seeds were found (Pl. 134.26a–b). Watermelon was also found at contemporary Amara West and Gala Abu Ahmed[1056] and had also been present at Kerma.[1057] The earliest finds of watermelon seeds in North Africa date to the Neo-

[1047] Mantell 1949.
[1048] Mantell 1949.
[1049] Hansen et al. forthcoming b.
[1050] Cf. Ryan 2017, 22; cf. the photos in Neef et al. 2012, 41–42.
[1051] Mubarak et al. 1982; Ryan et al. 2012.
[1052] Ryan 2017.
[1053] Heinrich et al. forthcoming.
[1054] Strab. 17.2.2.
[1055] Ryan et al. 2012.
[1056] See Ryan 2017; cf. Ryan et al. 2012; Kahlheber 2013.
[1057] Chaix 1984.

lithic, those found in northwestern Libya being of particular note.[1058] In a recent study Harry Paris traces the origins of domestication of the watermelon to Northeastern Africa, particularly Sudan, all prior to the New Kingdom, and from there he argues it was diffused to India and the wider Mediterranean.[1059] Furthermore, three specimens of desiccated *Cucumis* sp. were encountered in a domestic context dated to the 18th Dynasty (Pl. 134.27). Both *Cucumis melo* and *Cucumis sativus* have been attested in Egypt for this period, *Cucumis melo* being attested since the Predynastic period.[1060] In comparison to material in the reference collection, these seeds more closely resembled that of the cucumber (*Cucumis sativus*[1061]). Lastly, three desiccated seeds of grape (*Vitis vinifera*) were encountered in an organic layer (OL 1, Pl. 134.28). While the species was also attested at New Kingdom Semna West[1062] and in small numbers at sites from later periods,[1063] it is possible that the presence of grape is the result of later period mixing.

5.1.6.4 Arable weeds and wild plants

In addition to the wild/weed grasses mentioned above, several seeds and fruits of wild plants or potential weeds were encountered in the assemblage. Some of these were not identifiable or only to the family level, while others could be identified to the lower taxonomic level of the species. One of the species found was *Ambrosia maritima,* a member of the genus *Ambrosia* sp. (the ragweeds). Though the diaspore of *Ambrosia maritima* includes its perianth, only the fruits and fragments of the fruit (as it may break into three parts) were found, both as desiccated and charred specimens (Pl. 134.29a–b). Today in Egypt and Sudan it is commonly found on the banks of the Nile and of irrigation channels; although usually only a weed, its use in folk medicine as a treatment for kidney stones has been recorded.[1064] Its presence in the mud bricks may be explained from the fact that the clay used in mud bricks was sometimes obtained by scraping off part of the topsoil of inundated fields (that over time would be replenished with newly deposited silt) and the specimens encountered were possibly part of the soil seed bank. In MB3 several desiccated seed/fruits reflecting an irrigation or riparian signal belonging to the family of the Cyperaceae (sedges) were found. Damage to their seed coats prevented further identification, although two distinct types were noted (Pl. 134.30a–b).[1065] Two seeds of *Portulaca* cf. *nitida* were also found in MB3. *Portulaca* sp. is the only genus in the family of the Portulacaceae that grows in Egypt and northern Sudan and of the genus, only three species, *Portulaca oleracea*, *Portulaca nitida*, and *Portulaca stellata* occur there.[1066] The leaves and stems of *Portulaca oleracea*, known as common purslane, may be eaten as a salad vegetable, though all three species may occur as arable weeds. Based on the patterning on the seed coat and the seed coat structure (Pl. 134.31), *Portulaca oleracea* could be firmly excluded and of the remaining two species the seeds most closely resemble *Portulaca nitida*.[1067] As *Portulaca* sp. typically grows procumbent, it is likely that its seeds were part of the soil seed bank and included in the clay used to compose the mud bricks. The wild/weed grasses discussed above, by contrast, were likely included in the threshing remains that were actively added to the bricks as they are taller and were (inadvertently) collected with the harvest. Other wild species present in low quantities in the assemblage likely reflect wild flora in and around the settlement and are typical for semi-arid/arid environs. These include a seed of Roman nettle (*Urtica pilulifera*) and seeds/fruits of species belonging

[1058] Wasylikowa and Van der Veen 2004.
[1059] Paris 2015.
[1060] Fuller 2004; De Vartavan et al. 2010, 90; see Bruyère 1937 for *Cucumis sativus* at 18th Dynasty Deir el-Medine.
[1061] Cf. the pictures in Cappers et al. 2009, 435.
[1062] Van Zeist 1983. Cappers et al. 2007 note grape from the Middle Kingdom at Gebel Qarn el-Gir and from the New Kingdom onwards at Gebel Roma, both in the Western Desert, while Cappers et al. 2014 note it in the Kharga oasis from the Second Intermediate Period onwards.
[1063] Fuller 2015, 38.
[1064] Boulos 1983; Boulos 2002, 230.
[1065] For a general discussion on water and riparian plant remains mud bricks, see Cappers and Neef 2012, 216–218.
[1066] Boulos 1999, 49–50.
[1067] Cf. Amini Rad et al. 2017, Figures 1e and 1f there.

	Length in cm				Width in cm			
	μ	Median	Mode	σ	μ	Median	Mode	σ
New Kingdom	36.8	39.0	40.0	4.9	17.6	17.5	16.0	4.9
Ottoman	38.1	37.5	36.0	2.7	20.0	20.3	N/A	3.0
Uncertain date	32.8	33.0	33.0	0.4	16.0	16.0	16.0	0.7

Tab. 34 Descriptive statistics of mud brick dimensions and weight

to the genera *Centaurea* sp. (centaury), *Silene* sp. (catchfly), *Echium* sp. (bugloss), cf. *Aizoon* sp. as well some belonging to the families of the Boraginaceae (Borage family) and Papaveraceae (Poppy family) (Pl. 134.32 through Pl. 134.38).

5.1.7 Results: Mud brick size and composition

5.1.7.1 Mud brick size

Tab. 29 provides the dimensions and weight of the sampled mud bricks and Tab. 34 gives the descriptive statistics of these data. Following the example of Barry J. Kemp, the length and width of the New Kingdom, Ottoman and undated mud bricks have been plotted in Fig. 134.[1068] As to the dimensions of the mud bricks, no clear grouping can be discerned, even though the New Kingdom bricks on average appear marginally longer, while the Ottoman bricks appear on average marginally wider and heavier. The bricks of uncertain context/date (MB19, MB20, MB21, MB22 and MB23) were slightly smaller. These bricks largely overlap with the group of finger-marked mud bricks (MB19, MB20, MB21, MB22 and MB28), although the unmarked brick MB23 more closely resembles MB19–22, while the marked brick MB28 is more similar to the average of the New Kingdom bricks. The height (or thickness) of the mud bricks is consistent in all samples. Fig. 135 is a triplot in which length, width and height are shown together; the clustering of the mud bricks indicates their great similarity. Overall, the mud bricks fall within accepted ranges for brick size established for Egypt and the local convention of using elongated

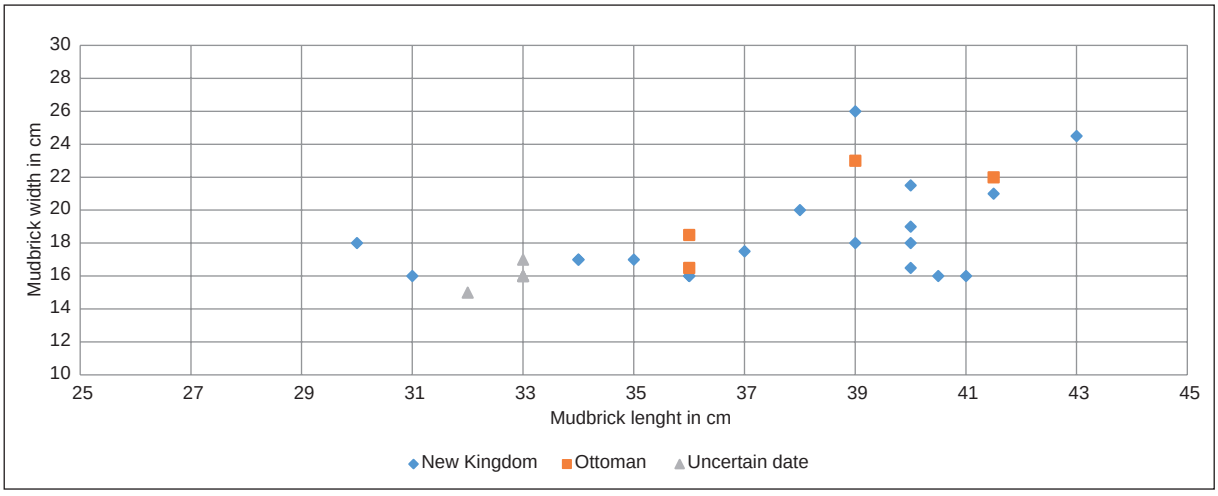

Fig. 134 Scatter plot of the length and width (in cm) of the sampled mud bricks

[1068] Kemp 2000. See also Doyen 2017, 26–28 for the mud brick dimensions encountered at SAV1 North of the New Kingdom town of Sai.

Height in cm				Weight in grams			
μ	Median	Mode	σ	μ	Median	Mode	σ
9.0	9.0	9.0	1.6	7394.8	6680.0	6400.0	2444.6
9.0	9.0	9.0	0.8	8545.0	8520.0	N/A	675.1
10.0	10.0	10.5	0.6	5682.0	5280.0	N/A	742.7

(μ = average/mean; σ = standard deviation)

rectangular bricks of a length that is roughly twice the width[1069] – in contrast, Levantine and Mesopotamian mud bricks were often square.[1070] The absence of clear size differences suggests that (within the sampled population) there was no apparent differentiation in functionality related to dimensions; the same appears to go for the mud bricks with finger markings. Such small variation as exists between individual bricks may be related to shrinkage during drying.[1071] Interestingly, there also does not appear to be a size difference between the New Kingdom and the Ottoman bricks. Furthermore, the New Kingdom mud bricks also do not seem to be categorically different from those used in Nubia before; mud bricks at the Western Deffufa at Kerma, for instance, were also rectangular and had an average size of 37.5 × 18 × 12cm (*n*= 24).[1072]

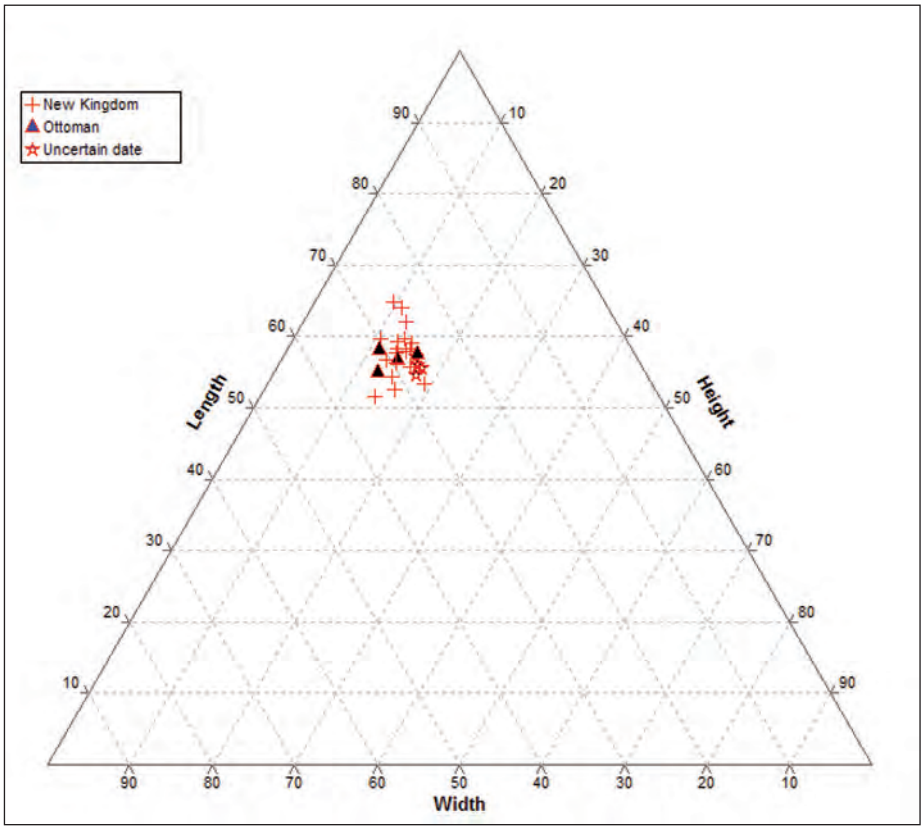

Fig. 135 Triplot indicating the degree of similarity of the mud bricks with respect to their length, width, and height

[1069] Kemp 2000, 85–88.
[1070] Homsher 2012, 5.
[1071] Kemp 2000, 85–88.
[1072] Heinrich, personal observation/measurements taken while working on the site in January 2014.

5.1.7.2 The botanical component of mud architecture

In terms of the botanical component of mud brick architecture, clearer differences are observable. In addition to the sample and context data, Tab. 29 and Tab. 30 provide the weight in grams of the botanics in each mud brick and each mortar or plaster sample as well as the density of botanics per sample expressed as the percentage of the total weight of the sample the botanics represent. These data are shown in Fig. 136 for the New Kingdom, Ottoman and undated bricks and in Fig. 137 for the New Kingdom and Ottoman mortars and plasters. Several observations can be made. In Fig. 136 the difference in the density of botanics between the Ottoman and the New Kingdom and undated bricks is immediately apparent. Whereas botanics in none of the New Kingdom bricks make up more than 1% of the total weight and average at only 0.36%, the weight of the botanics in the Ottoman bricks averages at 3%, or even 3.6% if the outlier MB24 is excluded. At an average of 0.08% (or 0.03% if the outlier MB23 is excluded) in the undated bricks, which largely overlap with the finger marked bricks, the botanics make up the smallest share. In the mortars and plasters similar differences between the New Kingdom and Ottoman samples can be observed; no mortars or plasters were associated with the undated bricks. There is no clear indication that there is a difference in terms of the density of botanics between mortars and plasters. Some of the mortars and plasters were richer in botanics than their associated mud bricks, yet the number of samples is too small for conclusive statements in that regard (see also Chapter 4.6). Ottoman mortar MO9, at 11%, had the greatest density in botanics of all the samples. New Kingdom mortar MO5, at 5.8% botanics, and Ottoman mortar MO8, at 2.3%, however, are more interesting: they are associated with MB15, the New Kingdom mud brick richest in botanics (1%) and MB24 the Ottoman mud brick poorest in botanics (1.4%), suggesting a relationship between the density in botanics between mud brick and mortar. Within the Ottoman samples, the outliers MB24 and MO4 might be explained from the fact that they were derived from an interior wall within the Ottoman fortress, whereas the other samples came from the outer (curtain) wall and the fortress' massive corner towers on which the main gunpowder batteries were mounted. Both historical sources as well as 20th century ethnographies indicate that the producers and consumers of mud bricks had a strong preference for mud bricks with a large botanical component in the form of tempering with straw and chaff; although some modern scholars have claimed choosing straw and chaff is not strictly necessary and other tempering agents work equally well.[1073] Whether in fact stronger or not, the notion that mud bricks heavily tempered with chaff and straw were of better quality may have motivated the choice for such bricks in structures in which strength and durability were especially valued. It is possible yet inconclusive that the reverse of this logic can be applied to the undated/finger marked bricks with minimal additions of plant remains.

The question why the New Kingdom (and undated) bricks contain much less botanical remains than the Ottoman ones is more complex. As straw and chaff are resources with important uses besides mud brick temper in arid environments,[1074] their commitment to any use represents an opportunity cost in terms of forgoing other uses. Lamentations as to shortages and prohibitively high prices depressing the use of straw and chaff in brick making have been historically recorded,[1075] and the Old Testament famously stated: "There shall no straw be given to you, yet ye shall make bricks without straw" (Exodus 5:18) as pharaoh's punishment unto the Israelites for Moses and Aaron demanding their freedom. The Biblical reference later gave rise to the modern English phrases 'to make bricks without straw' or 'you can't make bricks without straw' to express being asked to do the impossible or to denote an impossible feat. Kemp reflected on the absence of straw and chaff in some Egyptian mud bricks despite the historical preference and volunteered that a possible explanation may have been predation by insects, most notably termites, although he stated he did not know of a study investigating this for Egypt.[1076] Since then, some studies have reported possible infestation of mud bricks in present day Egypt by the

[1073] For an overview and discussion, see Kemp 2000, 82.
[1074] Van der Veen 1999.
[1075] Kemp 2000, 82.
[1076] Kemp 2000.

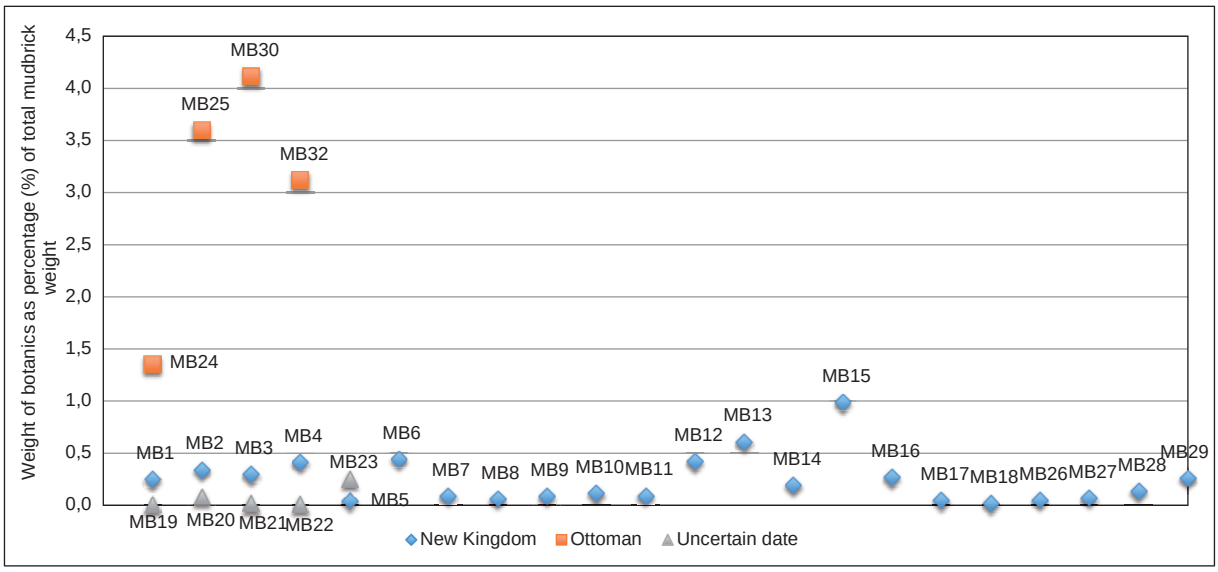

Fig. 136 Scatter plot expressing the density of the botanical element in the sampled bricks as the weight of the botanical element as a percentage of the total weight of the brick

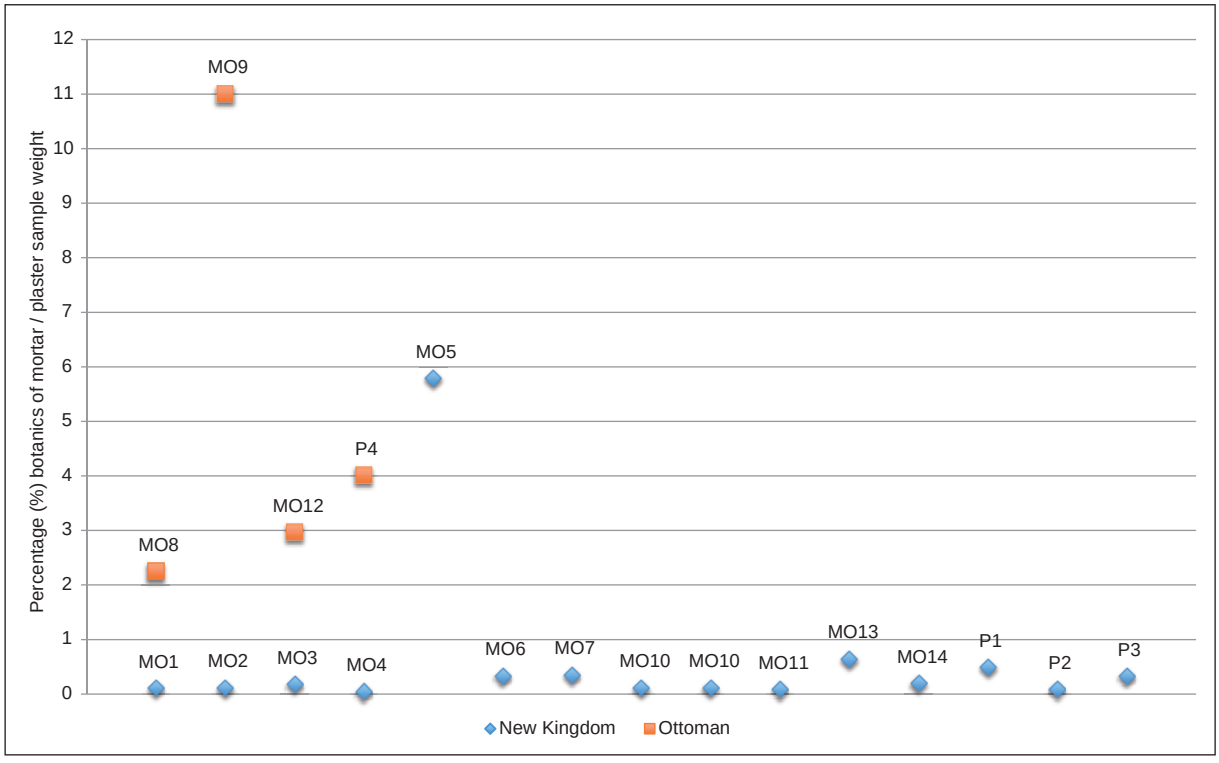

Fig. 137 Scatter plot expressing the density of the botanical element in the sampled mortars and plasters as the weight of the botanical element as a percentage of the total weight of the sample

termite species *Psammotermes hybostoma*.[1077] Such predation could be conceivable in the outer layers of a brick, although reaching all or even most of the material on the inside would require extensive burrowing or tunnelling. No evidence for this was found in mud bricks with low botanic densities at Sai.

[1077] Mohanny and Ahmed 2010; Aly et al. 2012.

Moreover, in other situations in which the physical plant temper does not survive, such as in contexts with a higher humidity or in (semi-)fired mud materials,[1078] impressions of the material may remain and this was also not the case in Sai mud bricks low in botanics. Lastly, on multi-period sites such as Sai, it would be difficult to explain why only the New Kingdom bricks would be greatly affected by insect infestation, while Ottoman bricks were left unharmed. Therefore, we deem it far more likely that the difference in the amount of plant temper represents the making of different choices rather than differences in predation or taphonomy. The construction of the New Kingdom town at Sai and the erection of its enclosure wall must have placed an enormous demand on the local availability of chaff and straw (see also Chapter 2.6). Though we do not possess the variables necessary to reliably reconstruct supply and demand at Sai, calculations at other sites suggest that especially defensive mud brick walls strained the production infrastructure and often required creative or oppressive solutions.[1079] As Sai started out as an outpost in only recently pacified territory, the strain on resources was arguably even greater and more concentrated temporally. It is not inconceivable that the construction of monumental structures with a (symbolic) defensive character under these circumstances was seen as more time sensitive, reducing the number of harvests from which the straw and chaff could have come. Relative scarcity may have forced the 18th Dynasty builders to use alternative sources of temper, such as sand, gravel or even large pebbles – the latter were found in roughly half of the New Kingdom bricks. The construction of the Ottoman period fortress may have been less time sensitive or the logistics may have been less strained. A further explanation of the difference may lie in the cereal crops themselves. As we noted in section 5.1.6.1, the cereals at New Kingdom Sai were (hulled) barley and the hulled wheat, emmer wheat; at Ottoman Sai the naked wheats, hard wheat and bread wheat, were dominant.[1080] In addition to the differences in the economics of transportation listed above, there are also differences in the availability of straw and especially chaff between hulled and naked cereals. Whereas emmer wheat and hulled barley would have been dehusked piecemeal (if the latter was dehusked at all, see above) providing only small amounts of chaff at a time, the chaff of the naked wheats would have become available all at once immediately after threshing.[1081] Hence, the practical availability of straw and chaff is greater if naked wheats are cultivated; and thus changes in crop selection likely affected mud brick technology. If the composition of the botanical material is taken into account, the Ottoman bricks appear to have been primarily tempered with threshing remains, whereas the New Kingdom bricks, besides small amounts of threshing remains, feature more charred plant remains and other inclusions (e.g. pottery sherds, small bone fragments and dung). This suggests that settlement waste was an important part of the temper in the New Kingdom mud bricks – which is remarkably similar to Reisner's ethnographic observation that the poor, who it is implied could not afford straw and chaff, would use street sweepings containing windblown cereal remains (which were omnipresent in most settlements) as temper.[1082]

5.1.8 Conclusion

In this chapter we assessed the archaeobotanical evidence from the New Kingdom town on Sai Island and have demonstrated that mud bricks serve as a good proxy in modelling the agricultural economy of a site, providing insights in both food production and the industrial use of rest products of agricultural production. Since mud bricks tend to have a very long tradition in the places where they occur, often spanning millennia, while most of the non-botanical parameters of their production and use remain the same, it makes them particularly useful for studying diachronic change. The fact that mud bricks are

[1078] Cf. Hansen et al. 2017
[1079] Homsher 2012.
[1080] Heinrich et al. forthcoming.
[1081] The total amount and exact composition of straw and chaff remains also depend on other factors, such as harvesting method – for a model, see Hansen et al. 2017.
[1082] Reisner 1931, 72; Kemp 2000, 82.

sealed contexts and are typically part of dateable archaeological structures that moreover remain, even after excavation or disturbances by looters, further adds to this suitability.

The AcrossBorders project investigated cultural, political, economic and technological cross-cultural exchanges on the Egyptian-Nubian frontier. While Sai was indeed situated on the border between Egypt and Nubia, ecologically and agriculturally the two regions have always had much in common: farmers were facing largely similar environmental constraints and were using mostly the same crops. Most cultivated taxa encountered at New Kingdom Sai have parallels at sites in Egypt and Nubia, both at contemporary sites (e.g. nearby Amara West) and sites from preceding periods, which had been spread along the Nile long before the New Kingdom conquest of Nubia. At New Kingdom Sai 6-row hulled barley and emmer wheat were the cultivated cereals. Emmer wheat does seem somewhat less important at New Kingdom Sai than barley, while in Egypt proper emmer wheat became dominant during that period. It should be noted, however, that crop shifts do not occur overnight, and the Sai assemblage mainly reflects the earlier part of the New Kingdom, the mid- to late 18th Dynasty. The cereals at Sai were part of a group of founder crops of the Neolithic Revolution that had been diffused from the Fertile Crescent. The so-called C_4 cereals (the millets and sorghum), which would become important in Nubia later in the Meroitic and Medieval periods, do not yet make an appearance as cultivated crops at Sai during the New Kingdom. However, some of their wild progenitors and wild relatives were present. Pulses were rare at Sai Island, although their underrepresentation in the archaeobotanical record is not uncommon. Leguminous trees, such as Nile acacia, were commonly encountered; they likely played important roles as sources of fuel and fodder, and also as source of timber, tannins, and quite possibly, gum arabic. Many fruit trees and fruits were present in the assemblage, the most common being doum palm, date palm and watermelon, which were exploited for food, while the wood was likewise a source of timber. Some of the earliest finds of watermelon, an African taxon, have been found in Sudan, though long before the New Kingdom it had spread to Egypt and beyond.

Mud brick dimensions at Sai were comparable between the New Kingdom and Ottoman periods; the main differences lie in the amounts and composition of their botanical component. Ottoman mud bricks contained up to ten times as much botanics as New Kingdom bricks, and the botanical component consisted mostly of straw and chaff. The botanical component in New Kingdom bricks was not only smaller, but besides desiccated plant remains also consisted of charred plant remains and a variety of other organic and inorganic materials that had been used as temper. A direct relationship to the different cereals cultivated in the respective periods is apparent: the hulled wheat emmer wheat and barley that were the dominant cereal crops in the New Kingdom did not concentrate the great and convenient availability of straw and especially chaff as the naked wheats, hard wheat and bread wheat, did in the Ottoman period. Another explanation for the relatively low volume of botanics for New Kingdom mud bricks may lie in the construction rate of the mud brick construction at Sai. The founding of a town and the erection of its buildings and walls would result in a relative scarcity of this material which would have made relatively little chaff and straw available per mud brick, necessitating the greater use of other tempering agents, most likely waste. The identification of the botanics in mud bricks sheds further light on pathways through which the material became incorporated in the brick and as the resultant of which human choices. Chaff and straw, as discussed form very deliberate additions to the mud bricks, but any cereal seeds that could not be (cost-effectively) separated from the threshing material are unintentional inclusions. Some taxa, such as the wild grasses, may have ended up in the mud bricks as they were unintentionally harvested along with the cereals, while the seeds/fruits of various water plants or riparian plants may have been scattered (or deposited by irrigation water) onto fields from which the mud for bricks was collected. In conclusion, the mud bricks at Sai were not only, quite literally, the building blocks of the New Kingdom town, but they play a similar role today in reconstructing its agricultural practices, the agricultural economy, and the daily lives of its inhabitants.

5.2 The faunal remains of vertebrates

by Julia Budka

The faunal remains from the New Kingdom town of Sai are important for our understanding of food production in New Kingdom Nubia and, in combination with the analysis of floral remains, for the reconstruction of essential aspects of the economic system. Much potential lies here in the comparison with other New Kingdom sites in Nubia, such as Amara West, and also sites located in Egypt proper, such as Elephantine.[1083] Furthermore, it was sought to compare the results from the analysis of the faunal remains from New Kingdom Sai with Kerma to address questions about Nubian or Egyptian lifestyle regarding the decision making in food production.[1084]

The study on faunal remains, in particular of vertebrates (for molluscs, see Chapter 5.3), from AcrossBorders excavations on Sai is still in progress (see Chapter 5.2.1). However, the analysis of animal bones from sector SAV1 North of the New Kingdom town of Sai was undertaken by Konstantina Saliari in 2014.[1085] A total of 492 faunal remains excavated in SAV1 North has been identified and analysed (490 bone and two mollusc fragments). More bone material was unearthed, but as those remains derive from badly mixed layers, they were not included in the examination.[1086] Human intervention related to butchery techniques was detected on the remains from 18th Dynasty contexts in the northern sector of the New Kingdom town.

The faunal evidence of vertebrates from Levels 5 to 3 at SAV1 North, the early to mid-18th Dynasty,[1087] is dominated by remains of domesticated mammals. Changes in the faunal profile are evident from Level 5 to 3, which are in particular relevant as Level 3 presents the heyday of the site, the Thutmoside period.[1088] Weight analysis shows a slight prevalence of sheep/goats in Level 5, while Levels 4 and 3 exhibit a higher proportion of cattle, followed by sheep/goats. It is noteworthy, however, that the counting of confirmed individuals (NISP analysis = Number of Identified SPecimens[1089]) changes the ratios between different species, making small ruminants the dominant type both in Level 5 and 3. Pigs are the third most important domesticated species in all three levels. Other taxa contributed only minimally to the archaeozoological assemblages from SAV1 North.[1090]

This assessment of the faunal remains from SAV1 North raises the following points: with sheep/goat as the dominant species, this case study finds many parallels at sites of Nubian cultures[1091] as well as in Egypt.[1092] The evidence from Egyptian settlements suggests that small ruminants were in general "the more common food for family groups in daily life."[1093] The presence of pigs is in particular noteworthy and seems to be specific for an Egyptian foundation in Sudan, contrasting with sites of Nubian cultures.[1094]

1083 No faunal remains have yet been published from Amara West; for Elephantine, see Boessneck and von den Driesch 1982, 1–119 (necropolis and temple of Satet); von den Driesch and Peters 2008 (bird bones). The faunal remains from House 55, serving as close comparison of the AcrossBorders project, will be studied in the near future by Joris Peters and Nadja Pöllath.

1084 Much material has already been published from Kerma, see in particular Chaix 1994. See also Chaix 2006 for a comparison between the rural Kerma site Gism el-Arba and Kerma town. On Nubian vs. Egyptian foodways in Askut as case study, see also Smith 2003, 113–124.

1085 Saliari and Budka forthcoming.

1086 See Budka 2017a, 17–18 for the stratigraphy and formation processes at SAV1 North; see also below, Chapter 5.4.

1087 For the levels at SAV1 North, see Budka 2017a, 18–22.

1088 Budka 2017a, 21–22.

1089 For the use of NISP for faunal remains in Egypt and methodological *caveats*, see Redding 2016, 140–141.

1090 Saliari and Budka forthcoming.

1091 See Chaix 1994.

1092 For the long history of domestication of sheep along the Nile valley, see Lobban 2014.

1093 Ikram 2012, 211. See also Gręzak 2016.

1094 Saliari and Budka forthcoming.

Pigs found at SAV1 North were slaughtered at the optimum age for meat consumption. In combination with the attested young age of slaughtered ruminants, it seems safe to assume a certain preference for tasteful and tender meat in 18th Dynasty Sai, attesting to an elaborated lifestyle. Pigs have been reported from other Egyptian sites in Nubia, but for now Sai represents one of the early attestations, if not the earliest. In Ramesside times, for example, a neonate piglet was found in the western chamber of the pyramid tomb G301 at Cemetery D of Amara West (19th Dynasty).[1095] At present, there is only little evidence for pigs at indigenous Nubian sites prior to medieval times. They are markedly rare at the site of Kerma, both in the town and in the cemeteries.[1096] In New Kingdom Egypt pig is among the most numerous species killed for meat[1097] and a preference for young animals is traceable in the respective settlements.[1098] It can be very tentatively suggested that the presence of pigs in the earliest Level 5 at SAV1 North is in keeping with the analysis of the ceramics from the same contexts: the material is New Kingdom in date and Egyptian in character, supporting the assessment that an Egyptian town was founded on the island very early in the 18th Dynasty.[1099]

The third of the important species of domesticated mammals is cattle. According to current evidence, cattle in SAV1 North became more numerous during Thutmoside times (Level 3). In terms of body size and weight, cattle are important domestic animals at Egyptian sites, even if this is not always apparent numerically.[1100] The distribution of anatomical parts from SAV1 North indicates the presence of complete living animals, at least for Level 3. This must be stressed because this represents the period when the Egyptian town of Sai enjoyed the status of an Egyptian temple town and administrative centre.[1101] The cattle remains may indicate an increased wealth of the town and could be associated with the presence of Egyptian elite and with the slaughter of sacrificial animals for Egyptian cults and festivals.[1102] As at sites within Egypt, a high percentage of the meat supply at Sai seems to have derived from cattle.[1103]

In general, Egyptian texts, temple reliefs and wall paintings give plenty of evidence that various domestic and also wild animals were imported to Egypt from Nubia. Several types of cattle are mentioned in the texts; for example, the paintings in the tomb of viceroy Amenhotep Huy at Thebes show *jw3*-cattle being brought from Kush.[1104] At Sai, a small number of wild animals was documented from the large cellars at SAV1 East, among others gazelles, in particular dorcas gazelles (see Chapter 5.2.1). Although it is also possible that these animals were hunted by and for the occupants of Sai, it is more tempting to associate these findings with so-called "tributes" depicted in numerous Egyptian tombs and temple reliefs and frequently including gazelles, in particular because the cellars on Sai are probably connected with the stone temple.[1105] Interestingly, gazelle bones found at Elephantine were in particular recorded from the temple area and the magazine tracts.[1106] In this case, an association with the goddess Satet seems likely, but the general occurrence and possible provenience of wild animal bones in contexts of New Kingdom towns in Egypt and Nubia need to be investigated further.

[1095] Binder et al. 2011, 53.
[1096] See the studies by Chaix, e.g., 1988; cf. Ikram 2012, 212.
[1097] Ikram 1995, 29–33; Bertini 2014, 306–308. For zooarchaeological sources for pigs in Egypt, see also Volokhine 2014, 179–182; Redding 2016, 173. For the consumption of pork see also Volokhine 2015.
[1098] See, e.g., at Amarna, Kemp 2012, 219–20. Cf. also Elephantine Boessneck and von den Driesch 1982, 21 (necropolis).
[1099] See Budka 2017a, 19.
[1100] See, e.g., Ikram 1995, 8–15; Kemp 2012, 219.
[1101] See Budka 2017a, 21–22; Budka 2017c.
[1102] Cf. Ikram 2012, 211–12. At Sai, it is intriguing that the amount of cattle seems to increase with the heyday of the town, when also the stone temple for Amun-Re and the king were expanded, thus in Thutmoside times (see Chapter 1.1).
[1103] See Amarna as a case study: Kemp 2012, 220, fig. 6.27.
[1104] Davies and Gardiner 1926, pl. 23.
[1105] See Budka 2017c, 80; also Budka et al. forthcoming.
[1106] Boessneck and von den Driesch 1982, 112–113.

5.2.1 Preliminary report on the faunal remains (vertebrate)

by Ptolemaios Paxinos and Nadja Pöllath

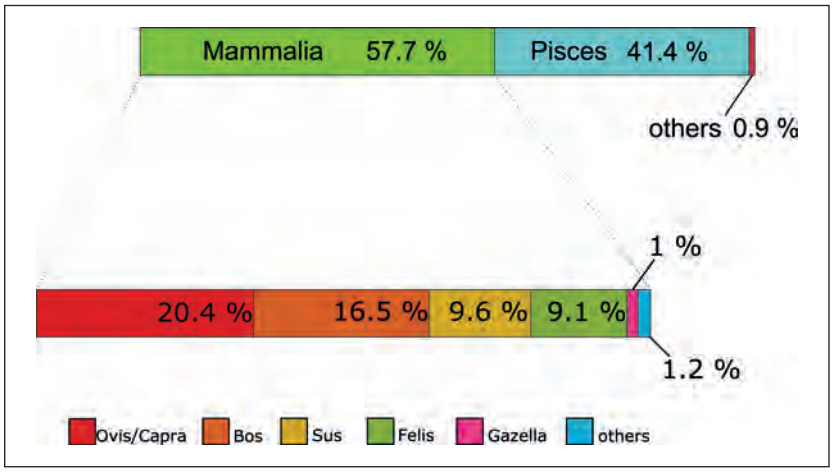

Fig. 138 Sai Island. Distribution of the classes Mammalia, Pisces and "others" (Aves, Reptilia, Mollusca) on the basis of the identified animal bones, along with the identified mammalian species. Rodent bones are not included

The animal bones reported here come from the New Kingdom town on Sai Island and were excavated between 2015–2017, predominantly at sector SAV1 East and also in SAV1 West.[1107] Overall, more than 7400 bones were studied. In spite of the high degree of fragmentation, it was possible to identify *c.* 30% of the bones at least to the level of order or higher. The faunal remains are composed for the most part of mammal and fish bones (Fig. 138). Birds, reptiles and molluscs[1108] are present, but only in small numbers. The bones of small rodents still need to be studied and are not part of the current report.

The majority of mammal bones pertain to livestock animals such as sheep, goat and cattle, thus corresponding well with the findings in sector SAV1 North. Although in lesser quantities, pig bones are also present, primarily in SAV1 East. Interestingly, cat bones are surpassing those of pig in terms of numbers. They were found in Feature 15 at SAV1 East and it seems that they belong to at least two juvenile cats, which were most likely not consumed but disposed as complete carcasses judging from the lack of cutmarks and traces of burning.[1109]

Bones of wild mammals were also present, although in small numbers with gazelle being the most abundant taxon (Fig. 138). Other wild mammals are hare (*Lepus capensis*), hippo (*Hippopotamus amphibius*) and baboon (*Pavio* sp.). Many gazelle bones could be identified only to genus level (*Gazella* sp.), but in some cases the identification of dorcas gazelle (*Gazella dorcas*) and dama gazelle (*Nanger dama*) was possible. Since most of the unidentified gazelle bones seemingly belong to small-sized gazelles, it can be assumed that they also represent dorcas gazelles.

The ichthyofauna evidenced in the present assemblage shows a rather high species richness. Bones of cyprinids (*Cyprinidae*) clearly dominate the fish bone assemblage, amounting to over 20%. Among the cyprinid bones some could be identified to the genera *Labeo* and *Labeobarbus*, while in one case the identification to the species level, *Labeobarbus bynni*, was possible. Besides cyprinids, a larger number

[1107] The strategy of exporting animal bones to Munich was the following: the complete assemblages from the large cellars at SAV1 East (Features 15, 83 and 85), from small units, such as Feature 75 as well as some selected samples from well-stratified contexts at SAV1 West, e.g. Feature 122.

[1108] The bulk of the mollusc remains was studied by Helmut Sattmann (see Chapter 5.3). Only few fragments were overlooked when the material was sorted on site.

[1109] Feature 15 (see Chapter 3.2.2) and its inventory will be published elsewhere in detail: Budka forthcoming b.

of bones pertain to catfishes (Siluriformes), such as *Synodontis*, *Bagrus*, *Schilbe*, clariids and *Auchenoglanis*. Alestid, mormyrid and tilapiine fish apparently were of minor importance for the diet.

Many bones are burnt to various degrees. Some of them are calcined, whereas others are partially burnt or completely charred (black). Interestingly, Feature 15 in SAV1 East yielded not only the bulk of the faunal material (*c.* 80% based on NISP) but also the vast majority of the burnt bones of either birds, mammals or fishes. The high number of burnt bones and the high degree of fragmentation strengthen the interpretation of the feature as a kitchen and room for food preparation.[1110]

5.3 Mollusc remains from Sai Island

by Helmut Sattmann, Sara-Maria Schnedl and Julia Budka

5.3.1 Introduction

During the archaeological investigations of the European Research Council project AcrossBorders on Sai Island in Upper Nubia (Kush) from 2013 to 2018, among other material, also remains of mollusc shells were recovered (Pl. 135). Because of their robust calcified structure, mollusc shells are often very well preserved and are, therefore, in many cases determinable and hence interpretable. Molluscs in archaeological findings can well represent local faunal evidence of the time span covered by a certain find/layer. Shells might have arrived there either naturally or in context with utilisation of shells by humans. It is also imaginable that shells used for a particular purpose were introduced from outwards. Thus, mollusc remains can provide several kinds of evidence. They may tell us about the local fauna, climate and ecology. If molluscs were used by humans as tools, diet, ornamentation or religious accompaniment, the findings also tell us about technology, economy, behaviour and religious traditions.[1111] Moreover, mollusc findings may also contain information about transport and trade routes and usage of resources. Thus, shells have been gathered, sorted, determined and analysed within the framework of this project.

5.3.2 Material and methods

Location

Sai Island is a Nile island between the Second and Third Nile Cataracts in northern Sudan. Geologically, it is dominated by several types of metamorphic Precambrian rocks and Nubian sandstone, largely covered by thin layers of comparably much younger Nile sediments.[1112] The New Kingdom town is situated at the eastern shore of the island. The particular sites studied are two areas with New Kingdom building remains (SAV1 East and SAV1 West) and one cemetery site (SAC 5).

Determination

Shells were studied macroscopically and for surface structures under weak magnification (5–10 fold) using a stereomicroscvope (Nikon SMZ25). Taxonomic assignment as well as information on ecology and geographic distribution were thoroughly analysed according to relevant literature on Holocene/Pleistocene mollusc fauna.[1113]

[1110] Budka 2015a, 44.
[1111] See Allen and Payne 2017; Hamdeen and Salih 2018.
[1112] Cf. Geus 1996, 1170–1171, fig. 5; Draganits 2014, 20; see also this volume, Chapter 2.2.
[1113] Van Damme 1984; Brown 1994; Van Damme and Van Bocxlaer 2009.

Photography

Smaller specimens were photographed using a Nikon SMZ25 microscope, large shells were shot using a Nikon D7200 digital camera with a AF-S Micro NIKKOR 60mm f/2.8 G ED lens and a repro stand.

5.3.3 Results

In total, nine species of molluscs (five gastropods, four bivalves) were identified (Tab. 35). Most of the species belong to the local Nile fauna, except for two; one of which is of marine origin, the other is unknown from Sudan and Egypt, but recorded from adjacent regions in the Mediterranean.

Species	SAV1W	SAV1E	Tomb 26	
Theodoxus niloticus	1			
Melanoides tuberculata	2	1	3 (F 1, 2, 4)	
Cleopatra bulimoides	1	7	2 (F1)	
Melanopsis c.f.costata	1			
Cypraeidae g. sp.		3		
Nitia teretiuscula	4	3		
Chambardia rubens	4	5		
Etheria elliptica	17	12	1 (F2)	
Corbicula consobrina	1			
sum	31	31	6	68
Undetermined fragments	1	7		

Tab. 35 Mollusc species list and abundance per species and sampling site (two sites within the New Kingdom town, SAV1 East and SAV1 West and the cemetery site, SAC 5, Tomb 26) as well as the total number and shell fragments. Species in bold are considered as being transported or used by humans, the others are small local species

Gastropods (Gastropoda)

Theodoxus niloticus (REEVE 1856) (Pl. 136)

Prefers slow flowing water and is tolerant to salinity, frequently occurring in the lower Nile in Egypt and in Sudan below the Second Cataract.[1114] The southern range extension of this palearctic species, however, might have fluctuated considerably during the Late Pleistocene – Holocene.[1115]

Melanoides tuberculata (O.F. MÜLLER 1774) (Pl. 137)

Occurs in different permanent water bodies and is tolerant to brackish water; widely distributed in Africa, as well as in Western and Southern Asia.[1116]

Cleopatra bulimoides (OLIVIER 1804) (Pl. 138)

Prefers muddy and sandy substrates with submerse vegetation, and is widely distributed in Africa.[1117] It occurs frequently in the Lower Nile.[1118]

[1114] Brown 1994.
[1115] Van Damme and Van Bocxlaer 2009.
[1116] Brown 1994.
[1117] Brown 1994.
[1118] Sattmann and Kinzelbach 1988.

Melanopsis c.f. costata (OLIVIER 1804) (Pl. 139)

The specimen is strongly costulated. Based on shell morphology, many taxa have been described within this species group in the past. However, dependent on ecological factors, shell sculpture seems to be very plastic.[1119] Different species of Melanopsis are recorded circum-mediterrean. From Egypt, Libya and Sudan, however, no records are known, not even in Pleistocene records. Geographically closest modern records are from Arabia and Sinai.[1120] In a recent revision of the family Melanopsidae, the species of the genus *Melanopsis* are clearly divided into an Eastern and a Western Mediterranean cluster. However, delimitations of described species based on morphological descriptions are not confirmed by molecular results.[1121] Thus, according to shell morphology and geography, we assign the specimen to *Melanopsis costata* (OLIVIER 1804).

Cypraeidae *g.sp.* (Pl. 140)

Crypraeids or Cowries are mainly subtropical and tropical marine gastropods. Many species occur in the Red Sea and in the Indian Ocean. The three remains found in SAV1 East resemble *Monetaria annulus* in size and form. There is clear evidence for the use of cowries as early as in the Neolithic period in the Levant[1122] and for these shells circulating long distances.[1123]

Bivalves (Lamellibranchia)

Nitia teretiuscula (PHILIPPI 1847) (Pl. 141)

This species occurs in the Lower Nile and White Nile, including some African lakes. Late Pleistocene – Holocene records include archaeological findings in Upper Egypt[1124] and Sudan.[1125]

Chambardia rubens (LAMARCK 1819) (Pl. 142)

The nominate subspecies is recorded from West and Central Africa. Specimens from the Nile populations are assigned to the subspecies *Chambardia rubens arcuata* (CAILLIAUD 1823),[1126] which is mainly characterised by larger shells and more gradually down-scurving anterior margin.[1127] However, the taxonomic situation still seems unresolved. Recent distribution in the Nile involves Lower Egypt and Sudan south of Karthoum. However, the Pleistocene to Holocene distribution in the Nile ranges to Upper Egypt and the Second Nile Cataract in Sudan as well.[1128] The uses of these large bivalves apparently were manifold in the past and have been recorded from ancient Egyptian graves.[1129]

Etheria elliptica (LAMARCK 1807) (Pl. 143)

Distributed in rivers and lakes in tropical Africa, reaching the Lower Nile at its northernmost margin. They represent large thick-shelled oyster-like bivalves, in rivers they can form impressive reefs.[1130] The

[1119] Tchernov 1975.
[1120] Van Damme 1984; Brown 1994.
[1121] Neiber and Glaubrecht 2018.
[1122] Bar-Yosef Mayer 2005.
[1123] Ridout-Sharp 2015.
[1124] Germain 1909.
[1125] Arkell 1953.
[1126] Cailliaud 1823.
[1127] Van Damme 1984.
[1128] Van Damme 1984.
[1129] de Morgan 1897 cited in Van Damme 1984.
[1130] Van Damme 1984.

Egyptian population in the Lower Nile supposedly got extinct recently; in Sudan the species reaches until the Second Cataract, where shells have been found recently,[1131] but on the other hand it seems to be rare or even lacking northwards of Khartoum.[1132] Nevertheless, Pleistocene to Holocene distribution was less fragmentary in Egypt and Sudan.[1133] Within the findings of the New Kingdom town of Sai, *Etheria elliptica* is the most common mollusc (see Tab. 35).

Corbicula consobrina (CAILLIAUD 1827) (Pl. 144)

A tiny freshwater bivalve, widely distributed in the Nile system, many (sub-)specific taxa are described, but taxonomy of the whole genus is far from being settled.[1134]

5.3.4 Comments on the molluscs from Sai

The most common species of molluscs found in the New Kingdom town are *Etheria elliptica*, followed by *Chambardia rubens* and *Cleopatra bulimoides*. While the latter is mostly attested from SAV1 East (seven examples compared to one example from SAV1 West) and most likely represents post-depositional additions to the archaeological layers,[1135] the other two species are evenly distributed between SAV1 West and SAV1 East and presumably entered the archaeological context as finds.

The contexts of the *Chambardia rubens* specimens (four pieces SAV1 West, five pieces SAV1 East) are partly mixed debris layers, but also some well-stratified contexts of the 18th Dynasty. At SAV1 West this applies to SAV1W 830/2015 which was found in the early-mid 18th Dynasty filling of a cellar (Feature 115, see Chapter 3.3). At SAV1 East two examples were found in the large cellar Feature 15 (see Chapter 3.2), SAV1E 1626/2015 and 1677/2015. SAV1E 1076/2015 was found in a debris layer which is associated with a 18th Dynasty floor level (SU 205).

Two further fragments of *Chambardia rubens* specimens were recorded from sector SAV1 North from 18th Dynasty levels.[1136] In general, it is one of the most common species of shells found at Pharaonic sites, remains of which have been recorded at numerous excavations in Egypt.[1137]

The most common species at Sai, *Etheria elliptica*, with 17 pieces from SAV1 West and 12 pieces from SAV1 East were partly found in sandy debris layers with mixed material. Noteworthy is that within the debris layer SU 337 one *Etheria* and one *Cypraea* were found (SAV1E 173/2016). Feature 15, the large cellar, yielded a total of three *Etheria* and the comparable cellar Feature 83 contained one individual. These shells retrieved from the cellars can be clearly dated to the 18th Dynasty. The question of the function and use of the *Etheria* within the New Kingdom town is difficult to answer. While Feature 15 and the associated burnt animal bones may indicate the consumption of the flesh,[1138] the findings at SAV1 West could attest to another use. Associated with the debris layers in SAV1 West are also a large number of painter's plaquettes and maybe the *Etheria* shells were used as raw material/ingredient for producing plaster or mortar as this is known from recent African peoples.[1139] *Etheria elliptica* has been used in Africa frequently. From archaeological findings to modern records, various

[1131] Martin 1968.
[1132] Van Damme and Van Bocxlaer 2009.
[1133] Van Damme 1984.
[1134] Van Damme 1984.
[1135] For small molluscs, such as *Cleopatra bulimoides*, also archaeological contexts as complements of mud bricks, mortars and plaster are attested in Egypt (Odler, Dulíková and Juřičková 2013, 11, fig. 4 and 14) and possible for Sai as well.
[1136] Recorded and identified in 2014 by Konstantina Saliari, see above, Chapter 5.2.
[1137] Falkner 1982, 160–162; Boessneck and von den Driesch 1992, 43–44.
[1138] For Nile oyster collecting at other sites in Nubia, see Kobusiewicz 1989.
[1139] Cf. Pilsbry and Bequaert 1927.

human uses of these animals are documented.[1140] It was also cited as burial gifts in graves at Karnak and Ballas.[1141]

Interestingly, the three cowrie shell fragments attested from the New Kingdom town of Sai were all found at SAV1 East. The contexts are, unfortunately, again mixed debris layer, but associated with Building A and thus with an administrative unit connected to the distribution of goods (see Chapter 3.2.2). It is, therefore, possible that the Cypraeids from SAV1 East should be seen within the context of the trading/collecting of various exotic items, which was already proven for the Old Kingdom.[1142] Cowries were mainly used as ornamentation and they are frequently recorded from Egyptian cemeteries as burial objects, in particular as amulets.[1143]

The other most probably imported species, *Melanopsis*, was only found as a single piece at SAV1 West (SAV1W 082/2017). Its archaeological context is again interesting, since it derives from the stratified and sealed filling of Feature 151, a small silo in Square 1SE_E which was dated to the mid-18th Dynasty (see Chapters 3.3.4 and 4.5).

The gastropods *Cleopatra bulimoides*, *Melanoides tuberculata* and *Theodoxus niloticus* as well as the bivalves *Corbicula consobrina* and *Nitia teretiuscula* are widely distributed in the Nile in Egypt and northern Sudan and also recorded there in the Pleistocene-Holocene records.[1144] They might have come into the archaeological layers accidentally. However, it is also possible that some were collected by people intentionally as food, tools, toys and and/or ornamentation. It is noticeable that many common freshwater molluscs of the local Nile fauna are missing, such as the genera *Bellamya, Pila, Cleopatra, Lymnaea, Bulinus, Mutela, Eupera*.[1145]

Overall, a number of the mollusc fragments found in the New Kingdom town of Sai were unearthed in 18th Dynasty layers and contexts, in particular in the cellars and storage installations at SAV1 East and SAV1 West, thus making these finds a valuable addition for reconstructing the New Kingdom fauna at Sai.

5.4 The human remains from the town site[1146]

by Julia Budka

New Kingdom settlement sites in Egypt and Nubia yield, as a rule, only in rare cases human remains.[1147] One group of burials which is often associated with Egyptian domestic architecture is infant burials,[1148] frequently placed within pottery vessels.[1149] During AcrossBorders fieldwork on Sai, no infant burials were found within the New Kingdom town.[1150] But since bones are one of the main categories of finds within the town area (see Chapter 4, Appendix), the human remains from sectors investigated by AcrossBorders seemed of interest, even if a New Kingdom date is unlikely for the majority of the material. As mentioned elsewhere, the upper strata of the town area consist of mixed material from Post-Meroitic,

[1140] Pilsbry and Bequaert 1927; Arkell 1953, compiled in Van Damme 1984.
[1141] Germain 1909.
[1142] Mumford 2012.
[1143] See Golani 2014; Stoof 2015.
[1144] Van Damme and Van Bocxlaer 2009.
[1145] Compare Van Damme 1984.
[1146] This chapter is based on the work and written report by Anna Sonnberger, Andrea Stadlmayr and Marlies Wohlschlager, March 2015; Sonnberger, Stadlmayr and Wohlschlager 2015a and Sonnberger, Stadlmayr and Wohlschlager 2015b.
[1147] For Egypt, see, e.g., Cagle 2016; for Nubia, no published skeletal remains from town areas/domestic contexts are known to me; all the published data derive from the associated cemeteries.
[1148] See von Pilgrim 1996, 36, fn. 84 with references for findings in Egypt.
[1149] Elephantine may serve as a case study; see von Pilgrim 1996, 136, pl. 22b. For a new interpretation of pot burials, see Kilroe 2015; Power and Tristant 2016. For general aspects of child burials in Egypt, see Zillhardt 2009; Marshall 2018. See also von Pilgrim 1996, 36–37, figs. 5–6, pls. 2c–d and 137–138, figs. 52–53 for infant burials in houses on Elephantine without pots (wrapped in linen or places in wooden chests).
[1150] For infant burials fromTomb 26 in cemetery SAC5, see Wohlschlager and Stadlmayr 2018.

Christian and Ottoman times.[1151] Extensive cemeteries of the Meroitic,[1152] Post-Meroitic[1153] and Christian periods[1154] as well as modern Islamic tombs[1155] are located in the near neighbourhood. Furthermore, at all sectors excavated within the New Kingdom town, disturbances and pits within the Pharaonic remains were documented, resulting partly in a very complex stratigraphy with mixed materials directly above strata of the 18th Dynasty.[1156] The human bones analysed for this chapter do not represent strong stratigraphic markers and their dating remains partly unclear.

All in all, this presentation of the human remains does not aim to provide conclusive remarks about the population of New Kingdom Sai,[1157] but rather presents aspects of the site formation process of the town and its history after the Second Millennium BCE. This chapter is, therefore, a useful contribution to the interpretation of the environmental remains from the Egyptian town on Sai because it presents an integral part of a systematic approach to consider all archaeological and material remains in order to reconstruct life and living conditions at the site.

The human remains from SAV1 North, SAV1 West and SAV1 East were anthropologically investigated in 2015. As a first step, human bones were separated from animal bones and then identified. Biological age and sex were determined when possible. Furthermore, pathologies and degenerative diseases were documented by Anna Sonnberger, Andrea Stadlmayr and Marlies Wohlschlager. The minimum number of individuals within the sectors SAV1 East, SAV1 West and SAV1 North as well as the total minimum number of all of these areas was established.

5.4.1 Material: commingled human remains

Within the studied human remains, the material from SAV1 East was excavated between 2013 and 2015, the material from SAV1 West between 2014 and 2015. The finds bag numbers (e.g. 285/2013, see Chapter 4, Appendix) were used to label/mark the human remains (e.g. 285/2013/1) and in the case of several bones within the same finds bag, consecutive numbers at the end of the finds bag number (e.g. 291/2014/1–291/2014/5) were added.

Bones from SAV1 North that had been excavated by the SIAM mission, directed by Florence Doyen between 2008 and 2012, had largely remained unprocessed up until 2015.[1158] This material was labelled according to the square number of the finds bags (e.g. all finds in square 180/2250: 180/2250/1–180/2250/35), since these finds bags from SAV1 North did not contain specific numbers. However, some of the SAV1 North bones had already been marked by the zooarchaeologist Konstantina Saliari in 2014, and those numbers, identified by a "B" as "bone" (e.g. B156/2, 1845/2), were kept. In such cases, the number following the slash indicated the level of the find.[1159]

In order to preserve the original bone for future analysis (e.g. stable isotope analysis), the AcrossBorders physical anthropologists intentionally refrained from washing the bones and used no adhesive substances to glue fragments together. Easily removable soil was brushed off to keep the original bone surface intact.

1151 Budka 2017a, 17.
1152 Geus 1994b; Francigny 2014.
1153 Vercoutter 1958, 164–169; Vercoutter 1986, 15; Geus 1994 a, 27. See also Siguoirt 2012.
1154 Vercoutter 1986, 15; Tsakos 2012.
1155 Cf. Davies 2017a, 133 (modern graveyard).
1156 See Budka 2017a, 17.
1157 For more significant remains from New Kingdom tombs on Sai, see Murail 2012; Wohlschlager and Stadlmayr 2018; Budka forthcoming c.
1158 For these excavations, which were analysed within the framework of AcrossBorders, see Doyen 2017.
1159 For the levels at SAV1 North, see Budka 2017a, 17–22.

5.4.2 Methods

Age at death and sex was estimated following the standard methods summarised in Denise Ferembach et al.,[1160] Rainer Knussmann,[1161] Jaroslav Bruzek,[1162] Louise Scheuer,[1163] Maureen Schaefer et al.[1164] and Jane Buikstra and Douglas Ubelaker.[1165]

Age was determined as precisely as possible, otherwise categorised in age groups, which are listed in the data base as follows:

Infant I:	0–7 yrs.
Infant II:	7–14 yrs.
Juvenile:	14–22 yrs.
Adult:	20–40 yrs.
Mature:	40–60 yrs.
Senile:	60–x yrs.

Sex was recorded as follows:

0	Unobservable
1	Female
2	Female?
3	Ambiguous
4	Male?
5	Male

Bones were recorded as follows:

Name of the bone

- **Side** (L=left, R=right, B=both, M=mid line, ?=unsidable)
- **Articular regions, long bone diaphysis and vertebrae by segments** (PE=proximal epiphysis, P=proximal third of diaphysis, M=middle third of diaphysis, D=distal third of diaphysis, DE=distal epiphysis), B=vertebral body, NA=neural arch)
- **Completeness of element** (1: >75% present, 2: 25–75% present, 3: <25% present)

Cranial bones were reported separately. The position of vertebrae and ribs was recorded when possible. In cases where this was not possible, the fragments were grouped together (e.g. cervical vertebrae 3–6, thoracic vertebrae 1–9, ribs 3–10). Bone surface preservation and soft tissue residues were macroscopically investigated and recorded.

Pathologies and degenerative diseases were recorded according to Jane Buikstra and Douglas Ubelaker[1166] and Richard Steckel et al.[1167] The following stages were used to describe articular margins and surfaces (after Michael Schultz):[1168]

[1160] Ferembach et al. 1980.
[1161] Knussmann 1988.
[1162] Bruzek 2002.
[1163] Scheuer and Black 2000; 2004.
[1164] Schaefer et al. 2009.
[1165] Buikstra and Ubelaker 1994.
[1166] Buikstra and Ubelaker 1994.
[1167] Steckel et al. 2011.
[1168] Schultz 2011.

1:	Joint shows no evidence of pathological changes
2:	Slight marginal lipping (osteophytes less than about 3mm) and slight degenerative/productive changes present (no eburnation)
3:	Severe marginal lipping (osteophytes greater than 3mm) and severe degenerative/productive changes present, eburnation possible
4:	Complete or near complete (>80%) destruction of articular surface, ankylosis
5:	Joint fusion (synostosis)

The minimum number of individuals (MNI) per area was determined according to Tim White and Pieter Folkens.[1169] Bones were sorted by element, age and side, and matching fragments were refitted in order to establish the most represented skeletal element. As long as bone fragments did not overlap they could represent the same individual (unless they were distinctively assigned to different age groups) and were, therefore, counted as one individual. Right-side bones that did not correspond to any of the left-side bones in age or morphology were added to the minimum number.

The total minimum number of individuals for SAV1 North, SAV1 East and SAV1 West (MNI NEW) was determined.

5.4.3 Conclusion about the human remains

In the sectors of the New Kingdom town of Sai which were anthropologically investigated (SAV1 East, SAV1 West and SAV1 North) no in situ burials were found until 2015.[1170] The excavated commingled remains most probably derive from different phases and have possibly been disturbed several times. The human remains show various stages of preservation. Some bones contained soft tissue residues, some were sun-bleached and a few were burnt. At present, it seems very unlikely that any of the human remains presented here originate from the New Kingdom; a Post-New Kingdom and mostly medieval/Ottoman date is more probable.

MNI SAV1 East

The most represented bone element in adults at SAV1 East was the left hip bone. Since the comparison is based on the acetabulum which generally fuses between the age of 15 and 18 years, it was only possible to distinguish between individuals younger or older than 15 years. At least four of those individuals were diagnosed older than 15 years. The total of five left fused hip bone fragments (030/2013/1, 041/2013/2, 351/2013/1, 365/2013/16, 365/2013/19) represent at least three different individuals. One of the two right hip bone fragments in this assemblage could be assigned to one of the left ones (365/2013/18 and 365/2013/16+19). The remaining right hip bone (365/2013/17) definitely represents another individual; therefore, we have a total of four individuals older than 15 years.

The minimum number of sub-adult individuals is based on infant and juvenile fragments. The existing skull fragments (332/2014/1, 368/2013/1 and 368/2013/2) could all belong to one individual younger than 15 years. The three existing femur fragments (285/2013/1, 131/2013/3 and 368/2013/1) may all derive from another individual aged Infant II – Juvenile. As the femur head could fuse later than the acetabulum in the hip bone, this individual could belong to one of the hip bones mentioned above and, therefore, cannot be taken into account.

Considering all age groups the total minimum number of individuals in sector SAV1 East is five (5).

[1169] White and Folkens 2005.

[1170] A burial in Feature 123 in SAV1 West was discovered in 2016, but not studied by the physical anthropologists (see Chapter 3.3.2).

Maxilla	776/2014/1	**Costae 3–10**	0411/2015/1
Mandibula	738/2014/1	**Costae 3–10**	0411/2015/2
Os frontale	598/2014/2	**Vertebra cervicalis 2**	0329/2015/1
Os frontale	745/2014/2	**Calcaneus**	0082/2015/1
Os ilium	0310/2015/1	**Tibia**	0197/2015/1
Radius	0310/2015/3	**Fibula**	0205/2015/3
Costae 3–10	0310/2015/2		

Tab. 36 Human remains from one sub-adult individual from SAV1 West

MNI SAV1 West

For sector SAV1 West the most represented elements were cranial fragments and hip bones. The minimum number of individuals based on cranial fragments is based on the posterior section of the sagittal suture (S3+S4) which was present four times (0461/2015/2, 598/2014/3, 0185/2015/1 and 571/2014/1). In terms of the hip bone, the comparison was again based on the acetabulum. Three left hip bones (1298/2014/1, 0454/2015/1 and 1228/2014/1) and two right hip bones (1338/2014/1 and 1149/2014/1) only represent four individuals as 1338/2014/1 could be the same individual as 1228/2014/1.

The minimum number of sub-adult individuals is two. However, one of these individuals represented via one scapula (0511/2015/1) and one tibia (0746/2015/1) aged Infant II – Juvenile possibly matches one of the pelvises/crania of the above mentioned adult individuals, therefore only one of the sub-adult individuals (Infant) can be taken into account for the total minimum number of individuals. It contains the elements given in Tab. 36.

Considering all age groups the total minimum number of individuals in SAV1 West is five (5).

MNI SAV1 North

In sector SAV1 North the most represented element was the sacroiliac articulation (where sacrum and hip bone join). In this case, it was possible to separate adult individuals from sub-adults by focusing on the iliac crest of the hip bone, which generally fuses between the age of 21–24 years, and the fusion of S1 and S2 at the age of 25 years in the sacrum respectively. Within the adult group there were three right hip bones (190/2260/24, 190/2260/33 and 190/2260/67) and three sacra (1410/2, 190/2250/3 and 200/2260/1) containing parts of the articular surface which were assigned to different individuals. Hence, the minimum number of adult individuals is six (6).

The sub-adult group is represented by one right pubic bone (B682/3) belonging to an Infant aged 4–5 years, two left humeri (B304/1 and 190/2250/12) belonging to two different individuals aged 12–15 years and >14 years, and one left tibia (1835/2) belonging to a fourth individual aged 15–19 years. Those four bones clearly derived from different individuals, based on age, size and morphology. It was possible to assign all other bone fragments in this age group of SAV1 North to one of those four individuals.

Considering all age groups the total minimum number of individuals in SAV1 North is ten (10).

MNI NEW

Since the areas SAV1 East, SAV1 West and SAV1 North are relatively close to each other (see Fig. 3), it was also tried to refit the fragments from all three areas. Although no matches could be made, the bone fragments could, however, still have been spread over more than one area. Therefore, the total minimum individual number for all three areas (MNI NEW) was determined.

For the adult group, the analysis focused on the hip bones (incl. sacrum), as these were the most represented elements in all three areas: two right hip bones from SAV1 East (365/2013/17 and 365/2013/18), three right hip bones from SAV1 West (920/2014/1, 1149/2014/1 and 1338/2014/1) and five right hip

Age	Bone numbers	Sectors within the town
Infant I	332/2014/1, 368/2013/1, 368/2013/2, B682/3	SAV1 East (3×), SAV1 North (1×)
Infant I – II	0082/2015/1, 0197/2015/1, 0205/2015/3, 0310/2015/1–3, 329/2015/1, 0411/2015/1+2, 598/2014/2, 738/2014/1, 745/2014/2, 776/2014/1	SAV1 West (10×)
Infant II – Juvenile	285/2013/1, 304/2014/1, 131/2013/1, 365/2013/1, 0511/2015/1, 0746/2015/1	SAV1 East (4×), SAV1 West (2×)
Infant II – Juvenile	B304/1, 381/2013/1	SAV1 North (1×); SAV1 East (1×)
Infant II – Juvenile	180/2250/20, 190/2250/12, 190/2260/93	SAV1 North (3×)
Juvenile	1835/2	SAV1 North (1×)

Tab. 37 Sub-adult group of individuals with corresponding bone numbers from the New Kingdom town

bones from SAV1 North (180/2250/2, 190/2260/24, 190/2260/33, 190/2260/61 and 190/2260/67) as well as three sacra (1410/2, 190/2250/3 and 200/2260/1) also from SAV1 North. Only one of the three sacra could not be assigned to any of the other right hip bones, which left a total of eleven individuals over the age of 15 years. In addition, the MNI based on skull fragments containing the sagittal suture S3–S4 from all three areas was checked, resulting in a total minimum number of eleven individuals. In order to prevent an overlap of adult and sub-adult individuals, the number of definite adults (over 21 years) was determined based on the fusion of the iliac crest and the first and second sacral vertebrae respectively. This resulted in a number of eight (8) adult individuals (1410/2, 180/2250/13, 190/2250/3, 190/2260/24, 190/2260/33, 190/2260/67, 200/2260/1 and 365/2013/17).

In the sub-adult group it was possible to assign the present bone fragments to a minimum of six individuals based on age, size and morphology (Tab. 37). Considering all age groups, the total minimum number of individuals in all three sectors within the New Kingdom town of Sai excavated between 2008 and 2015 is fourteen (14).

Age & sex

Due to the poor state of preservation and fragmentation, information on age and sex was very limited. However, individuals from all age groups, except for the fetus/neonatus and distinct senile group were represented in the overall sample. Sex could only be determined for one female and four male bones without doubt. 16 fragments were identified as “Male?” and one fragment was classified as ambiguous. The rest remained unclassified, since no distinguishing features were present on the respective fragments.

Pathologies and degenerative diseases

Because of the poor state of preservation on the one hand and soft tissue remains on the other hand, the evaluation of pathologies and degenerative diseases was largely impossible. However, the anthropologists were able to record a small number of cases, in which unspecific stress markers such as periostitis, porotic hyperostosis, cribra orbitalia, sinusitis, stomatitis and/or linear enamel hypoplasias were recorded.[1171] These signs of malnutrition and/or infectious diseases are often found in ancient populations around the world and did not necessarily lead to the respective individuals’ death. One individual’s cranium contained two small button osteomas (benign tumour), which have also been well documented in the past. The investigated jaws showed cases of intravital tooth loss, intravital chipping on teeth, paradontosis, calculus and caries lesions on one of the teeth.

[1171] For the relevance of stress markers to reconstruct aspects of the life of the deceased, see Mays 2010.

A small number of vertebrae contained Schmorl's nodes (result of increased intervertebral disk pressure on the superior or inferior surfaces of the vertebral bodies).[1172] Schmorl's nodes are most commonly associated with degenerative arthritis and the related changes, i.e. the formation of bony spurs called osteophytes.[1173] The latter, an age and activity-related form of degeneration, had also formed on some of the vertebral margins from Sai. The vertebral articular margins/surfaces rarely showed any severe forms of degeneration.

Trauma

Two cases of trauma were found on the skulls, one of which was a healed depression on a child's frontal bone. The inner surface of the skull appears to have remained intact at the time of impact. The second case was a depression fracture on the cranial vault of an adult which probably led to the death of this individual, since no signs of healing were apparent.

[1172] Cf. Waldron 2009, 45.
[1173] Ortner and Putschar 1981, 430.

Chapter 6: People on Sai: prosopographical contributions to the 'social fabric' of Sai in the New Kingdom

by Johannes Auenmüller

6.1 Introduction

One integral part of the European Research Council project AcrossBorders was to understand more about the people of Sai in the New Kingdom. Within work task 4: "The world of the living and the world of the dead – the occupants of Sai Island", a specific aspect of the available evidence was amongst others tackled: prosopographical data. The prosopography of the Pharaonic foundation Sai is constituted by data from three larger archaeological contexts that are typical for ancient Egyptian towns especially in New Kingdom Nubia:[1174] the walled settlement with its administrative buildings and magazines (SAV1; SAF5), the Temple A with its architectural and inscriptional remains, and the elite necropolis outside of the town in the nearby desert hinterland, with funerary goods bearing names and titles of the buried (SAC5) (cf. Tab. 39). In this contribution a comprehensive evaluation of the prosopographical data from Sai Island is undertaken. It first aims at answering the question which people are attested on Sai in the New Kingdom. Secondly, the different archaeological contexts of the evidence are taken into account to say something about function, roles and attachments of these people.

6.2 Prosopography – methods and Egyptological applications

Prosopography can be understood as a specific means of shedding light onto the social fabric and historical development of chronologically and geographically defined milieus or populations. For the present case, it is the 'social elite' of Sai Island in the New Kingdom as attested through various kinds of epigraphical evidence. The first part of a prosopographical study is to "bring together all relevant biographical data of groups of persons in a systematic and stereotypical way."[1175] This data is then used to investigate the "common background characteristics" of the prosopographical target people "by means of a collective study of their lives."[1176] Such a collective study aims, however, not at drafting a "collective biography",[1177] but rather at "presenting evidence about the individual and the exceptional – i.e. the true subject of biography – [...] in order to uncover the collective and the normal."[1178] Thus, individual and

[1174] On the architectural constituents of the walled town, see Adenstedt 2016; for the cemetery SAC5, see Minault-Gout and Thill 2012; for Sai in the New Kingdom, see also Vercoutter 1973; Azim 1975; Thill 1997; Minault-Gout 2007; Gabolde 2012; Budka and Doyen 2013; Budka 2015a; Budka 2015b; Budka 2015d; Budka 2016a; Budka 2017h; Budka 2017g; Budka 2017c; Budka 2017k; Budka 2018b. For recent and concise characterisations of New Kingdom Nubia in general, see Török 2009, 157–283; Spencer et al. 2017.

[1175] Verboven, Carlier and Dumolyn 2007, 37.

[1176] Stone 1971, 46.

[1177] See Verboven, Carlier and Dumolyn 2007, 39 and 59; Charle 2015; Hawkins et al. 2016 for the term 'collective biography', which sometimes stands in terminological competition with 'prosopography'. But indeed, there are a number of important conceptional differences (cf. Keats-Rohan 2007, 141, 143–146). An example for a recent Egyptological 'collective biography' would be Allon and Navratilova 2017.

[1178] Keats-Rohan 2007, 141.

exceptional cases are part of the endeavour to find out typical – or rather typological – features within administrative or institutional bodies or geographically defined entities such as regions or towns. Based on the indispensable and fruitful discussion of individual cases, it is the larger picture that is aimed at in unveiling general characteristics that can be made meaningful for describing and explaining culturally specific phenomena from an anthropological viewpoint. In breaking down this rather elaborate conceptualisation, prosopography can simply be understood as 'historische Personenforschung', i.e. research on historical individuals.[1179]

Prosopography looks back at a long history in the field of Egyptology.[1180] It was more often directly employed as a research tool than being scrutinised from a theoretical or methodological standpoint. Next to a myriad of studies discussing important and well-attested elite individuals based on their epigraphical evidence,[1181] one perennial topic of Egyptological research can easily be identified that has always been tackled with the aid of prosopography: this is 'Pharaonic administration'.[1182] Current prosopographical research relies on a number of fundamental studies. As for New Kingdom Egypt, the most influential study on its civil administration based on prosopographical data is Wolfgang Helck's "Zur Verwaltung des Mittleren und Neuen Reiches".[1183] His prosopographical approach on topics such as Pharaonic economy is also more than evident in his monumental data collection "Materialien zur Wirtschaftsgeschichte des Neuen Reiches".[1184]

As for New Kingdom Nubia, Ingeborg Müller's "Die Verwaltung Nubiens im Neuen Reich" is the foundation for any further research into both the efforts and strategies of the Pharaonic state to govern and manage this region as well as about the individuals who represent the administrative apparatus behind this endeavour.[1185] Müller's study is based both on a prosopographical catalogue in topographical order and a collection of texts and text excerpts dealing with administrative issues of more general and specific nature concerning the Nubian provinces. Her prosopographical target groups therefore encompass all known people and functionaries that bear any connection to Nubia and/or that are epigraphically attested there.[1186]

In view of the main topic 'Pharaonic administration', two common research objectives generally go together hand in hand. Whilst the first is the unveiling of administrative structures,[1187] the other is to understand more about Pharaonic society and its people.[1188] Potential shortcomings and problems of the administration of Egypt and its institutions are, however, only rarely discussed.[1189] Inseparable from the general topic 'administration' are studies about individual kings that include assessments of the known high elite functionaries of the respective reigns in order to shed light on historical events, administrative structures and personal responsibilities.[1190] Besides different members of the royal family,[1191] particularly the highest civil officials and the institutions over which they preside as well as people around the king

[1179] Cf. Raedler 2009b, 310, who uses the German term "Personengeschichte" next to 'prosopography'.
[1180] Cf. Raedler 2009b, 311–313.
[1181] To name just a few out of many: Gomaà 1973; Meyer 1982; Bryan 1986; Dorman 1988; Amer 1999; Meurer 2015; Štubňová 2016.
[1182] Moreno García 2013a.
[1183] Helck 1958.
[1184] Helck 1961.
[1185] Müller 2013. Cf. also Morkot 2013b, with more literature.
[1186] Since the time of publication of Müller 2013, several new epigraphical sources have been re-studied or were newly discovered. All new sources relevant for this contribution are taken into account in the following paragraphs and are listed in the prosopographical tables.
[1187] Cf. for example the diagrams in O'Connor 1983, 208, fig. 3.4; Steinmann 1984, 32, 34, 37 and 40; Shaw 1999, 27, fig. 15; Raedler 2012, 125, fig. 1.
[1188] See also Helck 1963; Auenmüller 2017; Auenmüller 2018a; Auenmüller 2018b; Auenmüller in press.
[1189] Eyre 2004; Eyre 2009; cf. also Kóthay 2013; Moreno García 2013b; Moreno García 2013c.
[1190] Cf., e.g., Hari 1976; Aling 1976; Der Manuelian 1987; Bryan 1991; Cline and O'Connor 2006; Cline and O'Connor 2012; O'Connor and Cline 1998.
[1191] E.g. Dodson 1990; Fisher 2001.

and in the palace have been studied extensively.[1192] The same holds true for religious institutions and their staff, particularly of the Pharaonic main state temples.[1193] The Egyptian military and its professional hierarchy is also a well-researched demographic.[1194]

Since the responsibilities, relationships and dependencies of individual people to any government institution, bureaucratic entity or occupational group of the Pharaonic state manifest themselves in specific administrative titles, there is a myriad of dedicated studies on such office titles and all kinds of professional métiers.[1195] Additionally, also particular ranking titles that indicate social position and status of their holders have undergone scrutiny.[1196] Individual people that received the prestigious 'Gold of Honour' have also been discussed on a prosopographical basis.[1197] A further important perspective on administration and particularly prosopography as a means to learn more about people and certain communities focuses on places and defined regions. This encompasses, e.g., studies on workers' settlements blessed with a rich epigraphical and archaeological record, such as Deir el-Medine,[1198] Egyptian provincial towns and capital cities[1199] and larger topographical units within Egypt[1200] – and beyond, such as the provincial territories and vassal states of the Pharaonic state in the Levant[1201] or in Nubia.[1202] While prosopographical data has been used in studies to answer chronological and historical questions with more precision,[1203] it is in most cases adduced to understand the development and functioning of institutions and to understand the role and elite social fabric of certain towns and cities which are archaeologically – except from monumental temple architecture – only partially known.[1204] In this way, prosopography also helps to answer sociological questions in which the affiliation of an individual with a certain administrative body, his belonging to a specific group of officials or a specific place are used as proxies to determine social prestige and status.

6.3 Research questions and aims

Sai provides us with a prosopographical data set of a New Kingdom Pharaonic foundation in Upper Nubia. Its rather typical constituents have already been discussed in comparing the social fabrics of Sai, Soleb and Amara West with each other.[1205] Here, the main focus shall lie on Sai only. In order to assess the people present on Sai either temporarily or permanently during the New Kingdom, some general research questions were already formulated in the introduction. To answer the first question of which people are attested on Sai, prosopography is used to identify all historical actors beyond the royal sphere for whom a relation with and presence at the walled town can be determined by the available epigraphic evidence. This evidence may derive from quite different contexts and media, in the form of various categories of objects bearing names and titles of the individuals from funerary, temple or domestic spheres,

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1192 E.g. Raedler 2004; Raedler 2006; Raedler 2009a; Raedler 2012; Dresbach 2012; Auenmüller 2013 (viziers); Awad 2002 (treasury officials); Bohleke 1991 (granary overseers); Simonet 1987; Geßler-Löhr 1989; Geßler-Löhr 1990; Schulman 1990 (royal butlers); Roehrig 1990 (royal nurses, tutors, foster mothers and brothers); Feucht 1985 (*ḫrd.w-n-kꜣp*).

1193 E.g. Lefebvre 1929; Kees 1953; Moursi 1972; Graefe 1981; Maystre 1992; Raue 1999; Haring 1997; Awadalla 2000; Eichler 2000; Raedler 2011; Leblanc 2012; Staring 2015.

1194 Schulman 1964; Yoyotte and López 1969; Chevereau 1994; Gnirs 1996; Pamminger 1997; Raedler 2009; Spalinger 2013; Ashmawy 2014; Gnirs 2013.

1195 E.g. Haring 2000 (*sḫꜣ.w-n-ṯmꜣ*); Balanda 2009 (*ḥr.j-sštꜣ*); Onstine 2005 (*šmꜥ.yt*); Steinmann 1980 (craftsmen); Valloggia 1976; El-Saady 1999 (royal envoys); Ghalioungui 1983 (physicians); Polz 1990 (*šnꜥ*-personnel).

1196 Pomorska 1987 (*ꜥꜣ.y-ḫw-ḥr-wmn.j-n-nsw*); Onasch 1998 (*sḫꜣ.w-nsw*).

1197 Binder 2008.

1198 E.g. Černý 1973; Janssen 1997; Davies 1999; Häggman 2002.

1199 E.g. Van Dijk 1989; Raue 1999; Betrò 2001; Herzberg 2016.

1200 Zecchi 1999; Long 2012; Esposito 2014; Mahfouz 2017.

1201 Mohammad 1959; Helck 1960; Hirsch 2006.

1202 Habachi 1981, 155–168; Müller 1982; Gasse and Rondot 2003; Müller 2013.

1203 Bierbrier 1975.

1204 Martin 2000; Raue 1999; Auenmüller 2017; Auenmüller 2018a; Auenmüller in press.

1205 Auenmüller 2018b.

or more stationary text records such as, e.g., rock inscriptions. The first aspect of the prosopographical method, a systematic collection of person-related information, is met here with the compilation of New Kingdom personal data that includes the evidence from Sai itself and beyond (cf. Tab. 39).[1206]

This is, however, only one side of the endeavour. It becomes evident that the person-related data derive from a quite varied range of sources and objects on the one hand, but from a rather restricted number of contexts on the other hand, which in turn have a bearing on the typical range of potential and actual prosopographical documents. This holds especially true for the evidence from Sai itself. Here, three main archaeological and/or social contexts can be differentiated: the elite necropolis SAC5, the main Temple A and the southern part of the town with the so-called governor's palace and the magazine facility (SAF2 & SAF5). However, it must be pointed out that the archaeological context is not always specifically known for all the epigraphical sources from Sai. Nevertheless, a typical range of name and title bearing objects can be specified for these three contexts in general: shabtis and other funerary equipment from the tombs, statues from the temple and inscribed door jambs from the magazines.[1207] The data from outside Sai also have their specific contexts, as will be discussed with the individual cases. The different archaeological locations and find-spots of the individual epigraphical pieces will finally be considered to tell something about function, role and attachments of their owners.

In line with this research, the social and professional structure of the Pharaonic town as mirrored by prosopographical data will become visible, at least in parts. But it is not only the structure, but also the individual moments of belonging, embeddedness and identity of the respective people that could be explored. All the people that are discussed in the following can be understood as integral parts of Sai's social and professional fabric, visiting, populating and administering the town, might they have worked in the governor's residence or the adjacent storage facilities or might they have been engaged in either temple rituals or artisanal activities. Especially the permanent Sai residents were significant players in the local milieu. They were part of families or other social professional groups and networks, they experienced Sai's architectural and social environment, shaped and transformed their own town, houses and societal groups with their presence and engagement, and died and were – as members of their local community – laid to rest in the close-by necropolis in the presence and under involvement of their fellow people.

While individual biographies and experiences are in most cases hidden behind the epigraphical and archaeological evidence, the single texts, images, objects and archaeological contexts seen together allow at least for a general description and understanding of Sai's social structure during the New Kingdom. The general aim behind this line of research interest in New Kingdom prosopography is to develop 'localised prosopographies' of New Kingdom urban landscapes, assessing both towns and their elite cemeteries, in order to understand more about different kinds of local attachments of the people.[1208] The question of whether the individuals we are going to encounter here on Sai were – or considered themselves as – 'Egyptians' or 'Nubians' is not of immediate concern for this paper. The fact that they are present on Sai is proof that they belonged to the Sai community in one way or the other, regardless of their origin or ethnicity.[1209]

[1206] While the epigraphic evidence deriving from Sai itself constitutes the principal part of the data set, additional individual-related epigraphical sources from outside Sai are included where necessary for discussing the full range of data pertaining to the people of Sai and those individuals known to have had a specific relationship with the New Kingdom town. The data set from Sai presented here is based on currently available published information. There is still a large number of inscribed blocks on Sai with prosopographical data that have not been published yet. They are under study by Anne Minault-Gout (Paris-Sorbonne) and Luc Gabolde (CNRS). Future publications of theses blocks will enhance our prosopographical picture of Sai in the New Kingdom.

[1207] See Tab. 39, column 'Attestation', for more details.

[1208] Cf. Auenmüller 2017; Auenmüller 2018a; Auenmüller 2018b; Auenmüller in press.

[1209] On the issue of cultural entanglements and hybridities, cf. Smith 2003a; Buzon 2008; Török 2009, esp. 263–283; Morkot 2013b, 944–950; Binder 2017; Budka 2017g, 443–444; Smith and Buzon 2017; Spencer et al. 2017, 41–50. See also this volume, Chapter 8.1.

6.4 The prosopography of Sai in the New Kingdom

In the following paragraphs, the prosopographical data from and related with Sai are discussed in a top-down order that is based on the social rank and professional position of the individuals. The backbone of this endeavour is Tab. 38, where the published prosopographical data pertaining to Sai is collected in a chronologically organised manner. Each entry has a consecutive identifying number that will be used as its individual reference code. The next columns give titles and name of the persons as attested on the individual prosopographical sources, which are listed in the following column with their object type as well as their museum or site-specific inventory numbers. A general find context and individual bibliographic references of the objects are specified in the next section. The 'Date' column serves to roughly position objects and people chronologically. Depending on the available information, the date given there is either more general or more precise. 74 individual sources are listed, out of which seven (Docs. 2–4, 29–31, 57; 9,46%) do not come from Sai itself. The 74 sources account for 28 named individuals, whose titles are completely or at least partially preserved.[1210] This is generally a quite large number for a New Kingdom 'temple town' in Nubia,[1211] only Aniba has a more extensive prosopography with more than 140 names and individuals.[1212] Not all entries in Tab. 39 will be individually discussed in the following paragraphs (cf. esp. Docs. 45–46, 55–56, 72, 74). Due to their rather fragmented state or a lack of significant prosopographical data (title and name), they are less informative. Nevertheless, they add at least some piece of evidence to more members of the local Sai society.

Doc.	Title	Name	Attestation	Provenance and Reference	Date
1	*mḥ-jb-ꜥꜣ-m-n'.t-[rs.jt] [sꜣ-nsw-n-Kš]*	[*Jmn-m-nḫw*]	Stela S.1100 with two joining pieces	SAF5, north-west of town site and Qoeïqa el-Gama' (Rondot 2017, figs. 1–2)	Hatshepsut/ Thutmose III
2	*ḥꜣ.tj-ꜥ-n-Šꜣꜥ.t*	*Jꜥḥ-ms*	Statuette Kairo CG 42047 (JdE 38234)	Karnak, Naqya es-Zaptieh (Legrain 1906, 28–29; Müller 2013, 209, Tabelle 2.5.2, no. 16, 387, Beleg 8.2.5)	Thutmose III
3	*ḥꜣ.tj-ꜥ-n-Šꜣꜥ.t sẖꜣ.w*	*Jꜥḥ-ms*	Statue Bologna KS 1823	Unknown, probably Thebes or Elephantine (Pernigotti 1980, 37–39; cat.-no. 8; Müller 2013, 209, Tabelle 2.5.2, no. 16, 464, Beleg 54.20)	
4	*sẖꜣ.w*	*Jꜥḥ-ms*	Statue Khartoum No. 93	Buhen (Randall-Maciver and Woolley 1911, 111; H.S. Smith 1976, 209; Müller 2013, 209, Tabelle 2.5.2, no. 16, 440, Beleg 38.72)	
5	*wḥm.w-nsw jm.j-r'-r[w.]yt sꜣ-[ns]w jm.j-r'-ḫꜣs.wt*	*Nḥy*	Sandstone pillar S.1 originally from Temple A	Town/fort (Minault-Gout 2007, fig. 3; Müller 2013, 106–108, 456, Beleg 45.1; Davies 2014a, 7–9, figs. 7–9, pl. 6)	Thutmose III
6	*sꜣ-nsw jm.j-r'-ḫꜣs.wt-rs.jt wḥm.w-nsw*	*Nḥy*	Cuboid statue fragment S.734a	Reused in '*mur turc*' (Müller 2013, 106–108, 456, Beleg 45.5; Thill 2016, 288)	
7	*jr.j-pꜥ.t ḥꜣ.tj-ꜥ ḫtm.tj-bjt smr-wꜥ.tj rs-tp.j-n-nb-tꜣ.wj n-[rḫ.yt ꜥḥꜥ]-ḫr-ḥꜣ.t=f sꜣ-nsw jm.j-r'-ḫꜣs.wt-rs.jt*	*Nḥy*	Door jamb fragment seen by Lepsius, no No.	Town (Müller 2013, 106–108, 456, Beleg 45.2)	

Tab. 38 The prosopography of Sai in the New Kingdom. The lines highlighted in grey indicate that the evidence listed there does not originate from Sai itself

[1210] The entries lacking a name and/or a title as basis for a proper prosopographical assessment are not individually discussed in the following paragraphs.

[1211] Cf. Auenmüller 2018b.

[1212] Steindorff 1937, 248–250.

Doc.	Title	Name	Attestation	Provenance and Reference	Date
8	*sꜣ-nsw jm.j-r'-ḫꜣs.wt-rs.jt*	*Nḥy*	Door jamb fragment used as threshold F 1030	SAF5 (Müller 2013, 106–108, 456, Beleg 45.3; Adenstedt 2016, pl. 31.1)	Thutmose III
9	*sꜣ-nsw*	*Nḥy*	Door jamb S.119 = bloc 387	Reused in Temple A (Müller 2013, 106–108, 456, Beleg 45.4; Thill 2016, 285, pl. Ib, Doc.Sai.14)	
10	[...]	[*N*]*ḥy*	Lintel S.417 =bloc 027	Reused in Temple A area (Thill 2016, 274–276, fig. 7, Doc.Sai.01)	
11	[...]	[*Nḥy*]	Lintel fragment S.25 = bloc 6 + bloc F2018)	Reused in '*mur turc*' (Thill 2016, 276–277, fig. 8, Docs.Sai.02–03)	
12	*jr.j-pꜥ.t ḥꜣ.tj-ꜥ wḥm.w-nsw jm.j-r'-rw.yt sꜣ-nsw*	*Nḥy*	Lintel fragment S.1085 = bloc 385	SAF5 (Thill 2016, 277–278, fig. 9, Doc.Sai.04)	
13	[...] *jm.j-r'-rw.yt*	*Nḥy*	Lintel fragments S.109 = bloc 030; S.781 = bloc 022; blocs 195, 221, 200)	Reused in '*mur turc*' (Thill 2016, 278–280, fig. 10, Docs. Sai.05–09)	
14	[... *jm.j-r'-rw*].*yt sꜣ-nsw jm.j-r'-ḫꜣs.wt-rs.jt*	*Nḥy*	Lintel fragment S.6 = bloc 156	Probably SAF5 (Thill 2016, 280–282, fig. 12, Doc.Sai.11)	
15	[...]	*Nḥy*	Lintel fragment bloc 3008	Sai, no precise findspot given (Thill 2016, 282, fig. 14, Doc.Sai.13)	
16	[*sꜣ*]-*nsw*	[*Nḥy*]	Door jamb bloc F 1031	Sai, no precise findspot given (Thill 2016, 285, pl. Ic, Doc.Sai.15)	
17	*jm.j-jb-Ḥr-nb-ꜥḥ wḥm.w-nsw jm.j-r'-rw.yt*	*Nḥy*	Door jamb S.1079 = bloc F 1044	SAF5 (Thill 2016, 292, pl. IIf, Doc.Sai.20)	
18	*sꜣ-nsw jm.j-r'-ḫꜣs.wt-rs.jt wḥm.w-nsw jm.j-r'-rw.yt*	*Nḥy*	Door jamb fragment bloc 3048	From Morka (Thill 2016, 292, pl. IIc, Doc.Sai.21)	
19	[*jm.j-r'*]-*rw.yt*	[*Nḥy*]	Door jamb fragment S.1139 = bloc 186	SAF5 (Thill 2016, 292, pl. IIg, Doc.Sai.22)	
20	[...] *wḥ*[*m.w-nsw*]	*Nḥy*	Door jamb fragment bloc F 1032 in situ	SAF5 (Adenstedt 2016, pls. 20.1–3; Thill 2016, 292, pl. IIh, Doc.Sai.23)	
21	*wḥm.w-nsw*	*Nḥy*	Lintel fragment S.1146	SAF5 (Thill 2016, 292, Doc.Sai.24)	
22	*jm.j-r'-rw.yt*	*Nḥy*	Seal with sealing impression SAV1E 2326	SAV1E Feature 15 (Budka 2015a, 45; http://acrossborders.oeaw.ac.at/nehy-and-hornakht-at-sai-island/sav1e-2326-thumbnail/ [last accessed 5 January 2018])	
23	*jm.j-r'-ḫꜣs.wt-rs.jt*	[*Nḥy*]	Stela fragment, no No.	Gebel Abri 'next to cairns' (Müller 2013, 106–108, 455, Beleg 44.1)	
24	*ḥm-ntr-?...?*	*Ḥn-sbꜣ*	Shabti T8Cc79; *Nnꜣ* identified as mother of *Ḥn-sbꜣ*	SAC5, Tomb 8 (Minault-Gout and Thill 2012, 183–187, pls. 62, 67, 92)	Thutmose III–Amenhotep II
	-	*Nnꜣ*			
25	*ḥꜣ.tj-ꜥ*	*Jpy*	Heart scarab T5C32 (Inv. 1009, Khartoum SNM 23392)	SAC5, Tomb 5 (Minault-Gout and Thill 2012, 219–220, pls. 57, 102, 111)	Thutmose III–Thutmose IV

Tab. 38 *continued* The prosopography of Sai in the New Kingdom. The lines highlighted in grey indicate that the evidence listed there does not originate from Sai itself

Doc.	Title	Name	Attestation	Provenance and Reference	Date
26	*šmᶜ.yt*	*Ḥn.wt-ᶜꜣ.t*	Faience vase T5C62 (Inv. 1020, Khartoum SNM 23299)	SAC5, Tomb 5 (Minault-Gout and Thill 2012, 384, pls. 57, 170)	Thutmose III–Amenhotep III
27	*ḥꜣ.tj-ᶜ ḫrp/sḫm-n-ḫꜣs.t* (*ḥꜣ.tj-ᶜ-n-Sḫm*)	*Nby*	Shabti T5C33 (Inv. 1005; Khartoum SNM 23425)	SAC5, Tomb 5 (Minault-Gout and Thill 2012, 180–183, pls. 57, 94)	Thutmose IV–Amenhotep III
28	*ḥꜣ.tj-ᶜ-n-*[*Sḫm*] (*?*)	*Nby*	Copper-alloy vessels T5C38-44 (Inv. 1015a–f)	SAC5, Tomb 5 (Minault-Gout and Thill 2012, 381–383, pl. 169, Cressent and Raimon 2016, pls. 2–13)	
29	*ḥꜣ.tj-ᶜ ḫrp* (*ḥꜣ.tj-ᶜ-<n>-Sḫm?*)	*Nby*	Rock inscription 21-E-1/1 553a	Tangur (Hintze and Reineke 1989, 170, pl. 235; Müller 2013, 209, Tabelle 2.5.2, no. 18, 451, Beleg 42.20)	18th Dynasty
30	*ḥꜣ.tj-ᶜ ḫrp* (*ḥꜣ.tj-ᶜ-<n>-Sḫm?*)	*Nby*	Rock inscription 21-E-1/2 554a	Tangur (Hintze and Reineke 1989, 171, pl. 236; Müller 2013, 209, Tabelle 2.5.2, no. 18, 451, Beleg 42.19)	
31	*ḥꜣ.tj-ᶜ ḫrp* (*ḥꜣ.tj-ᶜ-<n>-Sḫm?*)	*Nby*	Rock inscription 21-E-4/11 573	Tangur (Hintze and Reineke 1989, 170, pl. 244; Müller 2013, 209, Tabelle 2.5.2, no. 18, 450, Beleg 42.18)	
32	*jr.j-pᶜ.t ḥꜣ.tj-ᶜ* [*ḫtm.w*]*-bjt* [*smr-wᶜ.tj*]*; wbꜣ.w-nsw-wᶜb-ᶜ.wj sꜣ-nsw jm.j-r’-ḫꜣs.wt-rs.jt*	*Wsr-stj.t*	Statue fragment(s) SNM 33130	Statue cache (Davies 2017a, 134–137, no. 1, figs. 1–6)	Amenhotep II
33	*sꜣ-nsw*	*Wsr-stj.t*	Statue fragment(s) SNM 33225	Statue cache (Davies 2017a, 138, no. 2, figs. 7–8)	
34	*wbꜣ.w-nsw-wᶜb-ᶜ.wj ḫrd-n-kꜣp sꜣ-nsw jm.j-r’-ḫꜣs.wt-rs.jt*	*Wsr-stj.t*	Statue fragment(s) SNM 34947	Statue cache (Davies 2017a, 138–139, no. 3, figs, 9–10)	
35	[*sꜣ-nsw*] *jm.j-r’*-[*ḫꜣs.wt*]*-rs.jt*	*Wsr-stj.t*	Statue fragment, no No.	Statue cache (Davies 2017a, 140, fig. 14, no. 6)	
36	*jr.j-*[*pᶜ.t*] *ḥꜣ.tj-ᶜ mḥ-jb-n-n*[*sw*]	[*Wsr-stj.t*]	Statue fragment SNM 36537	Statue cache (Davies 2017a, 140, fig. 15, no. 7)	
37	*sꜣ-nsw*	*Wsr-stj.t*	Stelae fragment(s) SNM 33224	Statue cache (Davies 2017a, 142, figs. 18–19, no. 10)	
38	[...]	[*Wsr-stj.t?*]	Stela or statue fragments, no No.	Statue cache (Davies 2017a, 143–145, fig. 24, no. 14)	
39	[*sꜣ-nsw-n-Kš*]	[*Wsr-stj.t?*]	Stela S.63 of Amenhotep II	Town/fort (Gabolde 2012, 130–135, fig. 13)	
40	*nb.y*	*Ḫnm.w-ms*	Shabti SAC5 350	SAC5, Tomb 26, Feature 6 (Budka 2017l, 52–63, figs. 1, 11–12, 15; Budka 2017c, 77–78, pl. 5; Budka 2017k, 119–121, fig. 15; Budka 2018e, 189–191, fig. 5)	Amenhotep II–Thutmose IV
41	*nb.y*	*Ḫnm.w-ms*	Faience vessel SAC5 353	SAC5, Tomb 26, Feature 6 (Budka 2015a, 46–50; Budka 2017h, 18–19; Budka 2017l, 58, fig. 13; Budka 2017c, 75–79; Budka 2018e, 190, fig. 6)	
42	[...]	*Ḫnm.w-ms*	Faience vessel SAC5 355	SAC5, Tomb 26, Feature 6 (Budka 2015a, 46–50; Budka 2017h, 18–19; Budka 2017c, 75–79)	

Tab. 38 *continued* The prosopography of Sai in the New Kingdom. The lines highlighted in grey indicate that the evidence listed there does not originate from Sai itself

Doc.	Title	Name	Attestation	Provenance and Reference	Date
43	*jm.j-r'-nb.yw*	*Ḫnm.w-ms*	Faience vessel SAC5 352	SAC5, Tomb 26, Feature 6 (Budka 2015a, 46–50; Budka 2017h, 18–19; Budka 2017c, 75–79)	Amenhotep II–Thutmose IV
44	*nb.t-pr*	*Ḥnn=f (?)*	Heart scarab SAC5 349	SAC5, Tomb 26, Feature 6 (Budka 2015e; 2015a, 46–50; 2017h, 18–19; Budka 2017l, 58, fig. 14; 2017c, 75–79; Budka 2018e, 191, fig. 7)	
45	*jr.j-pˁ.t ḥꜣ.tj-ˁ* [...]	[…]	Statue fragment, no No.	Statue cache (Müller 2013, 456, Beleg 45.11; Thill 2016, 286)	18th Dynasty
46	–	[...]*y*[...]	Stela T11Ca2	SAC5, Tomb 11 (Minault-Gout and Thill 2012, 163, pls. 68, 84).	18th–19th Dynasty
47	*nb.t*-[*pr*]	*ꜣs.t*	Stela T16S21	SAC5, Tomb 16 (Minault-Gout and Thill 2012, 162, pl. 84).	18th–19th Dynasty
48	*ḥm-nṯr*-[(*m*)-*r'-pr?*]	*Sj*	Heart scarab T8Cb45	SAC5, Tomb 8 (Minault-Gout and Thill 2012, 223–224, pls. 103, 108)	18th–19th Dynasty
49	*ḥm-nṯr*	*Mr-ms*	Heart scarab T2C50	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 216–217, pls. 53, 105, 109)	18th–19th Dynasty
50	*ḥr.j-wꜣḏ.tj*	*Ḥwy*	Heart scarab pectoral T2C25	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 212–215, pls. 53, 113)	18th–19th Dynasty
51	*wˁb*	*Ky-jry*	Shabtis T2C41 + T2C47	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 191–120, pls. 53, 97a–b)	Early 19th Dynasty
52	– / *wˁb*	*Ky-jry*	Heart scarab T2C48	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 215, pls. 103, 108)	
53	*sḫꜣ.w-n-šˁ*(*.t*)	*Ḥr-m-ḥꜣb*	Shabti T2C24	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 190, pls. 53, 97a)	Early 19th Dynasty
54	*sḫꜣ.w*	*Ḥr-m-ḥꜣb*	Heart scarab T2C11	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 212, pls. 53, 108)	
55	*?...?*	*Wsr-ḥꜣ.t*	Shabtis T2C20 + T2C34	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 189, pls. 53, 96b)	
56	–	*Wsr-ḥꜣ.t*	Amulet T2C23	SAC5, Tomb 2 (Minault-Gout and Thill 2012, 276, pl. 119)	
57	*ḥꜣ.tj-ˁ-n-ḥw.t-Šꜣˁ.t*	*Ḫr.jw=f*	Mentioned on stela Louvre C.103 as father of stela-owner *Ꜣ.y-sry.t Pꜣ-wr*	Unknown (Pierret 1878, 41; Posener 1958, 58, with fn. 172)	19th Dynasty
58	*wr-m-jꜣ.t=f wpw.tj-nsw-r-ḫꜣs.t-nb*(*.t*) [*jdnw*]-*n-Kš*	*Ḥr-nḫt*	Door jamb SNM 466 I	Town/fort (Fouquet 1975, 135–136, doc. 8, fig. 5; Budka 2001, 211, doc. no. 196; Müller 2013, 201, Tabelle 2.5.1, no. 14, 457, Beleg 45.13)	Ramesses II
	jdn.w	*Ḫꜣt*[*jꜣy*]			
59	[*jdn.w-n*]-*Kš*	*Ḥr-nḫt*	Door jamb SNM 466 II	Town/fort (Fouquet 1975, 136, doc. 9, fig. 7; Budka 2001, 211, doc. no. 197; Müller 2013, 201, Tabelle 2.5.1, no. 14, 457, Beleg 45.14)	
60	*jdn.w-n-Kš*	*Ḥr-nḫt*	Door lintel, no No.	From Saisab (Geus 2012, 170, fig. 21; Budka 2015e, 63, fig. 19)	
	nb.t-pr	*?Tꜣ-...?*			

Tab. 38 *continued* The prosopography of Sai in the New Kingdom. The lines highlighted in grey indicate that the evidence listed there does not originate from Sai itself

Doc.	Title	Name	Attestation	Provenance and Reference	Date
61	*jdn.w-n-Kš*	*Ḥr-nḫt*	Pyramidion SAC5 335	SAC5, Tomb 26, end of shaft (Budka 2015e, 62–63, figs. 17–18; Budka 2015a, 46–50; Budka 2017h, 18–19; Budka 2017c, 75–79).	Ramesses II
62	*jdn.w-n-Kš*	*Ḥr-˹nḫt˺*	Door lintel SAC5 083	SAC5, Tomb 26, end of shaft (Budka 2015a, 48)	
63	*jdn.w-n-Kš*	*Ḥr-nḫt*	Door jamb SNM 14412	Abri (Fouquet 1975, 135, doc. 7; Budka 2001, 210, cat. no. 195; Müller 2013, 201, Tabelle 2.5.1, no. 14, 455, Beleg 44.3)	
64	[...]	*Ḥr-nḫt*	Door jamb SNM, Exc.-No. 2-R-A/2	Amara East, Karassin (Fouquet 1975, 133–135, doc. 6, fig. 6)	
65	*ṯꜣ.y-ḫw-*[…] *ḥsy-n-ḥm=f* (*ṯꜣ.y-ḫw-*[*ḥr-wn*]*m.j-n-nsw?*)	*Ḥr-nḫt*	Door jamb S.772	Town/fort (Fouquet 1975, 136, doc. 10, fig. 8; Budka 2001, 211–212; doc. no. 198; Müller 2013, 168–169, Tabelle 2.2.2 A, no. 6, 457, Beleg 45.12)	
66	*sẖꜣ.w-nsw jm.j-r'-pr-n-sꜣ-nsw-Stꜣw* [*ḫrp-ḥsb?*]*-n-Jmn sẖꜣ.w-mꜣʿ-m-*[*Kš?*] *jm.j-r'-jḥ.w-n-Jmn-*[*m-Kš?*] *sẖꜣ.w-ḥsb-nbw jm.j-r'-ḫꜣs.wt-nbw-Kš-n-*[*sꜣ*]*-nsw ʿꜣ-n-pr sẖꜣ.w-*[...]	*Ḥr-m-ḥꜣb*	Stela fragment S.103	SAF '*mur d'enceinte nord*' (Vercoutter 1958, 156–157, pl. XLVI b; Kitchen 1980, 110.6–14; Habachi 1981, 139–144, fig. 46; Müller 2013, 257–259, Tabelle 2.6.2, no. 1, 457, Beleg 45.19)	Ramesses II, late
67	[*jm.j-r'-ḫꜣs.*]*wt-nbw-*[*n*]*-Jmn sẖꜣ.w-nsw*	*Stꜣw*	Ex-voto inscription on temple block, no No.	Town/fort (Breasted 1908, 98; Müller 2013, 131–136, Tabelle 2.1 A, no. 21, 456, Beleg 45.9; Oriental Institute Chicago Photo P 3262)	Ramesses II., yrs. 38–60
68	*sꜣ-nsw-n-Kš*	*Rʿ-mss-nḫt*	Rectangular plaque T3Ca87	SAC5, Tomb 3 (Minault-Gout and Thill 2012, 243, pls. 55, 117)	Ramesses III / IX–XI
69	*jm.j-r'-ḥm.w-nṯr-n-nṯr.w-nb.w jdn.w-n-Kš*	*Wsr-Mꜣʿ.t-Rʿ-nḫt*	Doors jambs seen by C. R. Lepsius, no No.	Town/fort (Vercoutter 1956, 76–77; Budka 2001, 212, doc. no. 199; Müller 2013, 205, Tabelle 2.5.1, no. 26, 457, Beleg 45.15)	Ramesses IX
70	*jm.j-r'-ḥm.w-nṯr-n-nṯr.w-nb.w jdn.w-n-Kš*	[*Wsr-Mꜣʿ.t-Rʿ-nḫt*]	Door jamb fragment S.11 (may be one of the jambs seen by C. R. Lepsius?)	Town/fort (Vercoutter 1956, 76–77, no. 18; Budka 2001, 212, doc. no. 200; Müller 2013, 205, Tabelle 2.5.1, no. 26, 457, Beleg 45.16)	
71	–	*Ptḥ-?...?*	Seven faience shabtis T20Ca92	SAC5, Tomb 20 (Minault-Gout and Thill 2012, 197, pls. 77, 98)	Ramesside
72	[*sꜣ/sẖꜣ.w/wḥm.w?*]*-nsw*	[...]	Stela T25P6 from shaft	SAC5, Tomb 25 (Minault-Gout and Thill 2012, 163, pls. 82, 85)	Ramesside
73	*jdn.w-n-Kš*	[...]	Door jamb fragment	Town/fort (Vercoutter 1956, 76, fn. 65; Müller 2013, 205, Tabelle 2.5.1, no. 26, 457, Beleg 45.17)	Ramesside
74	–	[...]*-nḫt*	Painted plaster fragment T9S1	SAC5, Tomb 9 (Minault-Gout and Thill 2012, 68–69, pl. 20.1)	Ramesside

Tab. 38 *continued* The prosopography of Sai in the New Kingdom. The lines highlighted in grey indicate that the evidence listed there does not originate from Sai itself

6.4.1 Viceroys of Nubia

The so-called Viceroys of Nubia (*sꜣ-nsw-*[*n-Kš*], lit. 'King's son [of Kush]') mark the beginning of the assessment of Sai's social fabric. They are one of the best known and most intensely studied groups of New Kingdom high elite officials thanks to a rich body of epigraphical evidence that stands out in num-

ber, format, quality and distribution.[1213] Since the duties of the viceroys have been outlined a number of times, there is no need to repeat this here.[1214] One specific characteristic of the viceroys with regard to Sai can, however, be mentioned in advance. In contrast to all the other individuals attested on Sai, the viceroys are only short-term or temporary members of Sai's social fabric.[1215] The geographical radius of all their attestations on the one hand, but also of their responsibilities on the other is evident proof enough. More detailed assessments of their relationship with Sai Island will be provided in the following paragraphs.

6.4.1.1 Jnbny Jmn-m-nḫw

Recently, Vincent Rondot was able to put together two stelae fragments from secondary contexts on Sai and one additional piece from Qoeïqa belonging to a viceroy of Nubia whose identity signature and image were intentionally erased (Doc. 1).[1216] Based on stylistic dating criteria and remaining hieroglyphic traces, Rondot argues that this stela belongs to the viceroy *Jnbny Jmn-m-nḫw*, who was in office during the joint reign of Hatshepsut and Thutmose III.[1217] If this identification is correct, this stela would mark the first epigraphically attested presence of an earlier 18th Dynasty king's son of Kush on Sai Island. However, this identification can also be challenged based on the full writing of the viceregal title in the form of *sꜣ-nsw-n-Kš* that is attested for the first time with *Jmn-ḥtp*, viceroy under Thutmose IV.[1218] The original location of the stela is difficult to determine. A temple on Sai would be an appropriate setting, however, there is no immediate evidence for a temple structure on Sai built during the joint reign of Hatshepsut and Thutmose III. The earliest phase of Temple A is associated with Thutmose only.[1219] Having said this, there is, however, another more monumental attestation possibly associated with Hatshepsut on Sai. The piece in question is the sandstone statue of a seated female Khartoum SNM 443,[1220] whose owner is identified in the inscription as *jr.jt-pꜥ.t wr*(*.t*)-*ḥsw.t ḥm.t-nṯr ḥm.t-nsw*-[*wr.t*] *ḫnm*(*.t*)-*nfr-ḥḏ*(*.t*) ([name erased])| *ꜥnḫ.tj ḏ.t*. This statue is either considered as belonging to Hatshepsut[1221] or depicting queen *Mr.yt-Jmn*.[1222] Be it Hatshepsut or *Mr.yt-Jmn*, such a statue would require a proper emplacement in a pre-Thutmose III temple or cult chapel (*ḥw.t-kꜣ*) context, for which there is a fair amount of circumstantial evidence.[1223]

The putative presence of *Jnbny Jmn-m-nḫw* at Sai during the joint reign of Hatshepsut and Thutmose III could also be tied in with another category of evidence. In Feature 15 in SAV1 East, a subterranean room build of red bricks and with a vaulted roof, at least 20 sealing impressions naming Hatshepsut were found in the lower filling.[1224] Thanks to the stratigraphy of the deposits, these clay seals can be related to a use phase of this subterranean magazine under Hatshepsut until mid-Thutmose III. These finds thus "indicate an Egyptian presence and administrative activities in Nubia immediately after the Kerma revolt under Thutmose II during the era of Hatshepsut."[1225] The seal impression of *Nḥy* (Doc. 22) from this context hints at the involvement of the viceroys in the administrative activities taking place here, an action framework that could also be presumed for his predecessor *Jnbny Jmn-m-nḫw* on Sai under Hatshepsut, if the identification on the stela is correct.

1213 Cf. Müller 2013, esp. 18–31, 97–153, Tabelle 2.1 A–B.
1214 Cf., e.g., Habachi 1981, 169–183; Török 2009, 169–181; Morkot 2013b, 926–936, esp. 934–936; Müller 2013, 18–30; see also Budka 2015b, 70–72.
1215 For the viceroys on Sai, cf. also Budka 2015b, 72–73; Auenmüller 2018b, 239–256.
1216 Rondot 2017.
1217 Cf. Davies 2008; Müller 2013, 105–106, Tabelle 2.1 A, no. 4.
1218 Davies 2017b, 66, Fn. 50; cf. Müller 2013, 112–150.
1219 Cf. Thill 1997; Azim and Carlotti 2012; Adenstedt 2016, 34.
1220 Hinkel and Ali Mohammed 2002, 24; Gabolde 2012,127, figs. 11a–d.
1221 Valbelle 2006, 48; Minault-Gout 2007, 282.
1222 Gabolde 2012, 125–126.
1223 Cf. Minault-Gout 2007; Gabolde 2012; Budka 2015b, 68–69.
1224 Budka 2015a, 44–45.
1225 Budka 2015a, 45.

Jnbny Jmn-m-nḫw is known from eight rock inscriptions a Sehel, Shalfak (2×), Kumma, Tangur (2×), Dal and Tombos as well as a statue from Thebes, a stela probably from Buhen and an *ex-voto* in the Kumma temple.[1226] Possibly, one could add the Sai stela (Doc. 1) to his epigraphical record, which would indicate his at least temporary presence on Sai during the joint reign of Hatshepsut and Thutmose III. Otherwise, one should add this stela to the dossier of a later viceroy whose identity is yet to be determined. *Jnbny Jmn-m-nḫw*'s occupational presence on Sai may have provided him with the appropriate context of action in administrative, religious and political terms for setting up and consecrating his temple stelae there. The geographical distribution of *Jnbny Jmn-m-nḫw*'s attestations does not only circumscribe his individual sphere of action, it also agrees well with the viceregal territoriality of both his successors *Nḥy* and *Wsr-stj.t*. He would, therefore, be no exception to the non-local Egyptian elite administrators, who came to visit Sai during their different missions on certainly several occasions. One of these occasions became apparent – or medialised – in the form of the temple stela (Doc. 1).

6.4.1.2 Nḥy

Nḥy is one of the best known mid-18th Dynasty viceroys thanks to a large number of surviving and informative monuments.[1227] *Nḥy* flourished under Thutmose III, from year 22 to the end of his reign. He is attested at Sai with at least 14 epigraphical monuments, making Sai one of the places with the highest number of individual sources (Docs. 5–17, 19–22). The most famous one of these is the sandstone pillar bearing the historical inscription which describes the building of the Amun temple (Temple A) on Sai under *Nḥy*'s direction in year 25 of king Thutmose III (Doc. 5). This temple, or an adjacent chapel, may also be the place where *Nḥy* installed his cuboid statue (Doc. 6).[1228] He is furthermore evidenced on Sai with a large amount of fragmentary architectural elements, such as door jambs and lintels from different sorts of find contexts that once adorned a number of doorways especially in the administrative city centre with the magazine area (Docs. 7–10, 12–15, 17–18, 20–21). The AcrossBorders mission also contributed to the list of *Nḥy*'s attestations on Sai Island with an intriguing seal impression from Feature 15 in SAV1 East (Doc. 22). And finally, there are four fragmented inscribed artefacts from Sai and environs that can be attributed to *Nḥy* on stylistic and epigraphical grounds with reasonable certainty (Docs. 11, 16, 19 and 23).

Nḥy's professional responsibilities are reflected in his administrative titles. Next to his viceregal title and some epithets, he is identified as *jm.j-r'-ḫ3s.wt*-(*rs.jt*) 'overseer of (southern) foreign countries' (Docs. 5–8, 14, 18 and 23), *wḥm.w-nsw* 'royal herald' (Docs. 5–6, 12, 17, 18 and 20) and *jm.j-r'-rw.yt* 'overseer of the *rw.yt*-administrative building' (Docs. 5, 12–14, 17–19 and 22) on the objects from Sai. While the first title can be understood as designating an administrative responsibility in and for the southern frontier zone of Kush,[1229] the other two titles are, according to a recent study of Florence Thill, closely related to *Nḥy*'s role in the administration and supply of storage places such as the magazines on Sai and at Aniba,[1230] while underlining the status of both towns as administrative centres of Lower and Upper Nubia under Thutmose III.[1231] The seal impression from Feature 15 (Doc. 22) is further proof of the direct involvement of *Nḥy* in administrative activities undertaken on Sai. Interestingly, *Nḥy* seems to refer to both these two mentioned offices, *wḥm.w-nsw* and *jm.j-r'-rw.yt*, in his biographical texts as stages in his earlier career before his promotion to the viceregal office, provided, the reconstruction of the titles in the inscriptions is correct.[1232]

In assessing the geographical distribution of *Nḥy*'s attestations, it becomes apparent that he was, in contrast to those people living and buried at Sai (see below), not really a long-term resident of Sai. He,

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[1226] Davies 2008, esp. 44, with references.
[1227] Budka 2001, 114–115; Leblanc 2009; Müller 2013, 106–108, Tabelle 2.1 A, no. 6; Thill 2016; Budka 2015b, 71–73.
[1228] Cf. Budka 2015b, 72–73.
[1229] Morkot 2013b, 934–944.
[1230] Thill 2016, 290–294, 298. Müller 2013, 191, puts the *jm.j-r'-rw.yt*-title into her group of messengers from Egypt.
[1231] For the ideological – political and loyalistic – dimension of such inscribed blocks, see Budka 2017h.
[1232] Müller 2013, 285–286, Anhang 2.1.1, nos. 4–5.

however, should have been present in the fortified town – possibly living and working in the governor's residence with access to the magazines storing the goods for maintaining the operations of the 'temple town' and for shipment to Egypt proper – for quite long periods of time. For such an interpretation, one can take the high number of epigraphical sources from Sai and especially his involvement in the Temple A building project into account. Since genealogical sources are lacking, the social and geographical provenance of *Nḥy* is unknown. The presence of his tomb in Thebes might be an argument for his origin from there. He could, however, also have originated from an Egyptian provincial elite family while he was, thanks to his elevation into the function as viceroy,[1233] allowed and able to build a tomb in the mid-18th Dynasty residence necropolis *par excellence*: Thebes.[1234]

Nḥy's sphere of influence and presence ranges from Thebes, where his tomb is located, to the end of New Kingdom state control at the Hagar el-Merwa at Kurgus.[1235] As member of the peripatetic elite responsible for the Egyptian province territories in Upper and Lower Nubia under Thutmose III, he established the seat of administration and power for Lower Nubia (Wawat) at Aniba, while Sai was inaugurated as headquarters for Upper Nubia (Kush).

6.4.1.3 Wsr-sṯj.t

One of *Nḥy*'s successors as viceroy of Nubia was *Wsr-sṯj.t*.[1236] Like his predecessors, he was recruited from within the Egyptian elite. He acted in this office under Amenhotep II and was later subject to a *damnatio memoriae*.[1237] He is attested on Sai with at least five (Docs. 32–35, 37), if not several more statue and stelae fragments (Docs. 36, 38–39) that were found in a statue cachette in 1939 and have been recently pieced together by William Vivian Davies and his collaborators.[1238] They were once installed in a temple setting in Sai, most likely the aforementioned Temple A, whose construction continued under Amenhotep II.[1239] They form one, if not the most important private statuary ensembles in Nubia for the New Kingdom. In view of the type of evidence left by *Nḥy* on Sai, one can observe a very stark contrast. While *Nḥy* dedicated only one cuboid statue into the temple on Sai (Doc. 6) and is first and foremost associated with a large number of architectural elements such as door jambs and lintels, which adorned doorways in the magazine sector SAF5,[1240] it is his successor *Wsr-sṯj.t* who appears on Sai with a huge array of three-dimensional statuary representations of his person of varying type and size and most likely coming from a royal workshop.[1241] According to Davies, all these statues of the viceroy *Wsr-sṯj.t* "provide firm evidence, adding to that of other monuments from the site […], that a significant programme of renewed investment took place under Amenhotep II and certainly during Usersatet's period of office, the viceroy's large number of statues indicative of his special status and involvement in the process."[1242]

Sai is just one of the places in Egypt and Nubia where *Wsr-sṯj.t* is attested. The distribution of his sources also mirrors his functional duties as viceroy, particularly with regard to his appearances in Nubia. Based on Davies' works, one can create an up-to-date list of *Wsr-sṯj.t* documents,[1243] which includes a statue from Deir el-Medine, a shabti of unknown provenance, a shrine at Gebel el-Silsileh, several rock

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1233 The short 'biographical' texts from Semna and Sai (Doc. 6) refer in the typical manner to the favours of the king with regard to *Nḥy* in promoting him into his different career stages; Müller 2013, 285–286, Anhang 2.1.1, nos. 4–5.

1234 Cf. the considerations in Auenmüller 2012 about provincial New Kingdom mayors with a tomb in Western Thebes.

1235 Müller 2013, 106–107, with the list of his attestations from Western Thebes (cf. also Leblanc 2009), Elephantine, Sehel, Aniba, Qasr Ibrim, Faras, Buhen, Semna, Kumma and Sai; for *Nḥy* at Akascha West and Kurgus, see Davies 2017b, 85, no. 31, fig. 22 upper, 93, fig. 22 lower.

1236 Davies 2009, 26–31; Müller 2013, 110–112; Davies 2017a; Davies 2018. On the two officials acting as viceroys of Nubia chronologically between *Nḥy* and *Wsr-sṯj.t*, see Müller 2013, 108–109.

1237 Der Manuelian 1987, 158; Davies 2009, 23; Gabolde 2012, 134.

1238 Davies 2017a.

1239 Azim and Carlotti 2012; Adenstedt 2016, 34.

1240 Adenstedt 2016, 35–44.

1241 Davies 2017a, 145.

1242 Davies 2017a, 145.

1243 Cf. also Müller 2013, 110.

inscriptions at the First Cataract, particularly at the Gebel Tingar and on Sehel, another rock-cut shrine at Ibrim, a stela from Wadi Halfa (originally from Buhen), a statue from Uronarti, two stelae from Semna, a stela found at Amara West (most probably originally from Sai?), the statues and stelae from Sai as well as a rock inscription together with *Ḥḳꜣ-m-sꜣ=sn* at Tombos.[1244] The geographical range of documents is not as wide as the one of *Nḥy*, but conforms to the typical display of members of the peripatetic high elite concerned with administering ancient Nubia. With the statues (Docs. 32–36) and the other stelae fragments (Docs. 37–39), Sai is now second amongst the hotspots of *Wsr-sṯj.t*'s monumental presence. Most of his attestations are to be found at the First Cataract, where he inscribed himself into the social and ritual landscape particularly in the form of rock inscriptions. Due to the clustering of rock inscriptions at the First Cataract and his theophorous name meaning 'Satis is powerful', it is generally assumed that *Wsr-sṯj.t* originated from the Aswan area. *Wsr-sṯj.t*'s burial place is still to be found, however, it has recently been suggested that TT 116 at Sheikh Abd el-Qurna could belong to the viceroy *Wsr-sṯj.t*.[1245] *Wsr-sṯj.t*, originating from a provincial background, would have risen in rank and function until he was promoted as viceroy, while he decided to have his burial at Thebes.[1246] In his function as viceroy, *Wsr-sṯj.t* visited Sai a number of times and installed his monumental statuary ensemble there. While he was an external member of the social fabric, taking only temporary residence at Sai, he might have had personal or professional contacts with people such as the priest *Ḥn-sbꜣ* (Doc. 24), the mayor *Jpy* (Doc. 25) or the overseer of goldworkers *Ḫnm.w-ms* (Docs. 40–43), who represent the local social milieu of Sai during Amenhotep II in all its occupational dimensions.

6.4.1.4 Stꜣw

The viceroy of Kush *Stꜣw* is one of the most prominent Egyptian officials attested in the late reign of Ramesses II. He is known from an extraordinary high number of around 100 sources providing details about his career, his presence, his works and his social networks and attachments.[1247] They circumscribe a geographical sphere from the Ramesside capital city of Pi-Ramesse in the Eastern Delta down to Tombos at the Third Cataract and even beyond to the Hagar el-Merwa at Kurgus.[1248] On Sai, his name is present at least two times. Once in the biographical inscription of *Ḥr-m-ḥꜣb* where this official gives details about his career under successive viceroys, including *Stꜣw* (Doc. 66).[1249] So, this very piece of evidence cannot be taken as proof for *Stꜣw*'s personal presence on Sai. There is, however, rather unambiguous proof of *Stꜣw* on Sai. During his expedition to Nubia, James Henry Breasted visited Sai and came across an *ex-voto* inscription on a possible temple block mentioning an [*jm.j-r'-ḫꜣs.*]*wt-nbw*-[*n*]-*Jmn sẖꜣ.w-nsw* '[overseer of the] gold-[countries of] Amun and royal scribe' *Stꜣw* (Doc. 67). This person can be identified as the viceroy *Stꜣw*, based on parallels to the particular *jm.j-r'-ḫꜣs.wt-nbw-n-Jmn* title.[1250] While *Stꜣw*'s presence on Sai is proven with this piece, it is interesting to note that he has not been attested (yet?) at nearby Amara West, the administrative centre of Upper Nubia in the 19th and 20th Dynasties.[1251] In addition, there are two yet unpublished blocks on Sai that bear his identity signature[1252] and allow enlarging our understanding of *Stꜣw*'s epigraphical presence in the town.

Since the future publication of these blocks will provide more reliable data, this is not the moment to anticipate any results. It can, however, already be said that the appearance of *Stꜣw* on Sai during the later years of Ramesses II provides another significant argument – next to other Ramesside prosopographical

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1244 Davies 2009, esp. 27–28, with references; Davies 2017a; Davies 2018, esp. 354.
1245 Hartwig 2010, 159–167.
1246 Cf. Auenmüller 2012 for more provincial officials with tombs in Western Thebes.
1247 Helck 1975, 85–112; Kitchen 1980, 80–111; Raedler 2003; Kuckertz 2012; Müller 2013, 131–136, Tabelle 2.1 A, no. 21.
1248 For *Stꜣw* at Kurgus Davies 2017b, 85, no. 32, fig. 22.
1249 Cf. also Vercoutter 1958, 157; Raedler 2003, 143, no. 84. Helck 1975, 112, no. 39, understood this as direct evidence for *Stꜣw* himself.
1250 Cf. Müller 2013, 131.
1251 Auenmüller 2018b, 249–254.
1252 I am indebted to Julie Masquelier-Loorius for providing me with information on unpublished material of *Stꜣw* from Sai.

evidence (Docs. 58–66) – for the continued important status and role of Sai in the 19th Dynasty in parallel to the actual administrative headquarters of Upper Nubia at Amara West a little further north.[1253] During the 20th Dynasty, as will be seen below, Sai remains to be a place of elite presence and display, albeit limited (cf. Docs. 68–69). Whether *St3w* stood in contact with the deputy of Kush *Ḥr-nḫt* (Docs. 58–65) depends on the chronological position of this latter official. The viceroy should, however, definitely have had professional contact with his *jm.j-r'-pr-n-s3-nsw-St3w* 'steward of the viceroy *St3w*' *Ḥr-m-h3b* (Doc. 66) on Sai itself or elsewhere.[1254] It is, therefore, now possible to link *St3w* to the social fabric of Sai as an at least temporary visitor.

6.4.1.5 Rꜥ-mss-nḫt

One 20th Dynasty viceroy is epigraphically attested on Sai. In Tomb 3 of SAC5, pottery vessels of 18th Dynasty and Ramesside date were found, indicating several use phases of the burial chamber. Next to the skeleton in the north, a rectangular faience plaque with the identity signature *s3-nsw-n-Kš Rꜥ-mss-nḫt* 'king's son of Kush *Rꜥ-mss-nḫt*' on its reverse and the standing official adoring the cartouche of Ramesses III on the obverse came to light (Doc. 68).[1255] This is one of the very few plaques of this type from a reliable archaeological context.[1256] The burial and skeleton, with which this object was found associated, however, is generally not considered as that of the viceroy, who held office either under Ramesses III–VI or IX–XI. The viceroy *Rꜥ-mss-nḫt* represented on the rectangular faience plaque from Sai has generally been identified as the eponymous *s3-nsw-n-Kš* who is attested under Ramesses IX and – with an interruption – the early years of Ramesses XI.[1257]

The fact that *Rꜥ-mss-nḫt* adores the cartouche of Ramesses III on the Sai plaque should provide a reason for re-assessing the date of this specific official. Potentially corroborating the idea of the existence of an earlier *s3-nsw-n-Kš* with this name, there is epigraphical evidence from the Amara West temple of a viceroy *Rꜥ-mss-nḫt* associated with the cartouches of Ramesses VI.[1258] However, these two tableaus there may also have been added later under the earlier horizontal lines naming Ramesses VI and could, therefore, belong to the later viceroy *Rꜥ-mss-nḫt* (Ramesses IX–XI).[1259] In the Amara West tableau on the western door jamb, *Rꜥ-mss-nḫt* is not identified as viceroy, but as *jm.j-r'-mšꜥ-n-nb-t3.wj* 'army general of the Lord of the Two Lands', a title that should be added to his title portfolio if he would indeed be identical with the later Ramesside king's son of Kush.[1260] In the tableau on the eastern door jamb his name is followed by a text that seems to be a filiation due to the initial *s3*-hieroglyph (meaning 'son of...'),[1261] which currently, however, escapes a satisfactorily reading.[1262] If this is indeed a filiation, the name of his father, viceroy *Wn-t3-w3t* (Ramesses IX) could be expected here.[1263] The present hieroglyphic text, however, does not fit with such a name.

Based on this discussion, it is thus tempting to identify the Sai *Rꜥ-mss-nḫt* with his Amara West namesake, also considering the fact that for the time between the end of Ramesses' III reign and that of Ramesses VI there is only weak evidence for viceroys, represented in the person of *S3-3s.t*, who is securely attested at Amara West only.[1264] However, this is a rather speculative proposal that awaits fur-

[1253] Cf. Auenmüller 2018b, 247.
[1254] The mayor *Ḫr.jw=f* (Doc. 57) may also be a local subordinate of *St3w* depending on his exact date.
[1255] Cf. Budka 2017d, 38–39.
[1256] For such objects, cf. Hornung and Staehelin 1976, 37–38, 88–89, 301–302; Keel 1995, 89–91; Spieser 2000, 224–227.
[1257] Cf. Minault-Gout and Thill 2012, 243; Müller 2013, 146, Tabelle 2.1 A, no. 31; Spencer 2016, 40–41.
[1258] Müller 2013, 453, Beleg 43.16; Spencer 2016, 39–40, pls. 10–11.
[1259] Spencer 2016, 39–40.
[1260] For his other titles, see Müller 2013, 146.
[1261] Gardiner sign-list G 39.
[1262] A very provisional reading would be: *s3 sbj* (or *jni*?) *n šfn.w* 'son (of?) …?'.
[1263] On this person Müller 2013, 144–145, Tabelle 2.1 A, no. 30, with further literature.
[1264] Müller 2013, 143, Tabelle 2.1 A, no. 28, Beleg 43.13; Spencer 2016, 39, pls. 58f, 59f, 62–63.

ther substantiation.[1265] If we come back to the conventional identification of the Sai *Rꜥ-mss-nḫt* with the viceroy of the same name active under Ramesses IX–XI, we can localise his geographical provenance. The origin of *Rꜥ-mss-nḫt*'s family is Assiut,[1266] where he also could have been buried. Thus, the person in Tomb 3 who was equipped with the rectangular faience plaque or amulet may in consequence have been a member of the late Ramesside administration of Nubia on Sai who was given this amulet as a token of loyalty during his lifetime and not the viceroy himself. More rather circumstantial evidence in support of the idea that this is a plaque of the later Ramesside viceroy *Rꜥ-mss-nḫt* is also provided by the presence of the *jdn.w-n-Kš Wsr-Mꜣꜥ.t-Rꜥ-nḫt* (Docs. 69–70) on Sai, who can be dated to the time of Ramesses IX. Due to their jobs, both officials should have had close personal and professional contact on Sai itself or elsewhere, discussing administrative matters concerning Upper Nubia. Summing up, the presence of the faience plaque naming the viceroy *Rꜥ-mss-nḫt* in Tomb 3 can be interpreted from several directions.[1267] It could, however, possibly also be seen as indication that *Rꜥ-mss-nḫt* – may he date to Ramesses III or IX – was present on Sai for a certain period during his tenure.

6.4.2 Deputies of Kush

The so-called 'deputy of Kush' (*jdn.w-n-Kš*) stood under the direct authority of the viceroy together with his counterpart responsible for Lower Nubia, the *jdn.w-n-Wꜣwꜣ.t*.[1268] In creating this institution of the two distinct *jdn.w*,[1269] the territorial division of Nubia into Lower and Upper Nubia as the two provinces of the Pharaonic state as well as the territorial range of responsibilities of the respective *jdn.w*'s become apparent. Robert Morkot voiced the idea that these officials "appear to have been drawn from the hierarchy within Nubia and not appointed from Egypt."[1270] Müller gives a list including 30 deputies, in which the attested *jdn.w-n-Wꜣwꜣ.t* outnumber their counterparts in Kush.[1271] This ratio is, however, more an artefact of preservation than an actual fact. It is, however, striking, that all the attestations of these functionaries derive from Nubia, supporting the idea of Morkot, and that in those cases where the deputies' tombs are known, they can be found in the necropoleis belonging to the respective administrative centres. Aniba and temporarily Faras served as seat of the deputies in Wawat, while Soleb and Amara West were their headquarters in Kush.[1272] Based on the evidence from Sai, this town also played an important role for at least two Ramesside *jdn.w*.

6.4.2.1 Ḥr-nḫt

The first one of these deputies of Kush from Sai is *Ḥr-nḫt*, generally dated to the time of Ramesses II.[1273] During the AcrossBorders campaigns in SAC5, a new structure, Tomb 26, was discovered and excavated.[1274] At the bottom of its vertical tomb shaft an inscribed door lintel piece (Doc. 62) as well as a

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[1265] Accepting this idea, one could also speculate that the burial of this viceroy *Rꜥ-mss-nḫt* is indeed the one on Sai. In other instances, such rectangular faience plaques have been interpreted as providing the name of the buried; e.g. the rectangular steatite plaque Philadelphia E15563 from tomb 2010 in Sedment of a *sḫꜣ.w-nsw jm.j-r'-mšꜥ Ḥrj* (Petrie and Brunton 1924, 32, pl. 58, no. 46; Franzmeier 2017, 379–380, 1575–1576, no. 2010/Sch/003). For Nubia, cf. also the rectangular plaque of the viceroy *Msswj* (date Merenptah) from tomb SA 23 in Aniba (Cairo JdE 41832: Steindorff 1937, 101, pl. 54, no. 32; Kitchen 1982, 96,2–4, no. 57.6; Keel 1995, 91, §222; Spieser 2000, 227, no. 135), whose place of burial is, however, still debated: Müller 2013, 138–139; Auenmüller 2013, 448–449.

[1266] Amer 1999; Müller 2013, 143–146.

[1267] Cf. Budka 2017d, 39.

[1268] Morkot 2013b, 936–937; Müller 2013, 44–46, 197–206.

[1269] Sometime during the reign of Amenhotep III: Klotz and Brown 2016, 296–297. In the earlier 18th Dynasty, *jdn.w* are attested, but without the territorial specification; cf. also Müller 2013, 44–46.

[1270] Morkot 2013b, 936.

[1271] Müller 2013b, 197–198.

[1272] Müller 2013, 44–45.

[1273] Kitchen 1980, 117–118; Budka 2001, 210–212; Müller 2013, 201, Tabelle 2.5.1, no. 14; Budka 2015a, 49–50.

[1274] Cf. Budka 2015a, 46–50; Budka 2015e, 58–64; Budka 2017k; Budka 2017l; Budka 2018e.

fragmentary pyramidion (Doc. 61) were found together with other archaeological material.[1275] The inscriptions on both objects identify their owner as *jdn.w-n-Kš* 'deputy of Kush' *Ḥr-nḫt*. He was already known from three door jamb fragments from secondary contexts on Sai Island (Docs. 58–59; 65). Further lower door jamb parts were found in Abri (Doc. 63) and a little further north in Amara East (Doc. 64). It has recently been argued that all these objects might originally have come from Amara West.[1276] However, until now, no evidence for an *jdn.w Ḥr-nḫt* could be discovered at this neighbouring site, where the deputies of Kush had their headquarters in Ramesside times.[1277] Finally, there is – next to the evidence from Tomb 26 – one additional architectural fragment in favour of Sai as the origin of all these inscribed blocks:[1278] the lintel showing *Ḥr-nḫt* together with his wife that was recently recovered in the modern local village Sai Sab (Doc. 60).

Considering this data, particularly in view of the provenance of several blocks from the cemetery, it becomes apparent that *Ḥr-nḫt* had a monumental Egyptian style tomb with a pyramid in SAC5.[1279] The other blocks, especially the many door jamb fragments, provide evidence for the existence of an official building somewhere within the town of Sai, be it a more formal *jdn.w*'s-residence[1280] or an administrative and/or magazine complex.[1281] Both *Ḥr-nḫt*'s pyramid tomb and built structure(s) in the town put Sai on the map for a substantial administrative presence during Ramesside times, when a little further north at Amara West a new administrative seat of power was founded by Seti I and substantially redeveloped under Ramesses II. And indeed, one prosopographical connection can be drawn between the two sites. In the floor of magazine E12.4B at Amara West, a door lintel of the viceroy of Nubia *Ḥkꜣ-nḫt* was found, on which the viceroy was shown in adoration of the cartouches of Ramesses II and was followed by an *jdn.w-n-nb-tꜣ.wj* 'deputy of the Lord of the Two Lands' *Ḥtjꜣy*.[1282] Since this title is unparalleled in Nubia, Müller suggests understanding *jdn.w-n-Kš* here, *nb-tꜣ.wj* being a wrong reading/writing of '*Kš*'.[1283] Whatever reading is favoured, this *Ḥtjꜣy* can, according to Müller, be identified with the *jdn.w Ḥꜣt*[...] that is named as *Ḥr-nḫt*'s father on one of the door jambs from Sai (Doc. 58). In accepting this identification, *Ḥr-nḫt* should, chronologically speaking, be dated slightly after or concomitant with his father *Ḥꜣt*[*jꜣy*], who was active in the earlier years (3–10/20) of Ramesses II during the tenure of the viceroy *Ḥkꜣ-nḫt*.[1284]

Besides his main deputy title, *Ḥr-nḫt* is characterised as *wpw.tj-nsw-r-ḫꜣs.t-nb*(*.t*) 'royal messenger in/to every foreign country' (Doc. 58). According to Michel Valloggia, officials with such a title are

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[1275] Budka 2015a, 47–48. The three pieces of a door jamb found associated with the pyramidion (Doc. 61) and the inscribed door lintel fragment (Doc. 62) and registered as SAC5 122 bear no inscriptions.

[1276] Masquelier-Loorius 2017, 153–154.

[1277] Auenmüller 2018b, 249–254.

[1278] Cf. Budka 2015a, 49.

[1279] Cf. Budka 2015e, 63–64, fig. 20.

[1280] For such a building at neighbouring Amara West, attested from Seti I until later Ramesside times, cf. Spencer 1997, 161–186; Spencer 2017, 325–334.

[1281] Budka 2015e, 63; Budka 2015a, 49.

[1282] Spencer 1997, 170–171, pl. 150b; Budka 2001, 202–203, cat. no. 179; for *Ḥkꜣ-nḫt*, see e.g. Müller 2013, 125–126, Tabelle 2.1 A, no. 17.

[1283] Müller 2013, 200; cf. Taylor 2001, §§703–726, and Al-Ayedi 2006, §§631–676, for the repertoire of New Kingdom *jdn.w*-titles. In the 18th Dynasty, under Thutmose III and Amenhotep II, the owner of Theban tomb TT 88, *Pḥ-sw-ḫr* called *Snw*, bears the title *jdn.w-n-nsw/ḥm=f* 'deputy of the king/His Majesty' (Eisermann 1995, 66; for the tomb, cf. also Gnirs et al. 1997, 74–83), indicating his representation of and proximity to the king as a military official. *Ḥr-m-ḥꜣb*, the future king, is also aptly characterised as *jdn.w-n-nsw/ḥm=f*-(*m-s.t-nb.t/m-tꜣ-r-ḏr=f*) 'deputy of the king/His Majesty (in every place/in the entire land)' in his tomb in Saqqara (Martin 1989, 163). These titles circumscribe his leading role in the government of Tutankhamun. Based on this evidence, the *jdn.w-n-nb-tꜣ.wj*-title of *Ḥtjꜣy* should be taken seriously. The epigraphical copy is clear and all the hieroglyphic elements of the *nb-tꜣ.wj* writing are present. In addition, such a title is also attested on Ostracon BM EA8494 for an *jdn.w-n-nb-tꜣ.wj-m-S.t-Mꜣꜥ.t Jmn-nḫt* (Demarée 2002, 21, pls. 46–47) and in graffito no. 1072 in the hills of Western Thebes identifying an *jdn.w-n-nb-tꜣ.wj ꜣny* (Kitchen 1980, 612,3). Both stood in relation with the administration of Deir el-Medine in Ramesside times, obviously acting as representatives of the king in a certain form.

[1284] Fouquet 1975, 135–136; Müller 2013, 125–126; cf. Müller 2013, 201 and 295, Tabelle 2.5.1, nos. 15 and 27, for two more *jdn.w*'s *Ḥꜣtjꜣ*(*y*), which are, based on the find spots of their sources in the Wadi Allaqi and Quban, regarded as deputies of Wawat.

amongst the highest members of Pharaonic state administration in the New Kingdom, regularly recruited from a military background and active in many civil and military missions in Egypt and abroad.[1285] For Nubia in particular, these messengers were responsible for organising and carrying out the communication between the residence and the southern provinces. Thus, *Ḥr-nḫt* may have even been to Pi-Ramesse in the Eastern Delta on one of his official trips to Egypt. His epithet, *wr-m-jꜣ.t=f* 'great one in his office' is an in-depth expression of his social status and of his professional importance. When also the door jamb Doc. 65 is added to *Ḥr-nḫt*'s dossier,[1286] another high-ranking title can be discussed for *Ḥr-nḫt*. On this piece, *Ḥr-nḫt*'s title sequence can be either read *tꜣ.y-ḫw*-[...] *ḥsy-n-ḥm=f* 'fan bearer […] (and?) favoured one of His Majesty',[1287] or – and this is based on a substantial number of sources – *tꜣ.y-ḫw*-[*ḥr-wn*]*m.j-n-nsw* 'fan bearer to the right of the king'.[1288] If this is indeed the correct reading, then the elevated rank and position of *Ḥr-nḫt* at the royal court in Egypt proper become even more substantiated.[1289]

While all these titles indicate *Ḥr-nḫt*'s close relationship with the royal court and the administration at the residence in Egypt, the limited geographical distribution of his sources in the Amara-Abri-Sai region is noteworthy. While *Ḥr-nḫt*'s titles have been used to characterise his extraordinary career that might also have included training stays in Egypt, his father *jdn.w Ḥꜣt*[*jꜣy*] was maybe attested at Amara West and – above all – the provenance of *Ḥr-nḫt*'s monuments were interpreted as indicators of his local origin, possibly from Sai.[1290] His tomb on Sai is beyond all other considerations a quite substantial piece of evidence supporting the idea that Sai was his home town. Such a nexus of tomb location to the place of origin is particularly valid in the provincial milieus of New Kingdom Egypt and Nubia.[1291] While his royal messenger-title circumscribes *Ḥr-nḫt*'s wide geographical range of activities in relation to Egypt, and his fan bearer-title is evidence for his high standing at the royal court, it is his function as *jdn.w-n-Kš* that rather restricts his sphere of action in Nubia. As such, he is nevertheless the highest-ranking official buried on Sai.[1292] Close contemporaries and, therefore, people that he should have been in contact with in the town on various occasions are, for example, the *wꜥb*-Priest *Ky-jry* (Docs. 51–52), *sẖꜣ.w*-(*n-šꜥ.t*) *Ḥr-m-ḥꜣb* (Doc. 53–54), *ḥꜣ.tj-ꜥ Ḫr.jw=f* (Doc. 57) as well as the major-domo of the viceroy *Stꜣw Ḥr-m-ḥꜣb* (Doc. 66) and maybe also the viceroy *Stꜣw* himself (Doc. 67).

6.4.2.2 Wsr-Mꜣꜥ.t-Rꜥ-nḫt

Ḥr-nḫt is not the only Ramesside deputy of Kush known from Sai. In 1843, Carl Richard Lepsius came across a door jamb belonging to an *jm.j-r'-ḥm.w-nṯr-n-nṯr.w-nb.w* 'overseer of priests of all gods' and *jdn.w-n-Kš* 'deputy of Kush' called *Wsr-Mꜣꜥ.t-Rꜥ-nḫt* (Doc. 69). This might be the same jamb found by Jean Vercoutter in 1954 in an even more fragmented state and published subsequently (Doc. 70). Another architectural fragment found on Sai gives the deputy-title only and could thus also belong to *Ḥr-nḫt* (Doc. 73). Another attestation from Amara West helps in dating this official to late Ramesside times, particularly the reign of Ramesses IX and the tenure of the viceroy *Wn-tꜣ-wꜣ.t*.[1293] *Wsr-Mꜣꜥ.t-Rꜥ-*

[1285] Valloggia 1976, 239–271. For 'royal messengers' attested in Nubia, cf. also Müller 2013, 193–194, Tabelle 2.4.2, nos. 15–22.

[1286] Fouquet 1975, esp. 136–137; Kitchen 1980, 117–118; not added to his dossier by Müller 2013, 201, but put in the group of military officials without indication of their special unit, cf. Müller 2013, 168–169, Tabelle 2.2.2 A, no. 6.

[1287] Fouquet 1975, 136–137, favours to read *tp.j* and splits the sequence into "le flabellifère, le Premier de Sa Majesté". Such a singular *tp.j-n-ḥm=f*-title is, however, not attested; cf. Taylor 2001, 233–234; Al-Ayedi 2006, 626–627. Maybe *kṯn-tp.j-n-ḥm=f* 'first charioteer of His Majesty' was meant? For this title in Nubia cf. Müller 2013, 191–192, Tabelle 2.4.2, nos. 2–7.

[1288] Pomorska 1987. Such a reading is also suggested by Kitchen 1980, 118,2 with fn. a. Budka 2001, 211, offers another possible reading: *ꜣ.y-ḫw*-[*ḥr-wnm.j-n-nsw*] *ḥsy-n-ḥm=f* 'fan bearer [to the right of the king] and favoured one of His Majesty'. An autopsy of the piece should be carried out to determine the actual title.

[1289] See esp. Pomorska 1987, 39–40; on the royal court in Ramesside times: Raedler 2006; Raedler 2009a.

[1290] Budka 2015e, 63; Budka 2015a, 49–50.

[1291] Auenmüller 2014; Auenmüller 2018b; Auenmüller in press.

[1292] If not a viceroy *Rꜥ-mss-nḫt* was buried in Tomb 3 (Doc. 68). Cf. the discussion above.

[1293] Müller 2013, 205, Tabelle 2.5.1, no. 26.

nḫt appears in the temple of the neighbouring site of Amara West with an *ex-voto*-tableau giving his title and name twice in close association with his superior viceroy.[1294] In both cases, the *jdn.w-n-Kš*-title is followed by his designation as 'overseer of all priests of all gods'; this sequence is reversed on his Sai block(s) (Docs. 60–70). The latter title is rarely attested in Nubia,[1295] its meaning implies a superior position in relation to all the other religious officials.[1296]

In 2018 another monument of the *jdn.w-n-Kš Wsr-Mꜣꜥ.t-Rꜥ-nḫt* could be re-discovered.[1297] During recent work at Amara West, one lintel found by Herbert Walter Fairman during the 1948–1949 campaign and deposited next to his local dig house was identified. Back then it had not been properly documented; only some photos had been taken, four of which were published in 1997.[1298] In the literature, this piece is generally associated with *Pꜣ-sr*, deputy of Kush residing at Amara West under Ramesses III.[1299] Now the owner can be properly identified as *jdn.w-n-Kš Wsr-Mꜣꜥ.t-Rꜥ-nḫt*.[1300] As with *Ḥr-nḫt* and *Ḥtjꜣy*, a liaison between Sai and Amara West can be discerned, represented in the person of the *jdn.w-n-Kš Wsr-Mꜣꜥ.t-Rꜥ-nḫt*. Thanks to his epigraphic presence in the Amara West temple, we know about his floruit under Ramesses IX. His door jamb(s) on Sai are thus also the latest known monumental prosopographical appearances of an official of the administration of Nubia on the island. Chronologically, it is rather isolated and can only be linked to the (plaque of the) viceroy *Rꜥ-mss-nḫt* from Tomb 3 (Doc. 68).

6.4.3 Mayors

Ḥꜣ.tj-ꜥ-mayors or city governors are officials that typically belong to New Kingdom towns and cities in Egypt and Nubia.[1301] In New Kingdom Nubia mayors are known for Aniba, Faras, Buhen, Sai, Soleb and Kawa.[1302] Interestingly, most of these sites appear in the records as *mnn.w*,[1303] in which the mayors acted as highest civil administrators,[1304] with more or less the same general duties as their counterparts in Egypt.[1305] In contrast to the settlements with mayors in the Egyptian Nile valley,[1306] the Pharaonic foundations in both Lower and Upper Nubia were, however, fortress- and 'temple towns' in a quite different physiographic setting and with a specific array of locally specific functions.[1307] As for Sai, its function has generally been characterised as an early 18th Dynasty military 'bridgehead', from where campaigns versus Kerma could be launched or supplied,[1308] but also as base for securing the region as well as the entries to the Western Desert routes to Selima and to Upper Egypt.[1309] The location of Sai within a gold-bearing geological region adds another facet to the role of this central place in Upper Nubia.[1310]

The identification of officials as mayors of towns based on the *ḥꜣ.tj-ꜥ*-title only is sometimes quite difficult particularly for the Egyptian city governors and depends on the individual data set and its context.[1311] For the mayors in New Kingdom Nubia, however, the locational and archaeological context of

1294 Müller 2013, 453, Beleg 43.14 B; Spencer 2016, 16, pls. 59f, 64–65.
1295 Müller 2013, Tabelle 2.5.3, H1–5.
1296 For the religious landscape of New Kingdom Nubia, Török 2009, 209–262.
1297 I am indebted to Neal Spencer for allowing me to present some information on this piece here.
1298 Spencer 1997, pl. 167a–d.
1299 Spencer 1997, 194, 220.
1300 So the entry Table 6.19 in Auenmüller 2018b should be changed accordingly. This piece will be published in the context of a study of the Amara West epigraphy (re-)discovered in the course of the Amara West research project. On Amara West most recently Spencer 2017.
1301 Cf. Müller-Wollermann 1991; Morris 2005, passim; Auenmüller 2013, 681–698.
1302 Auenmüller 2013, 696–698.
1303 Somaglino 2017, esp. 234–239.
1304 Morris 2005, 811, 824.
1305 Auenmüller 2013, 652–775; Müller 2013, 46–49; Morkot 2013b, 937.
1306 Müller-Wollermann 1991; cf. Auenmüller 2013, 683–686.
1307 Cf. Vieth 2018.
1308 Budka 2017h, 15.
1309 Morris 2005, 107–108.
1310 Klemm et al. 2001; Klemm and Klemm 2013, 568–579.
1311 Cf. Auenmüller 2013, 700–703.

their attestations allows to identify the holders of a *ḥꜣ.tj-ꜥ*-title as actual governors of a particular town even if the specifying addition 'of town XY' is missing.[1312] In general, four mayors of Sai can be identified for the New Kingdom.[1313] Two of them, *Jꜥḥ-ms* (Docs. 2–4) and *Ḫr.jw=f* (Doc. 57), are not attested on Sai Island itself, but with epigraphical monuments from other places. They also date to the earlier 18th and the 19th Dynasty respectively. In contrast, the two other mayors *Jpy* (Doc. 25) and *Nby* (Docs. 27–28) are evidenced by inscribed funerary equipment from the local elite cemetery SAC5 and represent the heyday of Sai as administrative centre in Upper Nubia in the mid-18th Dynasty. However, the relationship of *Nby* and Sai is currently – based on the discovery of new texts (cf. Doc. 28) – not entirely clear (see below). In the social and administrative hierarchy of the functionaries of the Pharaonic state in New Kingdom Nubia, the mayors seem to have occupied a position directly under or equal to the *ḥm-nṯr-tp.j* 'high priests' of the local temple.[1314] Their senior supervisors in higher-level and local administrative matters were, however, the *jdn.w-n-Kš* and, in ultimate responsibility, the viceroy himself. Still, the mayors were the highest civic representatives of Pharaonic state agency on the local, i.e., urban level.

6.4.3.1 Jꜥḥ-ms

Jꜥḥ-ms is the first *ḥꜣ.tj-ꜥ*-mayor known for Sai in the New Kingdom.[1315] He is, however, not attested at Sai itself, but on one statuette from Karnak, now kept in Cairo (Doc. 2), and another statue, now in Bologna (Doc. 3).[1316] On both pieces, he is explicitly identified as *ḥꜣ.tj-ꜥ-n-Šꜣꜥ.t* 'mayor of Sai'. While the provenance of the first statuette is archaeologically proven, the original location of the second one cannot be determined with certainty. The gods mentioned in the offering formulae inscribed on the Bologna statue – 'Amun-Ra, Lord of Karnak' as well as Khnum and Satet – point either again to Karnak or to the First Cataract area, especially Elephantine, as its set-up location. A third statue of *Jꜥḥ-ms* is known from Buhen, now kept in Khartoum (Doc. 4). On this piece he is only entitled *sḫꜣ.w* 'scribe', a title that he also bears on the Bologna statue. The identity of the mayor of Sai *Jꜥḥ-ms* and the scribe *Jꜥḥ-ms* from Buhen is confirmed by the filiation given on both the Buhen and the Bologna statues, designating his father as a certain *sꜣb Jꜥḥ-ms* and his mother as (*nb.t-pr* [Bologna only]) *Ttj*. Thus, the Buhen statue seems to represent an earlier stage in *Jꜥḥ-ms*'s career, sometime before he became mayor of Sai.

Jꜥḥ-ms is generally dated to the time of Thutmose III, particularly in view of the intensive building activities attested on Sai during the reign of this king.[1317] The fact that one, maybe two statues were installed at Karnak (Docs. 2–3) gives rise to the idea that he is one of the Egyptian officials sent to Nubia under Thutmose III, who after finishing their administrative duties in the 'temple towns' in the Nubian provinces returned to their home town in Egypt, at least for their burial.[1318] Based on this assessment, *Jꜥḥ-ms* can be identified as of Theban origin. He should have had close professional contact to the viceroy *Nḥy* (Docs. 5–23), on Sai in particular. Since no traces of his burial have come to light on Sai until now, it is quite safe to assume that his tomb should be located somewhere in the Theban necropolis, the elite cemetery of his home town. His affiliation to the social fabric of Sai was, therefore, limited to his actual period of duty there, which cannot be rendered more precisely based on the available evidence. His temple statues from Karnak (Doc. 2), Thebes or Elephantine (Doc. 3) and Buhen (Doc. 4) and his posting on Sai not only display his quite large territorial radius of action and presence, but also his per-

[1312] Auenmüller 2013, 700–703.

[1313] For New Kingdom mayors in Nubia, see Morkot 2013b, 925, 937; Müller 2013, 46–49, 206–212, Tabelle 2.5.2; Auenmüller 2013, 696–689, 926–932, 936–938; for Sai in particular also Auenmüller 2013, 931–932; Budka 2015b, 74–75; Auenmüller 2018b, 255.

[1314] Müller 2013, 47–48, 206–212, esp. 211, Tabelle 2.5.2; cf. Auenmüller 2013, 704–711, 718–720.

[1315] Posener 1958, 58; Devauchelle and Doyen 2009, 34–35, nos. 4 & 5.

[1316] Posener 1958, 58, fn. 167, refers to an unpublished ostracon MMA 23001.56 from Deir el-Bahri as another attestation of the *ḥꜣ.tj-ꜥ-n-Šꜣꜥ.t Jꜥḥ-ms*. This piece could however not be re-identified as yet.

[1317] Müller 2013, 209; Budka 2015b, 74.

[1318] Müller 2013, 209.

sonal belonging to a number of social and/or ritual spaces, quite far away from his proper place of work for at least a certain amount of time: Sai.

6.4.3.2 Jpy and Nby

Tomb 5 in the elite necropolis SAC5 is of special importance for the upper end of the local social fabric of Sai. A first mayor *Jpy* is attested with a heart scarab (Doc. 25), while another *ḥꜣ.tj-ꜥ* called *Nby* is both evidenced by a shabti (Doc. 27) and a set of copper-alloy vessels recently studied and published (Doc. 28). On a faience vase, also a *šmꜥ.yt Ḥn.wt-ꜥꜣ.t* is named (Doc. 26). Given the well-attested Egyptian idea of the family tomb and considering all the names and titles inscribed on the funerary goods, it is likely that Tomb 5 was the final resting place of a family of local *ḥꜣ.tj-ꜥ* mayors. Based on an assessment of the accompanying pottery and typological studies of the funerary goods, this family, as represented by its prosopographically attested members, flourished on Sai roughly in the time between Thutmose III and Amenhotep III. Accordingly, the two mayors *Jpy* and *Nby* can be tentatively dated to Thutmose III–IV and Thutmose IV–Amenhotep III. Thus, it seems feasible to identify them as father and son, since it is widely provable that the mayoral office was regularly transmitted from father to son in the New Kingdom.[1319] The exact familial relation of the songstress *Ḥn.wt-ꜥꜣ.t* to both *Jpy* and *Nby* is not determinable, she might have been either the wife or mother of one of the mayors. Her role as female temple singer of an unnamed deity put her in a rather high local female elite sphere, appropriate for a wife or mother of a *ḥꜣ.tj-ꜥ*.[1320] The fact that the evidence of the mayors *Jpy* and *Nby* derives from a local elite funerary context,[1321] is significant for understanding their relationship with Sai and its New Kingdom community.

A recent assessment of the distribution of mayoral tombs in New Kingdom Egypt and Nubia has confirmed that such *ḥꜣ.tjw-ꜥ*-mayors are regularly buried in the elite necropoleis of the towns they administered.[1322] This typological trait can also be seen with *Jpy* and *Nby* and their interment in Tomb 5 in cemetery SAC5. In contrast to *Jꜥḥ-ms* (Docs. 2–4), *Jpy* and *Nby* seem to represent the second generation of local city governors posted on Sai who continued to live there, identified themselves with the town and, therefore, chose to be buried in the appropriate local funerary realm together with members of their family.

While the local mayoral attachments are portrayed in the funerary sphere, there is another type of evidence that refers to a different spatial setting for mayoral activities beyond Sai. A *ḥꜣ.tj-ꜥ ḫrp Nby* is attested further north at the Tangur rapids in the Batn el-Haggar with three rock inscriptions (Docs. 29–31). This *Nby* seems to be identical with the *Nby* from Sai.[1323] The three rock inscriptions give a clear *ḥꜣ.tj-ꜥ* title followed by a vertical sign that can be either read as *sḫm* or *ḫrp*.[1324] In their original publication of these texts, Fritz Hintze and Walter-Friedrich Reineke opted for the reading *ḫrp* and read it as a second title of *Nby* meaning 'chief, director'.[1325] Thanks to the recent conservation treatment of the copper alloy vessels from Tomb 5 (Doc. 28) that revealed new hieroglyphic inscriptions on five of the seven restored vessels,[1326] the reading of this title can be challenged. Although the texts on the copper alloy vessels are also rather fragmentary, they allow to discern an addition to the *ḥꜣ.tj-ꜥ*-title introduced with a genitive 'n'[1327] and concluded by the 'town' classifier.[1328] Here, one should expect a toponym with the name of the town where *Nby* acted as mayor. This name, however, is not securely readable at all. The shabti of

[1319] Auenmüller 2013, 731–736.
[1320] Cf. Onstine 2005, 35–36.
[1321] The status of SAC5 as elite cemetery is not only indicated by the prosopographical record, but also by high quality funerary goods; cf. Minault-Gout and Thill 2012, passim.
[1322] Auenmüller 2013, 742–751; cf. also Auenmüller 2012.
[1323] Cf. also Cressent and Raimon 2016, 33–34.
[1324] Gardiner sign-list S 42.
[1325] Hintze and Reineke 1989, 170, 174; for *ḫrp*-titles in the New Kingdom, see Taylor 2001, §§1785–1823; El-Ayedi 2006, §§1517–1559.
[1326] Cressent and Raimon 2016.
[1327] Gardiner sign-list N 35.
[1328] Gardiner sign-list O 49.

Nby (Doc. 27) also presents a challenging addition to the *ḥꜣ.tj-ꜥ*-title two times. Anne Minault-Gout and Florence Thill read the whole title signature as *ḥꜣ.tj-ꜥ ḫrp-n-ḫꜣs.t* and *ḥꜣ.tj-ꜥ sḫm-n-ḫꜣs.t*,[1329] identifying the general toponym *ḫꜣs.t* 'foreign country' as the region over which *Nby* presided as mayor. Davies proposed yet another reading of this title as *ḥꜣ.tj-ꜥ-n-Sḫm* 'mayor of Sekhem', while understanding *Sḫm* as locality in Nubia which can possibly be identified with Semna.[1330] In accepting this understanding also for the reading of *Nby*'s title on his shabti (Doc. 27) and the copper alloy vessels (Doc. 28), then also the *ḫrp* or *sḫm*-sign in the Tangur rock inscriptions (Docs. 29–31) has to be interpreted differently. Mélanie Cressent and Aymeric Raimon thus propose to understand this sign as a reduced writing of the *ḥꜣ.tj-ꜥ*-title with the mention of the possible toponym.[1331]

While this explanation is satisfactory in regard to the reading of *Nby*'s title(s),[1332] it poses another problem. Now is has to be explained, why *Nby*, who was identified as mayor of Sai based on the existence of his tomb in SAC5 and his simple *ḥꜣ.tj-ꜥ*-title, is called 'mayor of Sekhem' on the elite funerary equipment in his tomb. As for now, only conjectural and anecdotic interpretations can be given that are not wholly satisfactory: *Nby* was a mayor of Sekhem (Semna?) and was at one point sent to Sai to act as a local mayor there. With such a reading, the status and dating of the *ḥꜣ.tj-ꜥ Jpy*, who is considered as predecessor and possible father of *Nby*, becomes problematic. On the other hand, one can maybe speculate with more reason that *Nby* was an official from Sai who was installed as mayor of Sekhem – wherever this place is to be located – who, thanks to his origin from Sai and his attachments to this social community, also decided to be buried there. For the moment, pending further discoveries or studies, this case cannot be discussed any further. There is, however, no doubt that the Tangur rock inscriptions (Docs. 29–31) belong to the *Nby* from Sai (Docs. 27–28). Since he is buried on Sai, these three texts constitute further important markers of his territoriality, i.e., his geographical radius of action. This obviously went well beyond the confines of the town or region of Sai (and might even link Sai with Sekhem [Semna?]). Tangur is well known for its cluster of rock inscriptions recording the presence of officials supervising the safe passage of the ships through the dangerous rapids and shoals.[1333] *Nby* can be envisaged as one of the high-ranking members of the Nubian administration who participated in these undertakings there.

6.4.3.3 Ḫr.jw=f

The *ḥꜣ.tj-ꜥ-n-ḥw.t-Šꜣꜥ.t Ḫr.jw=f* has already been mentioned by Georges Posener in discussing the location of Kush and *Šꜣꜥ.t* in particular.[1334] This mayor is attested on a stela now in the Louvre (Doc. 57) which has only been inadequately published. While Posener placed *Ḫr.jw=f* rather vaguely "[q]uelques temps après Ahmès"[1335] (i.e. the *ḥꜣ.tj-ꜥ Jꜥḥ-ms* [Docs. 2–4]), one can add more prosopographical data to pinpoint his general date. The stela in the Louvre (Doc. 57) belongs to his son, a *ṯꜣ.y-sr.yt Pꜣ-wr*, who is also attested on another stela now in Berlin.[1336] Pierre-Marie Chevereau dates both to the 19th Dynasty,[1337] so a Ramesside date for the *ḥꜣ.tj-ꜥ-n-ḥw.t-Šꜣꜥ.t Ḫr.jw=f* seems likely. Taking the title of *Ḫr.jw=f* and his chronology at face value and identifying *ḥw.t-n-Šꜣꜥ.t* as designation of the 'estate of Sai'

[1329] Minault-Gout and Thill 2012, 181, translate both as "le gouverneur chef de la région" interpreting *ḫrp* not as independent title but as adjective attribute to *ḥꜣ.tj-ꜥ*.

[1330] Cressent and Raimon 2016, 33, with fn. 9; Davies 2018, 350, with fn. 12. Cf. also Davies 2009, 27, with fn. 14 and Dunham and Janssen 1960, 47, no. 28-1-69, fig. 3 with a stela from Semna mentioning two actual *ḥꜣ.tjw-ꜥ-n-Sḫm*.

[1331] Cressent and Raimon 2016, 33–34.

[1332] Cressent and Raimon 2016, 33, also propose the reading as *ḥꜣ.tj-ꜥ-n-w* 'mayor/governor of the district/region'.

[1333] Hintze and Reineke 1989, 170–177.

[1334] Posener 1958, 58, with fn. 172; cf. also Devauchelle and Doyen 2009, 35, no. 6; Minault-Gout and Thill 2012, 182, with fns. 54–55.

[1335] Posener 1958, 58.

[1336] Roeder 1924, 224–225, ÄM 7310.

[1337] Chevereau 1994, 103, no. 15.15; Devauchelle and Doyen 2009, 35, have tentatively written "*fin de la XVIIIe dyn. ?*".

means in consequence that he was mayor of Sai sometime in the 19th Dynasty and that *Šꜣꜥ.t* was in this time referred to as *ḥw.t*-installation.[1338]

Provided this understanding is correct, it is most likely that *Ḫr.jw=f* acted as mayor on Sai during a time when also other Ramesside activity is evidenced. He may, therefore, be a close contemporary of the *jdn.w-n-Kš Ḥr-nḫt* (Docs. 58–65) and may also have conversed and worked with *Ḥr-m-ḥꜣb* (Doc. 66) and the viceroy *Stꜣw* (Doc. 67). Interestingly, the son of *Ḫr.jw=f* is identified with a military title (*ṯꜣ.y-sr.yt* 'standard bearer') which is only very rarely attested in New Kingdom Nubia and whose bearers all date to the earlier 19th Dynasty (Seti I – Ramesses II).[1339] The genealogical relationship (fatherhood) of a municipal mayor of a New Kingdom Pharaonic foundation in Nubia with a standard bearer is anyhow exceptional. If *Ḫr.jw=f* was indeed a local mayor of and from Sai, his tomb should also be located there. Since the archaeological provenance of the two stelae of his son *Pꜣ-wr* is unknown, one cannot engage in any further considerations.

6.4.4 Goldworker

One goldworker is attested on Sai for the New Kingdom, more specifically the mid-18th Dynasty (Amenhotep II – Thutmose IV): *Ḫnm.w-ms*. His burial, accompanied by a shabti and at least two faience vessels giving his name and titles (Docs. 40–41; 43),[1340] was found in Tomb 26 in the elite cemetery SAC5 together with the interment of his presumed wife, a *nb.t-pr Ḥnn=f*, who is herself identified on a heart scarab (Doc. 44).[1341] *Ḫnm.w-ms* is characterised by two occupational titles that position him at two different levels of the hierarchy of goldsmiths: *nb.y* 'goldworker' (Docs. 40–41) and *jm.j-r'-nb.yw* 'overseer of goldworkers' (Doc. 43).[1342] Thanks to textual and iconographic sources as well as actual gold artefacts from a wide variety of archaeological contexts, we are well informed about this craft and its methods and technologies, particularly with regard to the New Kingdom.[1343] The economic role of gold, of Nubian Desert and Nile valley gold in particular, and its mining and production during the New Kingdom in both Egypt and Nubia is also well understood thanks to a number of dedicated studies.[1344]

Based on the available prosopographical record for New Kingdom Nubia, *Ḫnm.w-ms* is the only 'overseer of goldworkers' (Doc. 43) known so far in this region.[1345] He, however, shares his *nb.y* 'goldworker'-occupation (Docs. 40–41) with a number of other people attested in Nubia (cf. Tabs. 39, 40). In the region of Upper Nubia (cf. Tab. 39), only one other *nb.y* is known. The goldworker *Bꜣk* is evidenced by a fragmentary door lintel found in tomb T 38 at Soleb (Doc. 76), dating to the reign of Amenhotep III,

Doc.	Title	Name	Attestation	Provenance and Reference	Date
75	*ḥr.j-nb.yw*	*Kf(ꜣ)-jb*	Rock inscription in scene No. 5	Gebel Doshe (Müller 2013, 186, 2.3.2, No. 38; 458, Beleg 46.3; Davies 2017c, 61, pl. 5.)	late Thutmose III
76	*nb.y*	*Bꜣk*	Door lintel fragment T 38 p1	Soleb, Tomb T38 (Schiff Giorgini 1971, 319–320, fig. 629)	Amenhotep III

Tab. 39 New Kingdom goldworkers attested in Upper Nubia

1338 *Pace* Posener 1958, 58; Devauchelle and Doyen 2009, 37. For *ḥw.t* in relation to a temple domain, e.g., Spencer 1984, 21–27.

1339 Müller 2013, 168–169, Tabelle 2.2.2 A. For a stela of Seti I on Sai, Vercoutter 1972.

1340 For more shabtis from the same workshop as the one of *Ḫnm.w-ms*, cf. Minault-Gout 2012; Budka 2017c, 77–78; Budka 2017k, 121–123.

1341 Budka 2017l, esp. 56–59; Budka 2017c, 75–78; Budka 2017k, esp. 119–123; Budka 2018e.

1342 Cf. Steinmann 1980; Steinmann 1982.

1343 Wilkinson 1971, 1–10, 91–163; Drenkhahn 1976, 18–42, 164–165; Bulsink 2015, 29–39.

1344 Vercoutter 1959; Castiglioni, Castiglioni and Vercoutter 1998, 11–44; Klemm and Klemm 2013, 21–27; cf. Müller 2013, 75–79.

1345 For Egypt proper, a prosopographical compilation of goldworkers including *jm.jw-rꜥ-nb.yw*, *ḥr.jw-nb.yw* and *nb.yw* is in preparation by the present author.

Doc.	Title	Name	Attestation	Provenance and Reference	Date
77	*nb.y*	*Ḫʿy*	Shabti S 91,57	Aniba, tomb S 91 (Steindorff 1937, 79, 200, pl. 42,3; Müller 2013, 183, Tabelle 2.3.2, no. 33, 417, Beleg 30.33)	18th Dynasty, 2nd half
78	*nb.y*	*Šꜣʿm*	Heart scarab S 7,2	Aniba, tomb S 7 (Steindorff 1937, 87, no. 11, 157, pl. 48,11; Müller 2013, 185, Tabelle 2.3.2, no. 35, 417, Beleg 30.36)	18th Dynasty
79	*nb.y*	*Nb-sn*	Votive stela	Aniba, temple (Steindorff 1937, 24–25, no. 44a, pl. 11,42; Müller 2013, 185, Tabelle 2.3.2, no. 34, 417, Beleg 30.35)	18th Dynasty
80	*ḥr.j-nb.yw*	*R’-kꜣ*	Heart scarab SA 31,4 (Kairo 41825)	Aniba, tomb SA 31 (Steindorff 1937, 88, Nr. 13, 232–233, pl. 47,13; Kitchen 1980, 128,15; Müller 2013, 182, Tabelle 2.3.2, no. 9, 417, Beleg 30.31)	Ramesses II
81	*ḥr.j-nb.yw*	*Bꜣk-n-wrl*	Mentioned on naos of his father BM EA476	Aniba (from internal evidence) (Kitchen 1980, 127,12; Bierbrier 1982, 25, pls. 58–60; Müller 2013, 182, Tabelle 2.3.2, no. 10, 416, Beleg 30.26)	Ramesses II
82	*nb.y / ḥr.j-nb.yw*	*Ḫnm.w-ms*	Mentioned twice on votive stela BM EA1188	Buhen, South or North temple (Kitchen 1980, 132,14 & 133,9; Bierbrier 1982, 23–24, pls. 54–55; Müller 2013, 185, Tabelle 2.3.2, no. 32, Beleg 38.80)	Ramesses II

Tab. 40 New Kingdom goldworkers attested in Lower Nubia

the floruit of the Soleb complex. The burials of both *Ḫnm.w-ms* and *Bꜣk* in the elite cemeteries belonging to their respective places of work reflect their close professional and personal relationship to these Pharaonic foundations in Upper Nubia.

An earlier close contemporary to *Ḫnm.w-ms* perpetuated himself at Gebel Doshe with a rock inscription (Doc. 75) that attests to his professional participation in creating and activating the rock-cut chapel of Thutmose III there.[1346] This *Kf(ꜣ)-jb* bears, in contrast to *Ḫnm.w-ms* from Sai, the title *ḥr.j-nb.yw* ‘chief of goldworkers’, which indicates his higher position in the hierarchy of this group of craftsmen, headed by the *jm.j-r’-nb.yw* ‘overseer of goldworkers’.[1347] As has already been discussed above, *Ḫnm.w-ms* from Sai is not only characterised as a *nb.y* (Docs. 40–41), but also as such a higher-ranking ‘overseer of goldworkers’ (Doc. 43).[1348] Thus, he certainly belonged to the upper echelon of this craft in Upper Nubia, which seems to have had a heyday and central base on Sai Island at least under Amenhotep II and Thutmose IV, given the presence of an ‘overseer of goldworkers’ in the prosopographical – and funerary – record of the Pharaonic town. For Upper Nubia, three locations with a short-term or permanent presence of goldworkers, which also represent the entire hierarchy of this particular craft, can thus be identified in the New Kingdom, especially the mid-18th Dynasty from Thutmose III to Amenhotep III: Gebel Doshe, Sai and Soleb. In later Ramesside times, no goldworker is attested in Upper Nubia by epigraphical evidence.

In Lower Nubia, the prosopographical record for goldworkers looks somewhat different (Tab. 40). Interestingly, it is especially Aniba, the central seat of Egyptian power in Wawat during the New King-

[1346] Davies 2017c, 64.

[1347] In the literature, the titles *jm.j-r’-(nb.yw)* ‘overseer of (goldworkers)’ and *ḥr.j-(nb.yw)* ‘chief of (goldworkers)’ are – based on a certain set of evidence – often seen as interchangeable, cf. e.g. Caminos 1954, 405; Grajetzki 2001–2002, 125, and Ockinga 2004, 20. Following Eichler 2000, 145–149, the present contribution, however, takes these different titles at face value, assuming a three-tiered hierarchy within the group of goldworking craftsmen; cf. also Steinmann 1980.

[1348] For the hierarchy, cf. Steinmann 1982, 66–72; Eichler 2000, 141–161, esp. 145–149.

dom, from where the greater part of prosopographical data derives. Five people belonging to the local workforce of goldsmiths are attested at Aniba either with inscribed funerary equipment from their tombs (Docs. 77–78; 80–81)[1349] or a temple votive (Doc. 79). While *Ḫꜥy* (Doc. 77), *Šꜣꜥm* (Doc. 78) and *Nb-sn* (Doc. 79) all roughly date to the 18th Dynasty and are only known from single monuments such as shabtis or a temple votive stela with the *nb.y*-title,[1350] it is their two Ramesside counterparts *R'-kꜣ* and *Bꜣk-n-wrl* for which not only the higher *ḥr.j-nb.yw* title is attested, but also titles that connect them tò both the local temple and its entire workforce of craftsmen.[1351] While only his heart scarab identifies *R'-kꜣ* as *ḥr.j-nb.yw* (Doc. 80), he is called *jm.j-r'-ḥmw.t* 'overseer of craftsmen'[1352] (also with the additions *n-nb-tꜣ.wj* 'of the Lord of the Two Lands' and *n-pr-Ḥr-nb-Mjꜥm* 'of the temple of Horus, Lord of Aniba')[1353] or *wꜥb-ꜥḳ-m-ḥw.t-sr* '*wꜥb*-priest who enters into the *ḥw.t-sr*' in all his other epigraphical attestations.[1354] *R'-kꜣ*'s son *Bꜣk-n-wrl* obviously followed in the professional footsteps of his father, as he is identified both as *ḥr.j-nb.yw* on the family funerary naos (Doc. 81) and *jm.j-r'-ḥmw.t* on his Aniba shabtis and a graffito at Ellessiya.[1355] In the latter inscription he additionally characterises himself as *wꜥb jm.j-r'-ḥm.w-nṯr* '*wꜥb*-priest and overseer of priests', a religious office he most likely held at the Horus-temple at Aniba. For both *R'-kꜣ* and *Bꜣk-n-wrl*, two steps in their professional career as goldworkers and senior craftsmen can thus be identified, starting with *ḥr.j-nb.yw* and culminating in the *jm.j-'-ḥmw.t*-office, in which they acted as the functionaries being responsible for the entire artisan workforce of Aniba and the local Horus temple under Ramesses II.[1356]

From Buhen a last 'goldworker' and 'chief of goldworkers' in New Kingdom Lower Nubia is known: *Ḫnm.w-ms* is mentioned twice on the votive stela of his son, the *jm.j-r'-ḥm.w-nṯr* 'overseer of priests' and *jm.j-r'-ḥmw.t* 'overseer of craftsmen' *Mr-nḏm* (Doc. 82) that was once installed in one of the two temples of the fortress. Next to getting to know some members of this presumably Buhen based family, we first learn that *Ḫnm.w-ms* rose in rank among the goldworkers and that his son *Mr-nḏm* took over two locally important and intertwining posts as 'overseer of craftsmen' and 'priests'. This particular combination is also attested with *Bꜣk-n-wrl* at Aniba, whose father *R'-kꜣ* was, tellingly, also a *ḥr.j-nb.yw*. For both locations, Aniba and Buhen, a certain structural pattern emerges for the individual's social and functional embeddedness in particular professional groups. While more genealogical data for *Ḫnm.w-ms* from Sai (Docs. 40–43) and all other 18th Dynasty *nb.yw* (Docs. 75–76; 77–79) is lacking, one can – based on the later Ramesside evidence – at least speculate that they were also members of larger professional groups and families and individually represent their craft prosopographically at their places of work. The fact that *Ḫnm.w-ms* from Sai (Docs. 40–43) dating to the mid-18th Dynasty is uniquely identified as an 'overseer of goldworkers' may lead to different conclusion. Either he was the most important representative of his craft in Nubia, or Sai, at least during Amenhotep II and Thutmose IV, was the most

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1349 On Aniba cemetery S/SA in the New Kingdom, see Näser 2017.

1350 *Nb-sn* (Doc. 78) may be identical with the *Nb-s*(*n*)*y* known from the Gebel Agg rock inscription tableau when accepting the proposal of Van Siclen 1997, 411, notes c and d, to read *Nb-s*(*n*)*y*'s title as *nb.y* and to add a medial *n* to his name, that is written *Nb-sy*; cf. also Van Siclen 1997, 414, with further, also iconographical, considerations about the presumed identity. Müller 2013, 185, Tabelle 2.3.2, no. 34, 188, Tabelle 2.4.1, no. 11, 424, Beleg 31.6, follows Van Siclen's suggestions.

1351 For such a connection, cf. Eichler 2000, 141–149.

1352 On a) 16 shabtis from tomb SA 31 (Philadelphia E.11169 D–G, I–K): Steindorff 1937, 83, 232–233; Kitchen 1980, 128,8–9; Müller 2013, 416, Beleg 30.27; b) on the amulet SA 31,7 from the same tomb (Philadelphia E.11166): Steindorff 1937, 125, 232; Kitchen 1980, 128,11; Müller 2013, 417, Beleg 30.28; c) on the naos London BM EA476: Kitchen 1980, 126,11–128,6; Bierbrier 1982, 25, pls. 58–60; Müller 2013, 416, Beleg 30.26; d) appearance in shrine of Viceroy of Nubia *Stꜣw* (date: Ramesses II) at Qasr Ibrim: Caminos 1968, 46, pl. 14; Kitchen 1980, 104,8; Müller 2013, 413, Beleg 29.4; e) mention in graffito of his son *wꜥb Ḫwy* in speos of Thutmose III at Ellessiya: Desroches-Noblecourt et al. 1968, pl. 40, figs. 48–49; Kitchen 1980, 129,8–9; Müller 2013, 412, Beleg 28.9.

1353 For such additions and their meaning Steinmann 1982, 152–153.

1354 All these titles are attested on the naos London BM EA476: Kitchen 1980, 126,11–128,6; Bierbrier 1982, 25, pls. 58–60; Müller 2013, 416, Beleg 30.26. On the *jm.j-r'-ḥmw.t*-title and its implications Steinmann 1980, 142–144.

1355 Four shabtis SA 31,2 from tomb SA 31 (Philadelphia E.11169 A–C, H): Steindorff 1937, 83, 232–233; Kitchen 1980, 129,1–2; Müller 2013, 417, Beleg 30.3; graffito on north side of façade of speos of Thutmose III: Curto 1970, fig. 27bis; Kitchen 1980, 129,5–6; Müller 2013, 411, Beleg 28.3.

1356 On *R'-kꜣ* and his social position, see also Morkot 2013b, 941.

important gold working place in Upper Nubia. In the end, both conclusions taken together allow to characterise Sai's role in this context in the most reasonable way (see below).

One significant phenomenon has already been touched upon in the preceding paragraphs: as at Sai with *Ḫnm.w-ms* and Soleb with *Bꜣk*, all goldworkers or craftsmen attested for Aniba (except *Nb-sn*) are buried in the elite necropolis of their place of work, regardless of their 18th or 19th Dynasty date. This once more underlines their close-knit social and functional relationship to these places, where they led their private and professional lives and where in the end also their funerary rites and burials took place. Considering this as a typological trait for people belonging to such a social and functional milieu, *Ḫnm.w-ms* and his son *Mr-nḏm* should also have had chosen Buhen for their final resting place.

When we finally compare both form and dimension of the tombs of the attested goldworkers at Sai,[1357] Soleb[1358] and Aniba,[1359] a more or less typical format emerges. While the superstructure is not preserved in all five cases, the vertical shaft and the burial apartments conform to the well-known New Kingdom type, with noticeable differences in the number of subterranean chambers. These differences, however, bear witness to the continuous use of especially the tombs Aniba S 91 and SA 31 for new burials during their use-life only and do not represent the initial conception of the tombs for their original owners. It thus seems that *Ḫnm.w-ms* on Sai, *Bꜣk* at Soleb and *Šꜣʿm* at Aniba can be considered as original tomb owners, while their Ramesside successors re-used and enlarged already existing funerary structures. Nevertheless, none of these tombs falls out of the format considered appropriate for such a kind of craftspeople at Sai, Soleb and Aniba.

As indicated by the archaeological and epigraphical evidence, 'goldworkers' as representatives of local specialist craftsmen concentrate at the well-known administrative hot spots in New Kingdom Nubia: Aniba, Buhen, Sai and Soleb. All these were centres of Pharaonic power and state agency in Lower and Upper Nubia. Gold was one of the most important metallic resources much sought after by the Pharaonic state so that successful gold mining was one of the tasks of the administration of Nubia in the New Kingdom.[1360] It is, therefore, of particular interest that the towns of Buhen, Sai and Soleb are located in close proximity or within a gold-bearing geological zone between Wadi Halfa and Tondi along the Nile which also extended further into the Nubian Desert[1361] and which produced the so-called 'Gold of Kush'.[1362] The importance of gold on Sai is also reflected in a number of titles in the prosopographical record, particularly of the 19th Dynasty. Next to *Ḫnm.w-ms*, there is *Ḥr-m-ḥꜣb* (Doc. 66) as *sḫꜣ.w-ḥsb-nbw jm.j-r'-ḫꜣs.wt-nbw-Kš-n-*[*sꜣ*]*-nsw* 'gold-counting scribe and overseer of the foreign gold-countries of Amun of/for the king's [son]', and his superior, the viceroy *Stꜣw*, who is designated as [*jm.j-r'-ḫꜣs.*] *wt-nbw-*[*n*]*-Jmn* '[overseer of the] gold-[countri]es [of] Amun' (Doc. 67).

While the spatial relationship of Buhen, Sai and Soleb to gold mines in this area provides another significant reason for the presence of goldworkers at these three sites, this nexus is less clear for Aniba. The 'Gold of Wawat' is known to derive mainly from the Wadi Allaqi region, but also from other larger or smaller areas in the Nubian Desert.[1363] Some of these, especially the mines and desert tracks between the Nile river and the Umm Nabari Massif, were part of the spatial activity range of officials from Aniba, as is evidenced by rock inscriptions in the Nubian Desert.[1364] Among those people from Aniba venturing into the desert are also two New Kingdom mayors of the 18th and 19th Dynasties.[1365] They left their identity signatures at the Umm Nabari Massif along the Korosko road, presumably as members

[1357] Budka 2017k; Budka 2017l.
[1358] Schiff Giorgini 1971, 311–321, figs. 614–615.
[1359] Steindorff 1937, 157, sheet 12 (S 7), 198–200, sheet 33 (S 91) and 232–233 (SA 31).
[1360] Müller 2013, 75–79.
[1361] Klemm et al. 2001, 649–654, fig. 10; Klemm and Klemm 2013, 556–579, 606–611, fig. 7.4; Klemm and Klemm 2017.
[1362] Vercoutter 1959; Müller 2013, 75; Budka 2015d, 59; For the locational relationship, cf. Vieth 2018.
[1363] Vercoutter 1958; Klemm et al. 2001, Klemm and Klemm 2013, 294–339, 341–555; Müller 2013, 75–76; Klemm and Klemm 2017.
[1364] Castiglioni, Castiglioni and Vercoutter 1998, 26, 105–122, and map on 112; Castiglioni and Castiglioni 2003, 48–49, pls. 3 and 7, 50, pl. 9; Davies 2014b, 32–34, 36–39, with full references.
[1365] Auenmüller 2013, 927, BMAniba_02 (*Ms*), 928, BMAniba_05 (*Ḥr-nḫt*).

of expeditions prospecting for gold coming from Aniba. They attest to the integration of Aniba into the gold-mining and goldworking industries of Lower Nubia, in which context craftsmen like *R'-kꜣ* and *Bꜣk-n-wrl* would manufacture elite goods. As such, both *R'-kꜣ* and *Bꜣk-n-wrl* bear witness to the further cultural and economic importance of Aniba as major central place in Lower Nubia under Ramesses II, which finds significant parallels on Sai.

6.4.5 Priests

Some personnel of the religious sphere of Sai is attested in Tomb 2 of SAC5. Five shabtis, three heart scarabs, one heart scarab pectoral and one *tjt*-amulet bearing personal names and titles were found. Regarding onomastics and prosopography, five male members of the New Kingdom Sai society appear. Two of them – the *ḥm-nṯr* 'priest' *Mr-ms* (Doc. 49) and the *wʿb*-priest *Ky-jry* (Doc. 51–52) – can be understood as cult officiants of different ranks and functions.[1366] An indication of the specific local cult they were attached to is lacking. For the *ḥm-nṯr-?...? Ḥn-sbꜣ* (Doc. 24) from Tomb 8, such a reference seems to have had existed, however, the part that would give the name of the god or the sanctuary at which *Ḥn-sbꜣ* acted as *ḥm-nṯr* is partly destroyed and therefore difficult to read.[1367] In a recent assessment of the title, Thill proposed a number of possible readings that include either Ra and/or Horus and related this title to a particular cult of Ra-(Horakhti) on Sai, possibly located at the enigmatic 'pyramid' at SAC5.[1368] The case of the *ḥm-nṯr*-[(*m*)-*r'-pr?*] *Sj* (Doc. 48) also attested in Tomb 8 may provide us with more information as to which temple or sanctuary he was related. The addition to his *ḥm-nṯr*-title is, however, also rather difficult to read. With Minault-Gout and Thill, it can be interpreted as (*m*)-*r'-pr* '(in) a temple/chapel',[1369] while the option should not be ruled out that the entire phrase might be a personal name such as *Sj-m-?*(*w*)*sḫ*(.*t*)*?*. If the interpretation of Minault-Gout and Thill is accepted, the *r'-pr* should designate a temple or chapel on Sai, for which Temple A is the most likely candidate.

A last possible (?) religious official, a *ḥr.j-wꜣḏ.tj Ḥwy*, is known from Tomb 2 from his heart scarab pectoral (Doc. 50). His title, however, also poses some difficulties. Considering the general context, either a religious or an administrative title could be expected. It has, therefore, been first interpreted as "superior des deux Ouadjyt",[1370] i.e., 'chief of the two *wꜣḏ.yt*'s'. The term w*ꜣḏ.yt* designates a hall with papyriform columns in Egyptian temples,[1371] so such an architectural structure should have had existed twice in Temple A on Sai in the New Kingdom if we take this title literally.[1372] Another option would be to read a more mundane title here, understanding *wꜣḏ.tj* as 'vegetable gardener',[1373] so that *ḥr.j-wꜣḏ.tj* could be determined as a 'chief of vegetable gardeners'. Although no such officials are attested, at least vegetable and fruit cultivation in Nubia is documented in the textual record.[1374] In this case, *Ḥwy* would belong to a completely different professional sphere than the religious. Be that as it may, it is apparent that those people which can be connected to the religious milieu of Sai with certainty were all buried in SAC5, particularly in Tombs 2 and 8, which can be interpreted as family tombs of local priests. The spatial relationship of the burials of religious officials to their place of work is particularly close-knit. When

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[1366] Cf. Gee 2004, for the difference between *ḥm-nṯr* 'priest/prophet', lit. 'god's servant' and *wʿb* 'priest', lit. 'pure one'. On priests in general, see also Kees 1953; Sauneron 1960. Particularly on *Ky-jry*, see Minault-Gout 1979, 37–39.

[1367] Minault-Gout and Thill 2012, 184, who also raise the hypothesis, that *Ḥn-sbꜣ*'s mother was mentioned here together with her son, allowing for the dedication of this shabti for actually two people, since the *ḥm*(.*w*)-*nṯr*-title seems to be written in a rather particular way with plural strokes.

[1368] Thill 2017, esp. 207–208

[1369] Minault-Gout and Thill 2012, 223–224; for *r'-pr* 'temple/chapel', see Spencer 1984, 37–42.

[1370] Minault-Gout and Thill 2012, 213–214.

[1371] Spencer 1984, 68–71.

[1372] For more arguments in favour of the reading *ḥr.j-wꜣḏ.tj* and some other religious titles containing this element, such as *wr-wꜣḏ.tj*, see Minault-Gout and Thill 2012, 214, fn. 171. *Wꜣḏ.tj* also designates a greater area in the Western Desert including the oases of Bahariya, Kharga and/or Dakhla (Osing 1998, 1444–1447) or is the dual of *wꜣd.t*, meaning 'the two uraei, i.e. the two crowns'.

[1373] Gardiner 1947, 97* [227].

[1374] Müller 2013, 81–82.

even New Kingdom high-priests are regularly buried in the elite necropoleis of their place of office,[1375] it is safe to assume that this nexus is even more valid for the lower ranking members of the particular local religious institutions.

6.4.6 Scribes

The record of people at Sai identified as *sẖꜣ.w* 'scribes' is rather small. The first is the earlier 18th Dynasty mayor *Jꜥḥ-ms*, who bears this designation on the Buhen statue (Doc. 4) singly and on the statue now in Bologna (Doc. 3) in addition to his mayoral title. The next representative of scribes from Sai is *Ḥr-m-ḥꜣb*, dating to the earlier 19th Dynasty. Besides the simple *sẖꜣ.w*-title attested on his heart scarab (Doc. 54), he is more specifically characterised as *sẖꜣ.w-n-šꜥ*(*.t*) 'letter-scribe' on his inscribed shabti (Doc. 53). A third scribe, who also bears the ranking-title *sẖꜣ.w-nsw* like the viceroy *Stꜣw* (Doc. 67),[1376] is further identified with two occupational scribal titles: *sẖꜣ.w-mꜣꜥ-m-*[*Kš?*] 'true scribe in [Kush?]' and *sẖꜣ.w-ḥsb-nbw* 'scribe of gold-reckoning' (Doc. 66). These are part of his biographical inscription, in which he outlines several professional stages in his career under a number of viceroys of Nubia.[1377] While the *sẖꜣ.w*-title of the mayor *Jꜥḥ-ms* can be either seen as description of his actual professional duties or as marker that he belonged to the social group of literate officials,[1378] it is the two *Ḥr-m-ḥꜣb*'s that indeed acted as true professional scribes.

Amongst the current record of scribes responsible for Nubia,[1379] *Ḥr-m-ḥꜣb* (Doc. 53) is one of a few officials identified as letter-scribes.[1380] Interestingly, all of his counterparts are designated as letter-scribe of a specific king's son. For *Ḥr-m-ḥꜣb*, such a close professional relationship to the viceroy(s) of his time can also be presumed.[1381] Based on the fact that he is buried on Sai, it is safe to assume that he was part of the local administrative sphere, acting from and at Sai as his home base. Among those people laid to rest in SAC5, *Ḥr-m-ḥꜣb* is, in addition, the only scribe identified by a title and name. Several non-epigraphical scribal palettes were found amongst the funerary equipment in the SAC5 tombs which bear witness to some more scribes on Sai,[1382] if one interprets these palettes as indications of the actual profession of those people who were provided with such objects in their tombs.

The second *Ḥr-m-ḥꜣb* (Doc. 66) is neither attested in the local funerary record nor with any other epigraphical document.[1383] His biographical stela from Sai, however, provides evidence for his quite close personal relationship to Sai and to several viceroys under Ramesses II, under whom he acted in different functions. The record of titles shows his responsibilities as 'overseer of the gold-lands of Kush of the king's [son]' (*jm.j-r'-ḫꜣs.wt-nbw-Kš-n-*[*sꜣ*]*-nsw*) and for the scribal gold-reckoning (*sẖꜣ.w-ḥsb-nbw*) as well as possibly the herds of Amun in Upper Nubia (*jm.j-r'-jḥw-n-Jmn-m-*[*Kš?*]), amongst others. And it seems to be *Stꜣw*, under whom *Ḥr-m-ḥꜣb* reached his administrative floruit as *jm.j-r'-pr-n-sꜣ-nsw-Stꜣw* 'steward of the viceroy *Stꜣw*'.[1384] Based on his titles, *Ḥr-m-ḥꜣb* was one of the top officials in Upper Nubia during the late reign of Ramesses II, responsible for both gold and cattle. In this context, *Ḥr-m-ḥꜣb*'s and *Stꜣw*'s presence on Sai could be connected (cf. Doc. 67) and linked to a joint visit and stay on Sai in the framework of an inspection of the town and/or the gold mines in the vicinity. In addition, *Ḥr-m-ḥꜣb*

1375 Auenmüller 2016.

1376 For *sẖꜣ.w-nsw* as ranking title, Onasch 1998.

1377 Cf. Habachi 1981, 139–144; Müller 2013, 257–259.

1378 Allon and Navratilova 2017.

1379 Cf. Müller 2013, 270–279.

1380 Müller 2013, 153–154, Tabelle 2.1 C. There are several other scribes with the name of *Ḥr-m-ḥꜣb* attested with rock inscriptions, e.g. at Abu Simbel (Müller 2013, 429, Beleg 32.38) or at Dorintawwo (Müller 2013, 446, Beleg 39.23), which can, however, not be identified with certainty with the *Ḥr-m-ḥꜣb* from Sai. Cf. also Müller 2013, 276, Tabelle 2.7.6, nos. 54–56. On the Sai *Ḥr-m-ḥꜣb* also Minault-Gout 1979, 34–37, where he is described as "un fonctionnaire des Affaires Etrangéres en poste à Sai. Un parmi cette poignée d'Egyptiens qui restait en Nubie dans le but de 'showing the flag' […].".

1381 For the viceroys dating to the earlier 19th Dynasty, see Müller 2013, 97–100, with tab. 2.1.

1382 Minault-Gout and Thill 2012, pl. 114, T1Ca21 and 22, T14Ca58.

1383 Based on the available sources, one can currently only speculate whether the two *Ḥr-m-ḥꜣb*'s are identical or not.

1384 His title *ꜥꜣ-n-pr* 'major-domo' also seems to describe his work in the service of the viceroy.

is a close contemporary to the deputy *Ḥr-nḫt*, thus one could speculate that these two officials stood in close professional contact to each other as well.

6.4.7 Women

At this point, all male members of the Sai community have been discussed.[1385] Out of 28 individually identifiable people, only five can be identified as female, based on their names and titles. This 17.8%-ratio is not unexpected, it rather underlines the pervading male bias of the monumental discourse in Pharaonic Egypt, which is reflected even in small inscribed elite objects of the funerary equipment repertoire.[1386] Two of the females are, in addition, only known from objects belonging to their respective son (Doc. 24) or husband (Doc. 60). In view of the titles, the two typical and almost exclusive designations for elite women in the New Kingdom are present.[1387] While *Nnꜣ* (Doc. 24), the mother of *Ḥn-sbꜣ*, bears no title, *Ḥn.wt-ꜥꜣ.t* (Doc. 26), the presumed wife of either the mayors *Jpy* or *Nby*, is characterised as *šmꜥ.yt* 'songstress'. *Ḥnn=f* (*?*) (Doc. 44), the potential wife of *nb.y Ḫnm.w-ms*, *ꜣs.t* (Doc. 47) and *Tꜣ-?...?* (Doc. 60), wife of the deputy *Ḥr-nḫt* are all designated as *nb.t-pr* 'mistress of the house'. This title is generally used to refer to the status and role of women in more monumental contexts, such as tombs, stelae, offering tables and shabtis.[1388] It has thus been interpreted as "a honorific title for (married) women in monumental and funerary contexts."[1389] Its basic meaning is commonly understood as indicating the married status, a specific senior role in an independent household and the social position of its female bearers.[1390]

Since the sources for women from Sai with this title derive from funerary or monumental contexts and since *nb.t-pr* characterises the (potential) wives of sub-elite (*Ḫnm.w-ms*, Docs. 40–43) and elite officials (*Ḥr-nḫt*, Docs. 58–65), it most probably signals a certain social status and/or economic role. The *šmꜥ.yt*-title of *Ḥn.wt-ꜥꜣ.t* (Doc. 26) can be understood as indicator of her actual duties and her place in the local religious hierarchy as a female temple vocalist serving at the cult place of the local deity,[1391] which for Sai would certainly be Temple A. Thus, all females attested on Sai Island can be tied into the local sphere of (elite) household supervision as well as ritual and musical support of the temple cult(s). Of course, many more women lived on Sai during the heydays of the Pharaonic town in the New Kingdom, of which only five appear individually with their names, titles and sometimes also family relationships. At least two of them were – as shown by their funerary goods from SAC5 (Docs. 26, 44) – buried on Sai. For the other three (*Nnꜣ* [Doc. 24], *ꜣs.t* [Doc. 47] and *Tꜣ-?...?* [Doc. 60]), this is more than likely, given their presence and integration into the local community.

6.5 Concluding Remarks

The New Kingdom town of Sai was populated and visited by a number of people from different social, regional and professional contexts. Very few of them are attested in the prosopographical record from the site and can be identified on a more individual level. Based on the administrative titles that characterise those people, the entire social and professional scale of members of the administration of New

[1385] Except for Docs. 71 and 74, concerning which no further considerations are possible due to the lack of titles and the fragmented state of the names.

[1386] In fact, this ratio of 17.8% is quite high. Without the evidence from cemetery SAC5, the number of females in the context 'town' would, however, be zero, provided that the lintel of *Ḥr-nḫt* (Doc. 60) comes from his tomb in SAC5. Otherwise, only one female would appear in the epigraphical record of the town itself.

[1387] Cf. Toivari-Viitala 2001, esp. 15–18; Onstine 2005.

[1388] Toivari-Viitala 2001, 17–18.

[1389] Toivari-Viitala 2001, 18.

[1390] Toivari-Viitala 2001, 18.

[1391] Cf. Onstine 2005, 19, 24, 75–77; see Onstine 2005, 68–69, for the positioning of the *šmꜥ.yt* in the New Kingdom temple hierarchy.

Kingdom Nubia is present, from the highest-ranking representatives, the viceroys, to the local agents of the state such as the mayors, priests and scribes and specialised craftsmen, such as goldworkers. Next to this male dominated group of people, a small number of females come to the fore, whose attestations are concentrated on Sai only and allow describing their particularly close-knit relationship to the local milieu. Each high-ranking elite individual who is attested on Sai during a certain time, e.g. the joint reign of Hatshepsut and Thutmose III or the era of Ramesses II, can be understood as evidence for the role of Sai as an either earlier 18th Dynasty seat of power in Upper Nubia or for its continuous importance during the Ramesside period.[1392] The role of Sai as central place in New Kingdom Upper Nubia is also mirrored in the archaeology and use-life of the elite necropolis SAC5. Inaugurated under Thutmose III, it is used until late Ramesside times and beyond.[1393] Its main phases are in accordance with the heydays of the Pharaonic town.[1394]

However, not all people attested on Sai are also buried there. In general, two different sets of people can, therefore, be identified. On the one hand, there are the high functionaries of the state, such as particularly the viceroys, whose relationship to Sai was predominantly a professional one, manifest in their temporary presence on Sai Island. They were active here in the framework of their various administrative duties. They left, however, the most monumental epigraphical-prosopographical traces on the island, such as statues, stelae and door frames as representatives of the state personified by the king and thanks to their access to all forms of economic, social, cultural and religious capital.[1395]

The other set of people are the genuine local members of Sai's social fabric, whose attestations are part of the funerary record of SAC5. Although the prosopographical data is – certainly also due to reasons of preservation – clearly incomplete, it displays the artisanal, religious and administrative personnel of the town. *Ḫnm.w-ms*'s job as overseer of goldworkers (and also goldworker itself) fits well with the emerging relationship of the New Kingdom temple towns in Upper Nubia with gold exploitation in the region.[1396] Urban governance is represented by the two mid-18th Dynasty mayors *Jpy* and *Nby*, while the local religious personnel appears for example in the persons of *Mr-ms*, *Ky-jry* and *Ḥn-sbꜣ*. The scribal milieu is prosopographically displayed by *Ḥr-m-ḥꜣb*. Amongst those people who chose to have their final resting place be made on Sai, the deputy of Kush *Ḥr-nḫt* stands out in functional and sociological terms. He was buried on Sai in SAC5 in a typical private New Kingdom pyramid tomb, attesting to his attachment to the New Kingdom town and the local social fabric. Since the known burials of the *jdn.w*'s of both Upper and Lower Nubia are typically to be found in the elite necropoleis of the respective seats of power in Kush and Wawat during the New Kingdom, his burial on Sai is by all means exceptional, given the fact that Amara West can be considered as the headquarters of the deputies of Kush in Ramesside Nubia. It is, therefore, quite plausible that *Ḥr-nḫt*'s tomb and burial on Sai provide firm evidence for the status of Sai as his home town. His epigraphical traces as well as the presence of one of his late Ramesside successors in the town are, in addition, telling for the continuous social and political importance of the town in the region also in the 19th and 20th Dynasties.

Finally, there is a third group between those supra-regionally active administrators and the local people. One representative is, e.g., the mayor *Jʿḥ-ms*. As is apparent in his mayoral title and his chronological position, he is the first local agent of the Pharaonic state on Sai in the 18th Dynasty. While his office links him tightly to the urban sphere of Sai, his temple statues from Karnak, Thebes (or Elephantine?) and Buhen indicate other individual attachments to these places beyond Sai. *Jʿḥ-ms* can, therefore, be identified as one of the Egyptian officials that came to Sai in the context of the final establishment of Egyptian political dominance and territorial appropriation of Upper Nubia under Thutmose III. He seems to, after finishing his administrative duties, have returned to Egypt, at least for his burial that could be expected in his presumed home town Thebes.[1397] Other people of this third group are, e.g., the

[1392] Cf. Budka 2015a, 51.
[1393] Thill 2007; Minault-Gout and Thill 2012; for the dating of SAC5, see e.g. Budka 2017c; Budka 2017k; Budka 2018e.
[1394] Cf. Budka 2015a; Budka 2015d; Budka 2017g; Budka 2018b.
[1395] Cf. Budka 2017d.
[1396] See most recently Vieth 2018.
[1397] Müller 2013, 9.

mayor *Ḫr.jw=f* and the steward of the viceroy *St3w* called *Ḥr-m-ḥ3b*. There is, on the one hand, no direct epigraphical evidence for *Ḫr.jw=f* from the town itself, but the title itself is reflecting local competence. On the other hand, there is epigraphical evidence for *Ḥr-m-ḥ3b* from Sai only (noteworthy, an [auto-] biographical text), which could well be interpreted as signalling not only his presence, but also his local belonging.

After positively characterising the people that are represented on Sai, one might also ask which groups of people are not to be found in the prosopographical record. Interestingly, genuine military officials are lacking. This is, on the one hand, interesting in view of the strategic and military role of Sai during the 're-conquest' of Nubia.[1398] On the other hand, it is not entirely surprising. We may envisage only certain social and functional groups of people as inhabitants and frequent visitors of Sai after its foundation. Sai was conceptualised as 'temple town', as urban settlement in Upper Nubia, so in turn an urban social fabric is to be expected. And once Upper Nubia was fully integrated into the Egyptian administrative framework as the province of 'Kush', SAC5 was inaugurated as necropolis for those people of the local elite milieu who decided – or had? – to stay in the newly established fortified town of Sai Island with their families. Whether some of those people who later appear in the epigraphical record on Sai were 'Nubians' or 'Egyptians' is not visible based on the available prosopographical evidence. It may also be asked whether such a modern division really played an important role in the daily life decisions and experiences of the inhabitants of Sai. What would finally be of immense interest is the demography of Sai in terms of the actual amount of people living in the town in certain periods. The number of prosopographically attested people could then be put in relation with the entire number of inhabitants in order to better understand whether we really see an exclusive group of people only (cf. Tab. 38) or whether also the elite of Sai was more numerous and manifold. Thanks to the ongoing archaeological work in a number of Upper Nubian New Kingdom temple towns, an assessment of such demographic questions based on sound methodological reasoning might be feasible in the near future.

[1398] Cf. Budka 2015b.

Chapter 7: The New Kingdom town in its macrocosm – Sai within Upper Nubia

by Julia Budka

7.1. General remarks

As outlined above, the second objective of the AcrossBorders project after assessing Sai as a microcosm was to address the whereabouts of Sai Island from a macroscopic perspective (Chapter 1.5). To embed Sai into the macrocosm of the New Kingdom, one has to consider the corresponding historical and political situation and especially the site's relationship with other New Kingdom sites. The most acute question at the starting point of the project was definitely the date of the foundation of the town on Sai Island (see Chapter 1.1).

As discussed throughout this volume, much new information about the town's role in the Egyptian 're-conquest' was gained by a joint analysis of archaeological and textual sources as well as the combination of evidence from the town and the contemporaneous cemetery.[1399] This resulted in an improved understanding of the 'colonisation' of Nubia in the 18th Dynasty, of the relevant historical events and especially of the nature of the interrelationships between the Kingdom of Kerma and Egypt.[1400]

The historical and political framework of Sai within the macrocosm of Upper Nubia (Kush) can be outlined as follows:[1401] Prior to the New Kingdom, the Kerma Kingdom of Kush[1402] with its capital at the Third Cataract is known as a substantial rival of the Theban 17th Dynasty. Among others, this is illustrated by the Kamose stelae[1403] and by findings at Elkab.[1404] Kush (Upper Nubia) was ruled by the Kerma king and his vassals. The exact limits of Kerma influence towards the north are still partly unclear, but Wawat (Lower Nubia) seems to have been under independent control of several local rulers, cooperating with the ruler of Kerma.[1405] Sai, Egyptian *Šꜣꜥ.t*, is likely to represent the northernmost stronghold of the Kerma Kingdom with local princes in Upper Nubia. These appear with the toponym *Šꜣꜥ.t* already among the execration texts of the 12th Dynasty.[1406] Huge Kerma tumuli on the island illustrate the importance of the site throughout all periods of the Kerma culture, from Ancient Kerma to Classical Kerma.[1407]

Coming back to the outline of the history of the Egyptian advances towards the south, it is generally assumed that Wawat was again already controlled by the Egyptians at the end of the Second Intermediate Period.[1408] Epigraphical sources from Buhen and other finds suggest that Kamose managed to extend his sphere of influence into Lower Nubia.[1409]

1399 Budka 2018e.
1400 See Budka 2018f, 17–21; cf. also Williams 2018.
1401 See Spencer et al. 2017, 16–20. Cf. also the latest account of New Kingdom imperialism to the south: Morris 2018, esp. 223–248.
1402 For the town of Kerma, see most recently Bonnet 2014, 16–242, 250–253; Bonnet 2018; cf. also Morris 2018, 226–228.
1403 Cf. O'Connor 1997, 62–63; Zibelius-Chen 2013, 136–137.
1404 Davies 2010, 223–240. Cf. also Zibelius-Chen 2013, 135; Valbelle 2014, 107.
1405 Smith 2003a, 80. See also the recent summaries by Morkot 2013b, 924; Valbelle 2014, 107.
1406 See Devauchelle and Doyen 2009, 33–37.
1407 For Kerma cemeteries on Sai Island, see Gratien 1986; see also above, Chapter 1.2.
1408 Török 2009, 158–159.
1409 See Smith 2003a, 80; Török 2009, 103–118; Fisher 2012, 24; Müller 2013, 5. Cf. also Williams 2018, 107.

The Egyptian 'colonisation' of Upper Nubia began with the reign of Ahmose Nebpehtyra introducing major changes for the local population as they were confronted with Egyptian culture and representatives of Pharaonic administration.[1410] Based on recent evidence, it is safe to assume that Ahmose founded the Egyptian site on Sai Island.[1411] As northern stronghold of the Kerma Kingdom, Sai Island was in a very significant and strategic location just south of the Batn el-Haggar; it was probably a key site for the Egyptian expansion towards the south which was now secured for the Egyptian troops by Ahmose, gaining "more control over the buffer zone between Egyptian-held Lower Nubia and Kerma."[1412] His father Amenhotep I was definitely also active at the site and left records which can be interpreted as firm evidence of Egyptian presence on Sai.[1413] However, the first major campaigns against Kerma within the process of the 're-conquest' happened during the reign of Thutmose I, probably with Sai as "a secure launching pad"[1414] enabling the Egyptians to go much further south.[1415] A number of texts refers to the activities of Thutmose I in Upper Nubia, among others royal stelae at Tombos and Kurgus.[1416] A stela by his son Thutmose II at Aswan mentions fortresses, *mnn.w*, of Thutmose I.[1417] The location of these fortresses is disputed: there are no archaeological remains at Tombos[1418] or at Gebel Barkal. New finds at Dokki Gel indicate that one of these Egyptian fortresses might have been in close proximity to the capital Kerma (see below, Chapter 7.2).[1419] Architecture and artefacts at Kerma attest to a contemporaneous heyday of power of the king of Kerma.[1420]

Ongoing fieldwork at the major early New Kingdom sites in Upper Nubia (Sai Island, Sesebi, Tombos, Dokki Gel) has yielded structures and finds dating to the early 18th Dynasty, especially to Thutmose I[1421] – the archaeological work therefore complements the textual evidence. By the time of Thutmose I, there was an increased presence of Egyptians in the area which went hand in hand with a rapid 'Egyptianisation',[1422] although Egyptian influence in the area of the Third Cataract remained unstable and a Nubian rebellion is attested following the arrival of Thutmose I and being settled during the reign of Thutmose II.[1423] The Egyptian conquest of Upper Nubia came to an end with the final victory of Thutmose III against the Kingdom of Kerma – the realm of Egyptian domination now reached as far as to the area of the Fourth Cataract.[1424] Sai Island became one of the, if not the main, centres of the Egyptian administration which was now installed, being composed according to the Egyptian system.[1425] Recent work strongly suggests that the location of the main New Kingdom sites in the Abri-Delgo-Reach (Sai, Soleb, Sesebi and also Tombos) seems to be connected with the character of the area as a rich gold ore region (see below, Chapter 7.4).[1426]

1410 Smith 2003a, 56–96; see also Budka 2015a; Spencer et al. 2017. For Ahmose's activities in Nubia, cf. Kahn 2013, 17–18 with references and Davies 2014a. Note especially the cartouche of Ahmose found near the Kajbar cataract: Edwards 2006, 58–59, pl. 4.

1411 See Budka 2017a, 19; Morris 2018, 119–120.

1412 Morris 2018, 120.

1413 See Gabolde 2012, 127–129.

1414 Davies 2005, 51.

1415 Vercoutter 1973, 7–38; see also Török 2009, 158–159; Morkot 2013b, 913; Davies 2017b.

1416 Davies 1998, 26–29; Budka 2005b, 108–109; Davies 2008, 47; Valbelle 2014, 107; Davies 2017b.

1417 Török 2009, 161 with note 32; see also Gabolde 2012, 136 with note 77.

1418 Cf. Budka 2005b, 113.

1419 Valbelle 2012, 447–464; Valbelle 2014, 107. See also Gabolde 2012, 135–136; Bonnet 2018; Morris 2018, 226–228.

1420 Valbelle 2014, 107.

1421 See in particular Bonnet 2012, 67, fig. 9; Valbelle 2014, 107; Bonnet 2018, 72–77.

1422 Cf. Morkot 2013b, 947; Valbelle 2014, 107. Most recently, this was labelled as "conversion" and "transformation" of the Middle Nile valley which started already prior to Kamose by Williams 2018, 101.

1423 Gabolde 2004; Bonnet 2012, 71; Zibelius-Chen 2013, 138 with further references; Valbelle 2014, 107; Bonnet 2018, 75–77; Morris 2018, 224.

1424 Smith 1995, fig. 6.1; Török 2009, 165; Zibelius-Chen 2013, 138.

1425 For the administrative system installed in Nubia, see Morkot 1991; Morkot 1995; Müller 2013.

1426 Cf. Spence and Rose 2009, 38–39. See also Klemm and Klemm 2013, passim; Darnell 2013, 824–829; Vieth 2018.

7.2 Settlement patterns in Upper Nubia

Until the 2000s, when new fieldwork started in Upper Nubia (Kush), the understanding of settlement patterns in the area was quite limited. The general organisation and administration were well understood, although it was unclear which site functioned as the administrative centre prior to Soleb (from Amenhotep III to the early 19th Dynasty) and Amara West (from Seti I until the end of the New Kingdom).[1427] There are several indications that Sai Island was the Egyptian headquarters in Kush from at least Thutmoside times onwards.[1428] Most studies have concentrated on economic and strategic aspects of the sites, taking textual sources as main evidence. As it is for example well illustrated by the site of Soleb, there was a tendency to focus on stone temples and the cemeteries respectively.[1429] The urban remains and mud brick structures have been rather insufficiently studied. This has changed in the last decade. Settlement patterns in Nubia (northern Sudan) from the New Kingdom have been and are still currently investigated by diverse archaeological missions, in particular at Amara West, Sai, Sesebi, Tombos and Dokki Gel.[1430]

The better-understood settlements in Kush all fall into the category of so-called Nubian temple towns (Fig. 139) which can, according to our present understanding, be considered as "elite residential, administrative and cult centres".[1431] Such sites are laid out on a regular grid plan and consist of an enclosure wall with towers/buttresses and main gates. The orthogonal layout clearly reflects urban planning.[1432] The interior of these 'temple towns' is divided into several seemingly distinct areas which comprise a stone temple for an Egyptian deity, large magazines, administrative buildings and typical Egyptian houses.[1433] For most of the sites textual sources provide the Egyptian term *mnn.w*.[1434] In the mid-18th Dynasty, *mnn.w*, also attested for Sai, may simply indicate "a walled settlement erected in foreign territory."[1435]

Other than at these large urban sites in Upper Nubia, settlement patterns are still difficult to assess. In particular, the rural occupation and smaller villages of Kush are problematic to trace.[1436] With Gism el-Arba[1437] and H25 close to Kawa,[1438] important evidence for non-urban settlements in Upper Nubia was discovered, but these sites have only been partially explored until now. Significant data for some 'rural style' occupation remains were also documented in the hinterland of Amara West.[1439] Furthermore, indirect evidence for non-urban sites in Kush also derives from cemeteries.[1440]

The new boom in urban archaeology in Upper Nubia since the 2000s, with an increase in archaeological fieldwork at sites like Amara West,[1441] Sesebi,[1442] Tombos[1443] and Sai Island,[1444] provided important

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1427 Cf. Török 2009, 180.
1428 See below and cf. Budka 2013a, 78–87; Budka 2017a, 22.
1429 Cf. Schiff Giorgini 1965; Schiff Giorgini 1971; Schiff Giorgini 1998; Schiff Giorgini 2002; Schiff Giorgini 2003.
1430 See Budka 2018f, 16–17, 21–23 with references. For a concise overview see most recently Spencer 2019.
1431 Morkot 1995, 176.
1432 Cf. Moeller 2016, 378–379.
1433 Cf. Kemp 1972, 651–656; Morris 2005, 5; Graves 2011, 63. See also Vieth 2018 for a discussion of the term 'temple town'.
1434 For the latest study on *mnn.w*, see Somaglino 2017.
1435 Morris 2005, 213, 331.
1436 For a summary of New Kingdom occupation in Upper Nubia, see Edwards 2012, 66–74, especially 67. Note that according to Williams 2017 the 18th Dynasty re-occupation of the Middle Kingdom fortress of Serra is a 'rural' settlement of the New Kingdom.
1437 Gratien 1995; Gratien et al. 2003; Gratien et al. 2008.
1438 Ross 2014.
1439 Stevens 2014, 22; Stevens and Garnett 2017.
1440 For the general importance of funerary remains to reconstruct settlement patterns, see Seidlmayer 2006. For cemetery sites in Lower and Upper Nubia, see Williams 2018. See also Williams 2017 for tombs at Serra.
1441 E.g. Spencer 2010, 15–24; Spencer 2014b, 457–485.
1442 E.g. Spence and Rose 2009, 38–46; Spence et al. 2011, 34–39; Spence 2017.
1443 Smith and Buzon 2018.
1444 E.g. Devauchelle and Doyen 2009, 29–49; Budka 2011, 23–33; Doyen 2014, 367–375.

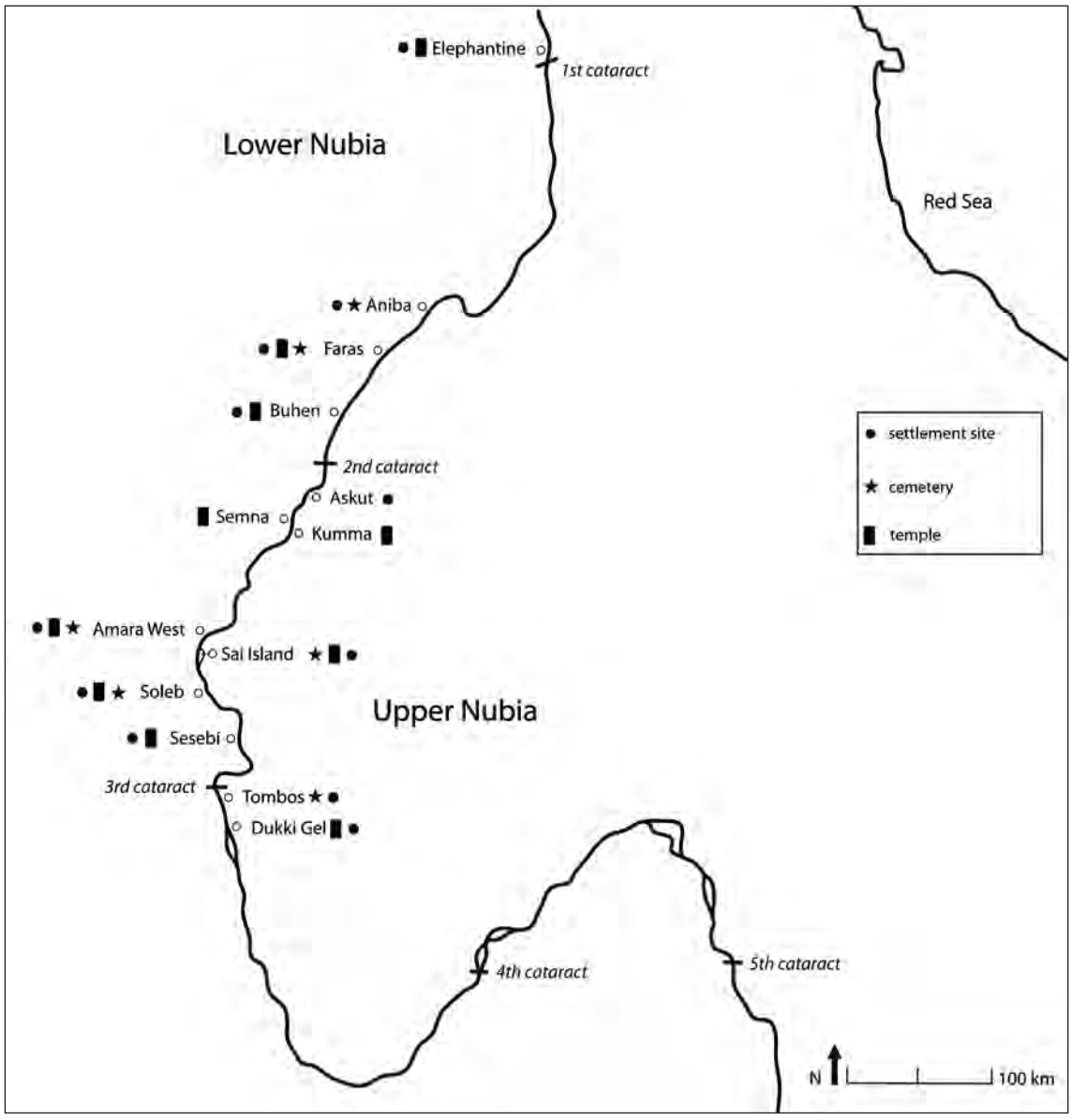

Fig. 139 Map of the most important New Kingdom sites between the First and Third Nile Cataracts, with a focus on settlement sites

clues for a better understanding of settlement patterns in the region (see Chapter 1.4).[1445] The diachronic and regional developments of the settlements in the area have been studied as well as the local properties of the individual sites at a synchronic level. The most important new results are outlined here.

Three major phases of the Egyptian involvement in Nubia are traceable by the settlement sites and can be reconstructed as follows for the period of the 18th and the 19th Dynasties: A) the 're-conquest' of Nubia in the early 18th Dynasty, prior to Thutmose III, with several throwbacks based on Nubian revolts; B) the heyday of establishing the Egyptian administration in Nubia following the defeat of the Kerma Kingdom by Thutmose III (period of Thutmose III to Amenhotep III); C) a re-organisation starting with the time of Seti I in the 19th Dynasty with the foundation of a new site at Amara West (19th Dynasty).

[1445] Just at the beginning of its research on settlement remains is the team directed by Timothy Kendall working at Gebel Barkal, see Kendall et al. 2017.

For questions related to settlement patterns in Kush of Phase A, the early New Kingdom prior to Thutmose III, three sites are essential (from north to south): Sai, Sesebi and Dokki Gel. Evidence from Sai has been discussed above and will also be summarised below. New work at Sesebi since 2008, under the direction of Kate Spence and Pamela Rose, concentrates on a re-assessment of the work by the Egypt Exploration Society in the 1930s. The most important result of this new mission is that structures and material remains, especially pottery, have been found which pre-date the reign of Akhenaten. It is, therefore, very likely that the site was already founded at the very beginning of the 18th Dynasty.[1446] This early site of Sesebi was possibly still without an enclosure wall, perhaps corresponding to the early phase of Sai.[1447]

Substantial remains including major temples and subsidiary structures were recently excavated at Dokki Gel by the team led by Charles Bonnet and have been dated to the period before Thutmose III.[1448] The site is in particular interesting because it combines Egyptian architecture with structures of indigenous, African character, illustrating complex formation processes during the early 18th Dynasty.[1449] If the interpretation of Dokki Gel as an Egyptian *mnn.w* is correct,[1450] this town and ceremonial place provides very significant data for diverse architectural layouts of the 'temple towns' in Nubia.[1451]

The role of Tombos within the 'colonisation' of Upper Nubia in the periods pre-dating Thutmose III still remains uncertain because of only limited excavations in the town area.[1452] However, the inscriptions of Thutmose I mentioned above clearly illustrate that it was an important border region at the Third Cataract, of strategic importance from the very early 18th Dynasty onwards and thus also possibly comparable to Sai in the North.

For aspects of settlement patterns in Kush during Phase B, the mid- and late 18th Dynasty, the most relevant sites are again Sai and Sesebi, but also Tombos and Soleb.[1453] The latter is difficult to assess from an urban perspective – only the stone temple and New Kingdom burials in the cemetery have been studied (see below, Chapter 7.3). Comparably complicated is the assessment of Gebel Barkal where New Kingdom occupation started from year 33/35 of Thutmose III onwards, but where mostly temple buildings have been investigated until today.[1454] According to textual evidence, we know of a *mnn.w* of king Thutmose III at Gebel Barkal, but this important Egyptian outpost remains for now archaeologically unattested.[1455] Phase B clearly marks the heyday of Sai (Thutmose III to Thutmose IV/Amenhotep III), of Soleb (Amenhotep III) and of Sesebi (Amenhotep IV/Akhenaten). These sites were most probably the administrative headquarters of the respective periods. Recent excavations at the site of Tombos, directed by Stuart T. Smith and Michele Buzon, have yielded settlement remains possibly from Thutmose III onwards.[1456] Based on the funerary evidence at the site, Tombos was also one of the important Egyptian centres in the second half of the 18th Dynasty, being contemporaneous to both Sai and Soleb.[1457]

The major site of Ramesside Upper Nubia is clearly Amara West, which marks the turnaround in settlement patterns during Phase C. This newly-founded town is located in the close neighbourhood of Sai, but seems to have replaced the 18th Dynasty sites as administrative centre from Seti I onwards.[1458] Both the New Kingdom town and cemeteries have been explored since 2006 by the team led by Neal Spencer

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1446 Spence and Rose 2009, 39, 42; Rose 2017; Spence 2017.
1447 See Budka 2017c, 79.
1448 See Bonnet 2017; see also Williams 2018, 105.
1449 Bonnet 2018.
1450 As proposed by Bonnet 2017; Somaglino 2017; Bonnet 2018, 72.
1451 See also Morris 2018, 226–228.
1452 See Smith and Buzon 2018. Cf. also Spencer 2019, 433.
1453 See Williams 2018, 105–106.
1454 Kendall et al. 2017.
1455 See Kendall et al. 2017, 162–163 who stresses the strategic importance of this *mnn.w.*
1456 See Smith and Buzon 2018.
1457 Smith and Buzon 2017; Smith and Buzon 2018. For Gebel Barkal in the second half of the 18th Dynasty, see Kendall et al. 2017, 165–178.
1458 The foundation of Amara West by Seti I is well attested by means of stamped mud bricks in the enclosure wall with the name of the king; see Spencer 1997, 15–17, pl. 8; Spencer 2017, 325.

and have revealed new finds of much significance for understanding aspects of domestic life in Ramesside Kush.[1459] Within the formal walled settlement, Spencer could trace "less formal areas"[1460] from the earliest phases onwards. These zones comprised houses and high-temperature industries on a small scale.[1461] All in all, the new investigation of Amara West has clearly shown the necessary re-assessment of how individuals and households shaped a new town (see also Chapter 8).[1462]

Taking all the evidence in account, it seems safe to propose that the evolution of the New Kingdom town of Sai, as preliminarily and fragmentarily as it is currently understood, actually reflects the major three phases of Egyptian involvement in Nubia (see also Chapter 8.3).[1463] The assessment of settlement patterns in Nubia has profited substantially from modern technical advances, which have become important for settlement archaeology in Nubia and have resulted in new data.[1464] Especially relevant are geoarchaeological approaches and the exploration of the environmental settings.[1465] Analysing spatial relationships of the sites by means of GIS has much potential[1466] and can already build upon a model of distances between Egyptian sites in Nubia developed by Irmgard Hein.[1467] New scientific analyses enable investigations on the micro-scale and site-specific approaches, which are in particular significant when combined with a view from the macro-scale. Neal Spencer rightly pointed out: "A re-assessment of the role of individual/household agency in creating and shaping a new town in Pharaonic Nubia is necessary."[1468] This aspect will be discussed in more detail below (Chapter 8).

It is highly relevant for this up-to-date summary of settlement patterns in Upper Nubia that evidence from both Amara West and Sai Island suggest that real developments within Egyptian towns in Nubia may differ considerably from theoretical urban planning.[1469] Although a hierarchy of diverse sizes of houses is present at these state foundations, a dissonance of houses from 'standard layouts' seems to have actually been common and integral parts of very dynamic worlds.

Thanks to the combined bottom-up and comparative approaches of the AcrossBorders project, it became in particular evident that the 'planned' appearance of Sai as 'temple town' with an orthogonal layout is not as uniform as previously thought. AcrossBorders' excavations at sectors SAV1 East and SAV1 West unearthed varied areas within the town with an orthogonal grid system which are most likely the results of a number of dynamic factors characterising a social fabric which is more complex than the macro approach towards an Egyptian town in Nubia would suggest.[1470] Furthermore, we have to keep in mind that not all sites in Nubia fell into the category of 'temple towns'.[1471]

As was mentioned above (Chapter 5), research on the agriculture, animal husbandry and food production at New Kingdom sites in Nubia is at most sites still ongoing.[1472] These topics are closely related to the still unknown characterisation of the hinterland of New Kingdom towns in Kush.[1473] The question of the hinterland is in turn highly relevant for the supply and administration of the Egyptian sites (see also below, Chapter 7.4). The faunal remains can give information regarding the local or external supply with livestock. On Sai there would in general be plenty of space and availability for husbandry, espe-

[1459] See, e.g., Spencer 2009, 47–61; Spencer 2010, 15–24; Spencer 2014a, 42–61; Spencer 2014b, 457–485; Spencer et al. 2014, passim with further references; Spencer 2017.
[1460] Spencer 2017, 349.
[1461] Spencer 2017, 349.
[1462] Spencer 2015; Spencer 2017, 352.
[1463] Budka 2015d.
[1464] For the general impact of new technologies on Egyptian settlement archaeology, see also Moeller 2016, 36–38.
[1465] See Spence and Rose 2009, 43–45; Spencer, Macklin and Woodward 2012, 37–47. Cf. also Edwards 2012, 67 and this volume, Chapters 2 and 5.
[1466] See Vieth 2018.
[1467] See Hein 1991, 129–134.
[1468] Spencer 2017, 352.
[1469] Spencer 2015, 201–202; Budka 2017h, 17; Budka 2018f, 21.
[1470] See Budka 2017h; Budka 2018f, 21.
[1471] Cf. Snape 2014, 224.
[1472] Cf. Cartwright and Ryan 2017; Spencer 2017, 349.
[1473] See Spencer 2019, 444–446.

cially for pigs and herds of sheep and goats. However, the pigs found in the early 18th Dynasty levels of the town were most likely brought from Egypt at the beginning (see Chapter 5.2).

Fishing and hunting at New Kingdom temple towns is another topic related to the location of the sites and their possible advantages compared to other places. Unsurprisingly, Sai as an island in the Nile shows a rather rich ichthyofauna with a larger number of diverse species (Chapter 5.2.1).[1474] According to the evidence from the faunal remains, tilapiine fish were of minor importance for the diet at New Kingdom Sai. This is interesting, since the faience nun bowls from the town frequently show tilapiine fish as decorative motifs, but functioned here as symbol of fertility and regeneration (see Chapter 4.3.2).

Among possible game animals, gazelles are well-attested in the faunal remains from the New Kingdom town of Sai, in particular dorcas gazelles (see Chapter 5.2.1). Although a possible direct link remains hypothetical, it is striking that at sector SAV1 West three animal figurines in the shape of gazelles (or ibexes) were found (Chapter 4.3.2). Obviously, these animals were of some importance to the inhabitants of Sai. In line with this, the hippopotamus may be mentioned. This wild animal species is attested within the faunal remains from the cellars at SAV1 East, as raw material for amulets (SAV1E 0971) and as a clay figurine (SAV1E 0851). It might be accidental that all of the attestations for hippopotamus derive from sector SAV1 East with its large scale magazines and cellars; however, a connection with the town's role within the Egyptian administration and its function to collect the so-called tributes (see below, Chapter 7.4) seems possible as well.

The sources of the agricultural products consumed by the inhabitants of the New Kingdom temple towns are presently still unclear. Archaeobotanical research at Sai has shown certain similarities, but also differences with sites like Kerma and Amara West (see Chapter 5.1). Although there are, according to the geoarchaeological research, possible agrarian lands to the south of the town (see Chapter 2.6), it is at present unclear which of the agricultural products were produced locally and which were imported to the island. From the historical point of view, the question whether communities in the newly founded towns could live self-sufficiently was probably of little priority for the Egyptians. These state foundations designed for "a primarily imported Egyptian population"[1475] were always thought to be part of well-established trade networks and had a functional connection with the exploitation of raw materials and the collection of *jnw* (see below, Chapter 7.4). However, some aspects of the flourishment of the New Kingdom sites could also be related to the sustainability of the respective agricultural systems and livestock farming. Compared to Soleb and possibly also to Sesebi, the heyday of Sai is in particular very long and the use of the island as settlement place is much older than the New Kingdom, attesting the very convenient living conditions on the island.[1476]

To conclude, the settlement patterns traceable in Upper Nubia at the present state of research seem to reflect the historical and political phases of the New Kingdom, but also allow stressing the importance of understanding the local microhistories which might deviate from the general development and superior plans. For the 18th Dynasty, Sai clearly mirrors the development from a simple supply station for Egyptian troops and location to collect gold and sandstone to a major Egyptian temple town and elite burial ground of clearly urban character (see Chapter 7.3).

7.3 Cemeteries and tombs in Upper Nubia

At all major New Kingdom sites in Kush cemeteries have also been found in close proximity to the towns. These cemeteries are of typical Egyptian character. In the case of Sai, the pyramid cemetery SAC5 is located approximately 800m south of the New Kingdom town.[1477] Its size and qualitative data

[1474] The eastern side of Sai Island along the main branch of the Nile with its rapid water flow offered since Holocene times good opportunities for fishing, see Florenzano et al. 2019, 30.

[1475] Snape 2014, 224.

[1476] For research on the early plant food production at Sai. see Hildebrand 2007; Garcea and Hildebrand 2009 (see also this volume, Chapter 5.1).

[1477] Minault-Gout and Thill 2012, 3; Budka 2014b; Budka 2015e; Budka 2017k.

underline the importance of Sai as administrative centre during the mid-18th Dynasty in Upper Nubia.[1478] The Pharaonic style tombs of SAC5 find close parallels at the Lower Nubian site of Aniba and in Kush at Soleb, Tombos and Amara West,[1479] but also in Egypt, e.g. in the Theban necropolis.[1480] The burial remains in the tombs cover almost the entire New Kingdom and the site was still used into the Pre-Napatan and Napatan periods.[1481] 24 rock-cut shaft tombs with mud brick chapels and mostly pyramidal superstructures were excavated by the French Mission at SAC5;[1482] one tomb of the same type was discovered and studied by the AcrossBorders project (Pl. 145).[1483]

According to the material unearthed until today, SAC5 was not in use prior to Thutmose III and flourished until the late 18th Dynasty, reflecting the general heyday of New Kingdom Sai.[1484] The pyramid cemetery is, therefore, contemporaneous to the extensive building activities in the town, traceable in all town areas with a stone temple, an enclosure wall, magazines and cellars as well as the governor's residence (see above, Chapters 1.1 and Chapter 3.2.2). Most tombs in SAC5 also testify a phase of re-use in Ramesside and Late New Kingdom times and the usurpation of older structures seems to represent the Ramesside standard at Sai.[1485] As yet, no structure has been found in SAC5 that was built as a new tomb after the 18th Dynasty.[1486]

Like at the other sites mentioned above, SAC5 is a necropolis of Egyptian type with a preferred extended position for burials, pyramid superstructures resembling the New Kingdom Theban model and typical Egyptian installations for funerary offering cult. The assumption that Egyptian administrative staff and their families were buried here is very likely and seems to be reflected in high quality objects such as heart scarabs and stone shabtis.[1487]

Of different character is the 'mixed' cemetery SAC4, located to the north of the Egyptian town. This cemetery was more of Nubian-Egyptian type with rectangular shafts, but no pyramids. However, the grave goods are Egyptian and no Nubian pottery was found. This contrasts to the presumed elite tombs at SAC5 where small amounts of Nubian pottery can be noted. According to Brigitte Gratien, graveyard SAC4 probably served for interments of Kerma people who were in contact with the Egyptians living on the island (and maybe for less high-ranking Egyptians as well).[1488]

Another major Egyptian site in Upper Nubia with pyramid tombs and Egyptian-style burials is Soleb.[1489] Remarkable parallels can be noted between the newly discovered Tomb 26 on Sai and Tomb 15 at Soleb. These correspondences in both architecture and finds imply a close connection between the two sites during the second half of the 18th Dynasty. Furthermore, the respective elite cemeteries also illustrate the almost identical status of both sites as administrative Egyptian centres.[1490]

The pyramid necropolis of Tombos was investigated in the last decade and yielded burials from Thutmose III to Ramesside times (as well as Napatan interments). The New Kingdom tombs and the cemetery burials at Tombos are predominantly 'Egyptianised'[1491] and well comparable to Soleb and Sai. However,

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1478 Minault-Gout and Thill 2012, 418; Budka 2014b; Budka 2015a, 51; Budka 2015b, 77–80.

1479 See Steindorff 1937; Schiff Giorgini 1971; Smith 2003a, 136–166; Binder 2017. See also Budka 2017k; Budka 2018e.

1480 See Budka 2015e, 56–58. For dating such tombs with pyramidal superstructures not before the mid-18th Dynasty, see Näser 2017, 560. Recently, Williams 2018 dated the first occurrence of pyramid tombs in Nubia already to the early 18th Dynasty; this dating issue seems at present still open.

1481 Thill 2007, 353–369; Budka 2014b; Budka 2015e.

1482 Minault-Gout and Thill 2012.

1483 See Budka 2018e.

1484 Budka 2018e with references.

1485 The re-use of older structures as a mode of burial is also attested at Soleb, see Schiff Giorgini 1971, 100. The re-use of Tomb 26 from Sai will be published elsewhere: Budka forthcoming c. At Amara West, pyramid tombs, simple shaft tombs and also a 'Nubian' tomb with a tumulus superstructure are attested for the Ramesside period, see Binder 2017.

1486 See Budka 2017k, 127.

1487 Budka 2018e.

1488 See Gratien 2002; cf. Williams 2018, 2015.

1489 Schiff Giorgini 1971.

1490 Budka 2017k, 128.

1491 Smith and Buzon 2018; Williams 2018, 105.

similar to the site of Amara West, there is also evidence for "biological entanglement" of the people buried at Tombos.[1492] The autochthony or allochthony of the skeletal remains was also tested with Strontium isotope analyses.[1493] In general, fresh research in the Egyptian cemeteries at Tombos[1494] and Amara West[1495] has shown a complex social diversity during the entire period of the New Kingdom (both in the 18th Dynasty and the Ramesside era). AcrossBorders' findings at SAC5 of Sai also correspond to this picture.[1496] Strontium isotope analysis has identified the overseer of goldworkers and presumable family members buried in Tomb 26 as autochthonous individuals.[1497] A complete assessment of these finds still needs to be undertaken, but at present is seems likely that Khnummose was an offspring of an Egyptian 'colonist' who came to Sai during the time of Thutmose III. It is, however, equally possible that a person like Khnummose, who appears completely Egyptian based on his burial style and burial gifts in Tomb 26 and has an Egyptian title (overseer of goldsmith), actually has roots in the indigenous population of Upper Nubia who were confronted with Egyptian culture ever since the campaigns of Ahmose. This corresponds well to the overall assessment of the mortuary evidence from the cemeteries of the New Kingdom sites in Kush: The funerary record supports the assessment of the material culture, especially the pottery, from the town sites that the respective occupants represented a multifaceted community, including both Egyptians and Nubians.[1498]

Especially in line with this complex 'entanglement' of cultures, a recent account by Bruce Williams on evidence from burial sites in Lower and Upper Nubia is noteworthy. He argues that the adoption of Egyptian culture, and here especially of religious culture traceable very well in the funerary remains, was not begun by the Egyptians themselves during the New Kingdom but started already earlier. According to Williams, the roots for the very quick "conversion" and "transformation" in New Kingdom Nubia into Egyptian culture can be sought prior to the 18th Dynasty in the colonies/the vassal regions attached to the Second Cataract sites where people were working for the Kerma rulers.[1499]

Similar to the topic of settlement patterns and settlement types, several questions about cemeteries of the New Kingdom sites in Kush still remain open. Recent research has, however, clearly pointed out that tombs and burials are of prime significance for understanding life in New Kingdom Nubia. Despite of a general Egyptian character of the tombs and burials, case studies from Amara West, Tombos and Sai illustrate that at the local level social, economic and cultural identities were changing, interacting and merging with each other and that there was a complex intermingling of Egyptians and Nubians.[1500]

7.4 Trade and administration in Upper Nubia

Nubia is famous for its rich supply of gold and it is well known that Nubian gold was among the main Egyptian economic interests during a long time span.[1501] There is increasing evidence that the rich gold occurrence in the Abri-Delgo-Reach influenced the foundation of the New Kingdom sites there[1502] and that the dense distribution of New Kingdom temples in this region might be connected to the gold of

[1492] Smith and Buzon 2017; Smith and Buzon 2018.
[1493] See Buzon 2016; Smith and Buzon 2017, 618–619, fig. 5.
[1494] Buzon 2008; Buzon 2016; Smith and Buzon 2014; Smith and Buzon 2017; Smith and Buzon 2018.
[1495] Binder and Spencer 2014; Spencer et al. 2014; Binder 2017, especially 606–609.
[1496] Budka 2018e with references.
[1497] Budka 2018e, 192.
[1498] See Budka 2018e.
[1499] Williams 2018.
[1500] Binder 2017, 606–611; Smith and Buzon 2017; Smith and Buzon 2018; Budka 2018e.
[1501] Cf. Vercoutter 1959, 120–153; Müller 2013, 74–79; Morris 2018, 130.
[1502] See Klemm and Klemm 2013, 569–570; Klemm and Klemm 2017, 266; also Darnell 2013, 828.

Kush.[1503] Recent archaeological fieldwork at Sesebi,[1504] Sai Island,[1505] Tombos[1506] and Amara West[1507] seems to support this association of the sites with gold exploitation. According to the Klemms, a significant change in gold processing and prospecting took place in the New Kingdom with the important "introduction of the grinding mill to the mining industry."[1508] This new type of mill allowed the increased exploitation of auriferous quartz vein systems and is attested in all New Kingdom sites mentioned above.[1509]

According to Egyptian texts, the amount of gold coming from Kush seems to differ from the one from Wawat.[1510] This is especially the case during the reign of Thutmose III when much more gold of Wawat was registered.[1511] From the time of Amenhotep III onwards, Kush seems to have gained in importance as a gold mining area as, for example, representations in the Theban tomb of viceroy Huy illustrate.[1512] Textual evidence implies a decline in gold production in Ramesside times;[1513] future archaeological fieldwork has the potential to confirm or modify this perception.

Another important raw material which was desired by the Egyptians in Nubia was sandstone (see Chapters 2.3 and 2.4). Epigraphical sources attest that the sandstone from Sai was also used for at least one of the northern temples in Lower Nubia, the temple of Kumma. As outlined by Martina Ullmann in the present volume (Chapter 2.4), such a presumed long-distance transport of stone blocks needs to consider the geology and landscape of the respective sites. Within the cataract region of the Batn el-Haggar, no sandstone formation is known and no traces of Pharaonic quarrying was found. North of this natural barrier sandstone is again attested. For example, the temples at Buhen could rely on building material from near-by sandstone formations. The situation was completely different for the Egyptian temples of Kumma and Semna, located at the southern end of the Second Cataract. For these structures, building material needed to be transported from a long-distance, either from the region of Wadi Halfa in the north or from the south. In the south the nearest sandstone quarries attested for being in use during the 18th Dynasty are the ones on Sai Island (see Chapters 2.3 and 2.4). These were used for the local building activities of the Egyptians such as Temple A, but as was demonstrated above, it is also very likely that the "white stone from Sai" was transported towards the north and was actually used at Kumma (Chapter 2.4). All in all, the sandstone formations on Sai might have been another trigger for choosing to set up an Egyptian town at this island (Chapter 2.6).

In relation with the Pharaonic building activities in Nubia, the highest official of the Egyptian administration, the viceroy or King's son, must be mentioned.[1514] This official was also responsible for building activities, as it is well attested on Sai for viceroy Nehy (see Chapter 1.2 and Chapter 6.4.1.2). The title King's son (King's son of Kush, *sꜣ-nswt n Kꜣš*) seems to go back to earlier models in the Second Intermediate Period, when it was used for military commanders of the troops. A direct relationship, as expressed in the term "son", seems to be a reference to a special position regarding the king, maybe used in contrast to local mayors.[1515] The title in the New Kingdom is King's son of the southern foreign lands/ King's son and overseer of the southern lands and from Thutmose IV onwards King's son of Kush.[1516]

An extension of the viceregal realm during the reign of Thutmose III is evident – prior to this king, the viceroy was only engaged with the supervision of Lower Nubia, but with Thutmose III plenty of

[1503] Klemm and Klemm 2013, 568–570.
[1504] Spencer 1997, 106, pl. 81d; Spence and Rose 2009, 38–39.
[1505] See Klemm and Klemm 2013, 570–572; Budka 2017k, 127.
[1506] See Smith and Buzon 2018, 207, 222.
[1507] Spencer et al. 2017, 32.
[1508] Klemm and Klemm 2013, 9. See also Klemm and Klemm 2017, 261–266; Klemm and Klemm 2018, 60.
[1509] Cf. Spencer et al. 2017, 32.
[1510] Vercoutter 1959, 135; Klemm and Klemm 2017, 261.
[1511] See Morris 2018, 128–130.
[1512] Cf. Zibelius-Chen 2013, 140.
[1513] Vercoutter 1959, 135.
[1514] For general aspects of the Egyptian administration in Nubia, see Morkot 1995; Morkot 2013b; Müller 2013.
[1515] See Budka 2015b, 69–71.
[1516] Morkot 2013b, 925 with note 39.

relevant evidence comes from several places in Upper Nubia. This is most probably connected with the defeat of Kerma and a corresponding shifting of powers (see above, Chapter 7.1).[1517] From the mid-/late 18th Dynasty onwards, the viceroy had two deputies: one *jdn.w-n-Wꜣwꜣ.t* and one *jdn.w-n-Kꜣš*.[1518]

The viceroy of Kush had a very special and close relationship to the king:[1519] he was directly appointed by the ruler and also received straight orders from the king. Besides the building activities in the name of the king and the general supervision of activities in the area, the viceroy was primarily responsible for collecting and transporting gold and other goods from Nubia to Egypt, the so-called *jnw*.[1520] The most common of these benevolences sent to Egypt from Nubia were gold, cattle, desert animals, Nubian exotica, minerals and also people.[1521] At Sai, it was suggested that the large scale magazines and cellars at SAV1 and SAV1 East of the New Kingdom town were probably connected with the Egyptian administration and the *jnw* (see above, Chapter 3.2.2).[1522] The same possibly applies to the large-scaled sectors of magazines in the other Egyptian 'temple towns'. At Sesebi, the large cellars of the houses have been interpreted as being related to the gold mining/crushing quartz at the site.[1523]

The local administration on the regional level of the New Kingdom towns in Nubia is still poorly understood, but mayors (*ḥꜣtj-ʿ*) are for example attested at Aniba, Buhen, Faras, Sai and Soleb.[1524] Especially well known is a scene of Nubian officials in the Theban tomb of viceroy Huy, including a number of *ḥꜣtj-ʿ*s from different sites.[1525] The title "overseer of the towns of Kush"[1526] suggests a specific hierarchy for these officials, which still remains uncertain. As it was suggested by Kemp for the general group of Egyptian mayors, it seems likely that mayors of Egyptian towns in Nubia "acted as a buffer between the external demands of the state and the wellbeing of the local community of which they were the symbolic head."[1527] In Egypt, the king's chief representative was the vizier,[1528] in Nubia the mayors would have turned directly to the viceroy. Installing loyal people in this position could, therefore, facilitate good relations between the local communities and the Egyptian representatives. Here it is significant that, as Ingeborg Müller has proposed, there had been a development concerning the mayors in Nubia[1529] – at the beginning of the 18th Dynasty, mayors as the local chiefs of the towns can be identified as Egyptians who returned to Egypt after their mission in Nubia.[1530] By the mid-18th Dynasty, holders of the title mayor are known to have been buried in Lower and Upper Nubia[1531] – thus these persons may be either Egyptians who decided to stay away from home, or, and this seems to be more likely, they are 'Egyptianised' Nubians who were working as 'Egyptian' officials at the Egyptian site (see also Chapter 8).[1532]

Besides the mayors, the so-called *wr.w* – Nubian chieftains with an Egyptian title and integrated in the Egyptian administration – played a role in Egyptian towns at the local level.[1533] A tomb scene in the monument of viceroy Huy at Thebes depicts both *wr.w* of Wawat and *wr.w* of Kush on the occasion of the *jnw*-presentation to the viceroy.[1534] Hekanefer is the best-attested of all *wr.w*, having left an

[1517] Cf. Morkot 2013b, 912–915.
[1518] Morkot 2013b, 925–926 (system established during the time of Amenhotep II to Thutmose IV). Cf. also Budka 2001, 72.
[1519] Budka 2001, 78; Török 2009, 179; Müller 2013, 18–31.
[1520] Cf. Smith 2003a, 70–73; Morris 2018, 128–131.
[1521] Morris 2018, 130.
[1522] See Budka 2017e, 443.
[1523] Blackman 1937, 150; Spencer et al. 2017, 32.
[1524] Cf. Müller 2013, 48. For a concise list of all New Kingdom mayors in both Egypt and Nubia, see Auenmüller 2013, 652–775 (see also this volume, Chapter 6.4.3).
[1525] O'Connor 1983, 183–278.
[1526] Morkot 2013b, 925.
[1527] Kemp 2006, 282.
[1528] See Kemp 2006, 282.
[1529] Müller 2013, 47–48, 209.
[1530] Müller 2013, 48, Tab. 2.5.2 Nr. 16; see also Auenmüller, this volume, Chapter 6.5.
[1531] Especially at Aniba and Soleb; see Minault-Gout and Thill 2012, 413–418 and Auenmüller, this volume, Chapter 6.4.3.
[1532] Müller 2013, 48; Budka 2018e, 193.
[1533] Morkot 2013b, 944–950.
[1534] O'Connor 1983, 261, fig. 3.20. Cf. Morkot 2013b, 947.

Egyptian-style tomb, funerary equipment and various graffiti at Toshka.[1535] Robert Morkot has argued that Kushite princes like Hekanefer held a major influence in Nubia, especially in the area south of Sai, between the Third and Fourth Cataracts.[1536] They should be considered as an integral part of the Egyptian administration system in Nubia, but many aspects still remain unclear. For example, their way of dwelling is still uncertain: Nubian chieftains and their families might very well have been settled and integrated within the walled Egyptian towns, but maybe some of the settlements outside of the enclosures are also connected with indigenous people at New Kingdom sites (see Chapter 8).[1537]

One type of building which is attested at several New Kingdom 'temple towns' and can be associated with elite representatives of the Egyptian administration is the so-called governor's residence, also documented at Sai (see Chapter 1.2). As already suggested by Manfred Bietak,[1538] the location of these buildings seems to be one of their characteristics as they are most often situated in the southeastern corner of the walled area. Other than for the commander's buildings in Middle Kingdom fortresses, this location is not a strategic one with a real military character, but a prominent position stressing the importance and high status of both the built architecture and its owner.

Especially noteworthy for governor's residences like the example from Sai, SAF2, is the large central hall (15.57 × 16.17m)[1539] with formerly six columns, whereby only two of the stone column bases (diam. of 87–89cm) are still in situ.[1540] Similar central halls of large building complexes are attested at other sites – column bases have been found at Amara West, building E.13.2,[1541] but also at earlier fortresses in Lower Nubia. Buhen, Semna and Uronarti yielded columned halls.[1542] Another parallel can be named with the fortress of Askut and its "commandant's quarter".[1543] In Egypt proper, sites like Amarna illustrate the importance of columned halls as representative rooms in the centre of villa-sized houses.[1544] There are, furthermore, "centre-hall houses" attested as elite dwellings at Sesebi.[1545] A columned audience hall is one of the elements illustrating similarities and links between palaces, temples, the Kahun elite houses of the Middle Kingdom and the Amarna villas.[1546] Resemblances of the so-called governor's palaces in Nubian fortresses and towns and the large Kahun houses are, therefore, not surprising.[1547] Associations based on the architectural layout seem also possible with the so-called campaign palaces attested at Uronarti and Kor.[1548]

The columned halls in the governor's palace at Buhen have axial entrances as it is typical for representative architecture, including palaces and the Amarna villas.[1549] In contrast, in SAF2 at Sai and also in the residence at Askut the access into the hall is located at one of the corners of the rooms which is normally characteristic for domestic buildings and medium-sized houses.[1550] All in all, the governor's residences of New Kingdom towns like the example in Sai seem to reflect a rather complex function of

[1535] Morkot 2013b, 947 with references; Smith 2015.
[1536] Morkot 2013b, 944–950. See also Edwards 2004, 111; Morris 2018, 224. Archaeological research in the Debba Bend also yielded no archaeological traces of Egyptians during the New Kingdom and thus seems to support Morkot's theory of a different kind of organisation in the area south of the Third Cataract; see Grzymski 1997.
[1537] See Budka 2018a.
[1538] Bietak 1984, 1247.
[1539] Adenstedt 2016, 58, 62, fig. 18.
[1540] Azim 1975, 107–108; Adenstedt 2016, 58.
[1541] Spencer 1997, 163–167.
[1542] See Vogel 2010; Vogel 2012.
[1543] Smith 1995, 140, fig. 6.2; Fuchs 2009, fig. 101; Vogel 2012, 155–156; Adenstedt 2016, 58.
[1544] See Arnold 1989; Bietak 1996; von Pilgrim 1996, 211; Koltsida 2007, 57–61. See also Vogel 2004, 129 for the columned halls within Nubian "commandant's palaces" as "Wohn- und Repräsentationsbereich."
[1545] Morris 2005, 338.
[1546] Bietak 1996, 37; cf. Fuchs 2009, 47. For Kahun and the so-called palace there, see Arnold 2005.
[1547] Cf. Vogel 2004, 145.
[1548] See Kemp 1989, 178–179, with fig. 64 (with literature) = Kemp 2006, 241–242, fig. 89; Morris 2005, 187; Fuchs 2009, 71–72; Lacovara 2009, 107–108; Budka 2018a.
[1549] Cf. von Pilgrim 1996, 211, citing some examples and literature.
[1550] von Pilgrim 1996, 211.

the building that is of a representative character, but being merged with basic dwelling purposes.[1551] For example, at Amara West there are functional rooms such as bathrooms and kitchens attested.[1552] Storage facilities illustrate functional aspects of daily life in such building complexes which also included service rooms.[1553] The residences first of all illustrate that there was the need for a representative building offering certain luxury to the local elite, the mayor and/or possibly the viceroy within the fortified towns.[1554] Such structures probably held more than one storey and were equipped with special types of pavements.[1555] Stone column bases and lintels, thresholds and door jambs in stone are all expressions of the elite status of these palatial residences.[1556] SAF2 and the other so-called governor's residences in the New Kingdom 'temple towns' provide diverse insights into aspects of the local administration, including religious establishments in very specific circumstances.[1557]

To conclude, this survey of aspects connected with trade and administration allows placing New Kingdom Sai into the macrocosm of New Kingdom Nubia, finding on the meso-scale close parallels to Sesebi, Soleb and Tombos and illustrating a complex evolution throughout the New Kingdom reflecting historical events and complex, evolving social structures. Much new evidence for trade and administrative tasks was unearthed by the AcrossBorders project on Sai Island. The Egyptian town set up on the island can, therefore, be regarded as the administrative centre of Upper Nubia (Kush) during the Thutmoside Period and most probably as the predecessor of Soleb and Amara West.[1558] Founded at a strategic position on the east bank of the island, the New Kingdom town functioned from the beginning as a control point and landing place for ships. Besides the importance of seizing Sai, which was the northern stronghold of the Kerma state empire, the Egyptians seem to have preferred the site also because of the natural resources of the area. Egypt's strong interest in gold and sandstone is well known and both materials were available in the region of Sai. Nubian gold was among the main Egyptian economic interests during a long time span.[1559] Like other 'temple towns', Sai also offered supplementary opportunities to collect desired items, such as cattle, desert animals and people, for shipment to Egypt.[1560] In addition, last but definitely not least, the New Kingdom installations on Sai, such as the Amun temple and the fortified town enclosure, embodied the successful conquest of former Kerma land, one of the actions of the victorious kings of the 18th Dynasty, which was continuously celebrated, and being incorporated in the royal ideology of the New Kingdom.[1561] This last aspect could explain the continuous importance of Sai, even when it was replaced as formal administrative centre by Soleb and then by Amara West.

[1551] See Budka 2018a.
[1552] Spencer 1997, 163.
[1553] See evidence for silos, bakeries and service rooms in the governor's palaces at Balat: Soukiassian et al. 1990, 355.
[1554] Cf. Vogel 2012.
[1555] Budka 2018a.
[1556] Cf. Budka 2001, 6 with further literature.
[1557] See Budka 2018a.
[1558] See Minault-Gout and Thill 2012, vol. 1, 415, fn. 27; Budka 2013a, 78–87; Budka 2014a, 36; Budka 2015b, 74–81; Budka 2015d, 57.
[1559] Cf. Müller 2013, 74–79; Budka 2018f, 23.
[1560] For the possibility that Sai was also connected with mineral-extraction in the desert of the west bank around Amara West, see Stevens and Garnett 2017, 304.
[1561] Cf. Morris 2018, 131. On the New Kingdom towns as "architecture of control", see also Spencer et al. 2017, 20.

Chapter 8: Sai as an Egyptian microcosm in Nubia

by Julia Budka

8.1 Living on Sai in the 18th Dynasty

"Cross-culturally, colonists often attempt to recreate the built environment of their homeland down to the smallest detail in order to enhance their feeling of belonging in an alien environment."[1562]

As outlined in Chapter 7, the site of Sai Island can be understood as the prime example for settlement policy of New Kingdom Egypt in Upper Nubia from the early 18th Dynasty onwards. One may propose that the New Kingdom Egyptian towns set up in Nubia mirror Egyptian lifestyle within Egypt proper, but recent work has illustrated that the individual microhistories of the individual site had a considerable impact and resulted in local developments.[1563] Despite of a general state-planning of sites such as Sai in Nubia, certain dynamics are traceable and one may well challenge the assumption that apart from general common characteristics, there were precise factors defining a certain type of Egyptian town in New Kingdom Nubia. Such towns like Sai were most probably "multi-faceted in function, ensuring – to varying degrees – the control and exploitation of resources, access to and monitoring of and or river trade routes, the support of military campaigns and mining expeditions, and the promotion of Egyptian propaganda and ideology."[1564] Taking all these aspects into account, it seems therefore likely that these New Kingdom sites share several aspects, but differ in others, depending on their regional context and, most importantly, on the input of their occupants and their decisions. Steven Snape has, for example, proposed "that some Egyptian colonists felt secure enough to develop a more disperse form of urban occupation, which they would have known well from, for instance, Thebes."[1565]

On a broad scale, the Egyptian 're-conquest' of Upper Nubia introduced central changes for the local population as they were confronted with Egyptian culture and in particular with representatives of Pharaonic administration (see Chapter 7.4).[1566] Ellen Morris recently stressed the impact of three major conversions within New Kingdom Nubia: 1) built environment, 2) economy mirroring Egypt's system and 3) a new religious landscape focusing on Amun, divine kings and other Egyptian gods.[1567] All three aspects are to be considered when reconstructing the lifestyle of Egyptians and Nubians on New Kingdom Sai. These living conditions in terms of the built environment seem to have developed in the course of the 18th Dynasty as was outlined above (Chapters 3.2.2 and 3.3.2). Evidence from AcrossBorders excavations suggests that Sai was largely dependent on Egypt in the early 18th Dynasty and supplies were at least partly brought from Egypt (cf. the evidence from the ceramics and the animal bones, in particular pigs). Only during the reigns of Hatshepsut and Thutmose III there is increasing evidence for a more independent state of Sai and the temple towns in Nubia in general (see Chapter 7.2).

The conversions regarding the administrative system and the religious landscapes lead to the question of the cultural identity of the occupants of the newly founded towns such as Sai. Recent archaeological research (e.g. at Tombos,[1568] cf. Chapter 7.3) has begun to highlight that impenetrable boundaries and prominent ethnic categorisation in Egyptians and Nubians in New Kingdom Nubia are likely to be

[1562] Morris 2018, 230.
[1563] See Spencer 2015; Spencer 2017; Budka 2018f, 22.
[1564] Spencer et al. 2017, 20. Also for urban sites in Egypt it is not possible to differentiate specific functions for various categories of urban forms, but rather "principal functions" which vary, see Moeller 2016, 379.
[1565] Snape 2014, 224.
[1566] Smith 2003a, 56–96. For a slightly different view that the conversion to Egyptian culture has its roots already in the Second Intermediate Period, see Williams 2018. Cf. also Morris 2018, 224.
[1567] Morris 2018, 223–252.
[1568] Smith 2003a; Buzon 2008; Smith 2014a; Smith and Buzon 2017; Smith and Buzon 2018.

a modern conception and no longer tenable.[1569] In line with modern theoretical approaches to identities and cultural entanglement, these sites can be taken as examples to illustrate the dynamic and situational character of past societies.[1570] Other than drawing artificial border lines between Egyptians and Nubians, the aim should be to reconstruct social, economic and cultural identities at the local level of these Upper Nubian sites. Such identities can change, interact and merge with each other,[1571] and allow a more direct approach to diverse aspects of life than a stereotype perspective derived primarily from textual references. As Neal Spencer could demonstrate: "the actions of individuals and small groups play a major role in maintaining and developing social organization and cultural expression".[1572] Recent works have furthermore stressed that "hybridization and entanglement have a temporal dimension"[1573] and a diachronic approach to Egyptian-Nubian relations at individual sites is clearly necessary.[1574]

One big advantage of the microscale of AcrossBorders' approach can be described in the words of Anna Boozer: "By examining individuals, families, or small groups within their social fabric, we become aware of variants that macroscale analyses flatten out in quantitative approaches."[1575] However, already at planning the research project, it was completely clear that this ambitious pretence will be difficult to achieve for Sai with evidence from the town only. Thus, from the beginning the combined approach, assessing the material culture of Sai with both finds from the town and from the elite cemetery SAC5, promised new information on the micro-level (see Chapter 1.4). Tomb 26 allowed tracing a family who lived in 18th Dynasty Sai and the finds from the tombs, especially the pottery, found close parallels in the town area.[1576]

In general, the artefacts and especially ceramics processed by AcrossBorders (see Chapter 4) testify to a cultural fusion from the foundation of the town in the early 18th Dynasty throughout the New Kingdom.[1577] The ceramics in particular indicate that there was a complex, two-way mixture of lifestyles, resulting in a great variability and also in 'hybrid' forms that display both Egyptian and Nubian features. Similar findings by Spencer and others mirror "a picture appearing throughout the region of a complex two-way entanglement of Nubian and Egyptian cultural features".[1578] This "heterogenous cultural mix"[1579] has to be embedded in the changing appearances of the respective towns, also taking generations into account.[1580] For Sai it is clear that by the mid-18th Dynasty, during the reigns of Thutmose III and Amenhotep II, things have changed for its inhabitants – the outer appearance is that of an Egyptian fortified town, being mastered by viceroys like Nehy and Usersatet and a mayor of *Šꜣʿ.t* as the highest local representative of the civil administration (see Chapters 6 and 7.4). During this heyday of Egyptian building activity at the site the occupants living there were the second generation of witnesses to the campaigns of the first kings of the 18th Dynasty.[1581] It seems straightforward that the relationship of these individuals with the Egyptians was considerably different compared to their ancestors still living under Kerma rulers.[1582] Considering the general developments in Upper Nubia during the times of Ahmose to Thutmose III, it is not surprising that the persons traceable in the archaeological records are fully integrated into the Egyptian power structure and administrative system.[1583]

1569 Cf. also Näser 2013 for the area of the First Cataract.
1570 Cf., e.g., Jones 1997; Gramsch 2009; van Pelt 2013; Smith 2014a; Spencer 2014a.
1571 Cf. Morkot 1995, 181.
1572 Spencer 2014a, 47.
1573 Spencer 2014a, 57; see also Smith 2014a, 3 and Pappa 2013, 36–37; see also Excursus.
1574 Budka 2017g.
1575 Boozer 2010, 141.
1576 Cf. Budka 2017c.
1577 Budka 2017g.
1578 Smith 2014a, 2.
1579 Smith 2014a, 3.
1580 Spencer 2014a, 42.
1581 See Budka 2015b.
1582 Cf. also Williams 2018 for the respective phases of cultural adaptation and conversion.
1583 Cf. already Morkot 1995, 181.

This becomes especially evident by funerary remains in the elite cemetery of the island, SAC5, where burials in Egyptian-style are attested from Thutmose III onwards.[1584] Even if funerary objects reflect a contemporaneous Egyptian-style, the individuals with Egyptian names and titles might still be of Nubian origin.[1585] Like Morris pointed out, it was more convenient to accept the various items offered from the new Egyptian workshops than to maintain an independent production of traditional Nubian objects and pottery.[1586] However, the traditional objects did not disappear completely, as was pointed out with the evidence from the town of Sai (see Chapter 4). This allows stressing again the impact of individual choices reflected in the material culture – the so-called 'hybrid' pottery vessels and Nubian-style artefacts appearing within the overwhelming Egyptian culture may very well attest to persons which for a number of possible reasons decided not to rely exclusively on the products from the Egyptian workshops. Other than those personal decisions, major motivators for becoming overwhelming Egyptian in New Kingdom Nubia were probably the access to power, increased opportunity within the new system and simply convenience.[1587] People of Nubian origin who wanted to make a career within Egyptian sites like Sai Island needed to speak Egyptian, adopt an Egyptian name and cultivate an Egyptian appearance.[1588] It is quite likely that successful players in the higher social strata were then in turn becoming "role models"[1589] for fellow Nubians who followed their example. One of these successfully converted citizens on Sai might very well be the overseer of goldsmiths Khnummose, whose burial of Egyptian type was discovered in Tomb 26, but for whom Strontium isotope analysis suggests that he was local to the region of Sai.[1590] Examples like Khnummose are to be expected at all New Kingdom sites of the 18th Dynasty in Nubia. As recently presented by Johannes Auenmüller, the social fabric of Soleb is well comparable with Sai, whereas the prosopography from Amara West illustrates certain changes in the Ramesside period.[1591] All assessments of Nubian New Kingdom towns and their citizens must, therefore, consider both the chronological framework and the regional conditions (see Chapter 7).

Excursus: The metaphor of cultural entanglement[1592]

Theoretical background

One of the buzzwords in recent archaeological studies dealing with settlement remains and cemeteries of the 2nd and 1st millennia BCE in northern Sudan is 'entanglement'.[1593] Since this concept also became of relevance for AcrossBorders' interpretation of Sai, the theoretical background and the most important publications and ideas will be outlined in the following. Crucial for understanding new approaches to Northeast African archaeology is a strong bias in early research. Until quite recently, archaeology in Northeast Africa has been dominated by ancient Egypt and its rich cultural heritage. The monuments located in modern Sudan, ancient Nubia, were first described and analysed by Egyptologists and traditionally viewed from an 'Egyptian' perspective, resulting in several shortcomings in assessing African indigenous cultures.[1594] Many studies exhibit an Egyptocentric bias and refer primarily to written Egyptian sources which have been read as accurate evidence, partly neglecting archaeological findings.[1595]

[1584] See Minault-Gout and Thill 2012; Budka 2017k; Budka 2018e.
[1585] Cf. Minault-Gout and Thill 2012, 415; Budka 2018e, 193.
[1586] Morris 2018, 224.
[1587] Morris 2018, 224.
[1588] Morris 2018, 224.
[1589] Cf. Morris 2018, 224.
[1590] See Budka 2018e.
[1591] Auenmüller 2018b and in this volume, Chapter 6.
[1592] For a slightly different version of this excursus, see already Budka 2018h.
[1593] See, e.g., Smith and Buzon 2014; Smith and Buzon 2017; Budka 2018h.
[1594] Edwards 2004, 7. Cf. also Williams 2018, 99.
[1595] See, e.g., Liska 2011.

The early phase of research on Sai Island also shows this bias and a strong focus on textual sources (see above, Chapter 1.2).

The archaeological remains from the periods of the Egyptian Middle Kingdom and New Kingdom, when Egypt 'colonialised' parts of northern Sudan, attest not only to an Egyptian presence but also to certain adaptations of the Egyptian culture. The latter was labelled as 'Egyptianisation' and described as one of the main features of Egyptian colonialism in Nubia.[1596] However, in recent years fresh theoretical approaches have stimulated a diverse discussion and moved away from this too simplistic point of view of processes which were in reality very complex and exhibit local features as well as regional variants.[1597] New work in Egypt and Sudan has begun to identify impenetrable boundaries and a prominent ethnic categorisation in Second Millennium BCE as modern conceptions that are no longer supportable.[1598] Since the publication of an article by Paul van Pelt in 2013 the phenomenon of 'cultural entanglement' is also discussed for New Kingdom Nubia.[1599] These new approaches on archaeological fieldwork in northern Sudan were applied by the AcrossBorders project on Sai Island as a case study where Egyptian culture met with the Nubian Kerma culture.

New approaches to Egyptian and Nubian archaeology

For about five years now, the well-established concept of 'Egyptianisation' has been subject to criticism on the grounds that it projects a one-dimensional and static view of culture. In its stead, a model based on the notion of 'cultural entanglement' has been suggested,[1600] borrowing from a more advanced discussion in Mediterranean archaeology and also studies about Romanisation.[1601] Ongoing excavation work at New Kingdom sites in Sudan has since expanded the material basis of the debate and has shown how central the dynamics of cultural intermingling really are.[1602]

Similar to research in North America and elsewhere, the use of 'entanglement' in Sudanese archaeology is related to colonial and postcolonial studies.[1603] What has yet not been touched in detail is the question whether entanglement in Northeast African archaeology is used as a model or as a metaphor.[1604] Its relation to the older idea of 'Egyptianisation' might suggest that it is regarded as a model. Similar to the concept of hybridity,[1605] which has been discussed in a number of recent papers on Nubian New Kingdom sites and is especially well traceable in pottery vessels (see Chapter 4.2), this can cause several complications.[1606] It seems, therefore, more reasonable to use 'entanglement' as a metaphor.[1607] From my perspective, 'cultural entanglement' stands for an important redirection of the archaeological interpretation of finds in northern Sudan, but should not be regarded as the one and only solution. Following Philipp Stockhammer's categories,[1608] small finds, ceramics and other objects can be seen as evidence of "material entanglement".[1609]

'Biologic entanglement' is another theme recently discussed in Northeast African archaeology, in particular in the work by Stuart T. Smith and Michele Buzon.[1610] Especially the funerary evidence sug-

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1596 Cf. Edwards 2004, 7–9, 107–109.
1597 Cf. De Souza 2013; De Souza 2019, 140–153 and passim; see also Spencer et al. 2017.
1598 See Smith 2003a; Smith and Buzon 2014; Smith and Buzon 2017; cf. also Spencer et al. 2017; Budka 2018f.
1599 van Pelt 2013; Binder 2017; see also Budka 2018h.
1600 van Pelt 2013, based on Stockhammer 2012.
1601 See Stockhammer 2013.
1602 See Smith and Buzon 2014; Spencer 2014a; Budka 2015a; Budka 2017c; Spencer et al. 2017.
1603 For "colonial entanglement", see Silliman 2016, 33 with further references; see also Hodder 2012, 88–112 for various approaches to entanglement
1604 Silliman 2016.
1605 Stockhammer 2012.
1606 See Silliman 2016.
1607 See Silliman 2016; also Budka 2018h.
1608 Stockhammer 2012, 49–51.
1609 See Budka 2018d, 149.
1610 Smith and Buzon 2017.

gests that the individuals buried at the New Kingdom sites in northern Sudan were both Egyptians and Nubians, thus a "culturally and biologically mixed group of people."[1611] Since these people can safely be interpreted as the occupants of the relevant town sites in the neighbourhood of the cemeteries, this is a clear indication that the town population represented complex communities. Related to this new theory, the systematic variation in the isotopic composition of Strontium in the environment and in dental enamel of ancient skeletons was examined in the last decade for tracing human migration in Nubian archaeology (see Chapter 7.3).[1612] The isotope signals can be used as basis for the further interpretation of the autochthony or allochthony of the skeletal remains of the excavated individuals. Ongoing analyses, for example from the AcrossBorders project, will provide relevant new data in the near future.[1613] Again, 'biological entanglement' should first of all be regarded as a metaphor – a metaphor which clearly marks the necessary redirection of older interpretations, away from strict categories such as 'Nubians' and 'Egyptians'.

Recent outcome and outlook

As was illustrated in this volume, the Egyptian town of Sai is one of the most promising examples of a 'colonial site' built during the New Kingdom in northern Sudan, especially because of its long occupation period and its attested history during the African Kingdom of Kerma. As is the case with other Egyptian colonial sites, the archaeological evidence of Sai – the architecture, the objects, the pottery, the religious materialisation – identifies the New Kingdom town as an Egyptian foundation. However, similar to other sites, indigenous Nubian elements are also present and from the beginning of the AcrossBorders project, it was clear that these African features have to be carefully assessed. In order to achieve a better understanding of the situation on Sai, a bottom-up approach to the investigation of the society in the New Kingdom town was introduced, also taking into account new data from the contemporaneous elite cemetery on the island (see Chapter 1.4).[1614]

In the context of these Egyptian elite burials it is important to stress that perceptions of status differ seemingly depending whether they are viewed from a micro or a macro perspective (see Chapter 7.3). Local 'wealth' is well traceable with case studies such as the overseer of goldsmiths, Khnummose, whose family tomb was discovered by AcrossBorders (cf. Chapter 6).[1615] It seems as if flourishing families of Nubian origin on Sai Island were not holding overly significant positions within the Egyptian administration and this once again underlines the dynamic character of this Egyptian microcosm and its occupants in Nubia. AcrossBorders' multi-faceted research suggests that at the local level social, economic and cultural identities were changing, interacting and merging with each other. Sai can, therefore, be regarded as an example for the dynamic and situational character of past societies[1616] for which firm categories such as 'Nubians', 'Egyptians' and 'Egyptianised Nubians' fall short.

To conclude, important advances were made in the last decade regarding the concept of 'Egyptianisation' for Nubia which is now replaced by approaches using theories of cultural entanglement and appropriation.[1617] The notion of the importance of indigenous people for the area and the period was also highlighted[1618] – other than drawing artificial border lines between Egyptians and Nubians, the focus should be on interacting identities of people.[1619] The AcrossBorders project and its interpretation of Sai exhibit this new methodological development and its advances. With a fresh emphasis on the importance of the microhistories and individuals of specific sites, the 'entanglement' metaphor developed in the last

[1611] Smith and Buzon 2017, 619.
[1612] Smith and Buzon 2017; Budka 2017c.
[1613] Budka forthcoming c.
[1614] Budka 2017c.
[1615] Budka 2018e.
[1616] Budka 2017f, 177.
[1617] van Pelt 2013.
[1618] See already Morkot 2013b.
[1619] Cf. Spencer 2015; Spencer 2017.

years for Nubia can also be of relevance for sites located in Egypt.[1620] It seems safe to expect that this new image describing complex inter-African intermingling of cultures will result in fresh insights in Northeast African Archaeology in the upcoming decade.[1621]

8.1.1 The occupants of Sai

> *"Thus, it was quite likely easier, if one lived near Egyptians, to outwardly become Egyptian than it would have been to refuse the clothing, pottery, and other items offered and insist in manufacturing them oneself. Under Kerma rule, after all, Nubians had of their own volition already begun to experiment with adopting aspects of Egyptian material culture*."[1622]

Can we now reconstruct who lived in New Kingdom Sai and how?[1623] The basic problems with this task have already been mentioned and are connected with the general evidence and the difficulties tracing individuals, in particular in urban contexts.[1624] Gender and age are often concealed in settlement contexts and women and children are especially difficult to trace, particularly at Egyptian sites in Nubia.[1625] This topic was tackled by Stuart T. Smith who pointed out what also applies for the citizens on Sai: "Fortress inhabitants usually included both women and children, who are typically neglected in favor of the adult men who performed the more obvious military, political and economic roles associated with these specialized communities."[1626] This bias is especially evident in Egyptian and Nubian archaeology which traditionally focused on textual evidence (see Chapter 7.4 for almost exclusively male officials attested in the Egyptian administration of Nubia; for women in the prosopographical data of Sai, see Chapter 6.4.7). Smith has stressed useful ethnographic parallels and mentions gaming pieces as possible children's toys.[1627] For Sai, the categories of possible toys primarily include small animal figurines and stone and clay balls (see Chapter 4 and see below). Furthermore, there is evidence for several productive activities, such as pottery making, where children were probably involved.[1628]

The question of women within the communities of New Kingdom 'temple towns' is equally problematic. In addition to the presumed bias in the archaeological record, especially within the textual records, "a false notion of objectivity"[1629] by the researchers seems relevant as well. For Nubia, this becomes especially evident in assessments of the cooking traditions: Nubian cooking pots have been associated with Nubian women and cooking is thought to represent a predominantly female activity.[1630] Such a gender-specific factor for the composition of the pottery corpora of Egyptian sites in Nubia assuming that indigenous females were responsible for cooking and were using Nubian cooking pots faces certain difficulties in interpretation.[1631] Male cooking activities are well-attested in various cultural contexts,[1632] and the evidence from New Kingdom Nubia does not allow a precise

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[1620] Cf. corresponding research by Bader 2013 and Bietak 2016.
[1621] Budka 2018h.
[1622] Morris 2018, 224.
[1623] See also the recent summary by Morris 2018, 233–235 with references to AcrossBorders' work. For more general aspects of the occupation in New Kingdom Nubia see Spencer 2019, 446–452.
[1624] Darnell 2014, 239; see also Smith 2003a. For the reconstruction of the elite social fabric at Sai, see Auenmüller 2018b and this volume, Chapter 6.
[1625] Smith 2013. For the lived reality of children in Egypt, see Harrington 2018.
[1626] Smith 2013, 269.
[1627] Smith 2013, 274–275.
[1628] Smith 2013, 274–275.
[1629] See Conkey and Spector 1984, 6: "We argue that the archaeological 'invisibility' of females is more the result of a false notion of objectivity and the gender paradigms archaeologists employ than of an inherent invisibility of data".
[1630] See Smith 2003a, 43–53, 190–193, 204.
[1631] See Budka 2018d, 149.
[1632] See Goody 1982, 101–102; cf. also Raue 2015, 55, fn. 119.

gender-attribution. In general, the Nubian elements traceable in the New Kingdom town of Sai, such as Nubian pottery vessels, may indeed be related to Nubian women who were married by the Egyptian town community,[1633] or just simply to Nubian families loyal to the new rulers from Egypt and engaged with food preparation.[1634] The need for a contextualised approach, in particular the consideration of the chronological dimension, also applies for questions about the presence of children and women at New Kingdom Sai. In the very early phase of Sai, the Egyptians arriving on the island were connected to the campaigns against the Kerma Kingdom. At this early stage, it is likely to assume that these settlers included various officials of military rank as well as craftsmen and others, probably travelling within small, labour related communities and not with their own families. Women and children are rather to be expected for the more consolidated stages of Egyptian settlement on Sai, especially from the time of Thutmose III onwards, when also objects such as amulets and toys can tentatively be connected with females and sub-adults. As was stressed above, it is of less priority to speculate about a 'Nubian' or 'Egyptian' origin of these people; more essential is reconstructing their importance within the social fabric of Sai.

The changing social structures regarding females and sub-adults in the course of the 18th Dynasty on Sai might be reflected in the built environment as was proposed for sector SAV1 North.[1635] The simple, small building units of the earliest phase of Sai traceable at SAV1 North, but also at SAV1 East and SAV1 West, are clearly lacking a second storey and seem unsuitable for larger sets of families. For New Kingdom Egypt, Kate Spence has convincingly shown that at Amarna the second storeys of houses were spaces for female family members and generally dedicated to family life.[1636] Could the layout of the small workshop-like structures with storage installations in the earliest phase of Sai therefore relate to a predominately male occupation of a military character? In line with this, the second building phase of Sai could reflect a more complex social stratification. Besides the administrative buildings at SAV1 East and in the southern part, SAV1 also includes larger, more standardised houses which are comparable to the Amarna houses.[1637] A second storey is more likely for these buildings, perhaps indicating that Egyptian officials living there in the consolidated phase after defeating the Kingdom of Kerma were accompanied by their families.[1638] The lack of secondary storeys in the small building units of Thutmoside date at sectors SAV1 North and SAV1 West of course do not necessarily suggest a lack of females and/or sub-adults in these zones of New Kingdom Sai. The different architectural layout and especially the many sub-building phases of these structures could rather relate to changes on the social level, possibly supporting the idea that individuals had much impact on creating living spaces, even in a state-controlled town like Sai. These dynamics are also clearly reflected in the material culture, in particular the pottery.

How many people lived within the New Kingdom town of Sai is still a really challenging question and will be addressed below (Chapter 8.3). Nevertheless, as was illustrated throughout the volume, the fresh research of the AcrossBorders project allows a more detailed assessment of the citizens of Sai. A well stratified society embedded in the Egyptian administration of Upper Nubia is visible by the prosopographical data from Thutmose III onwards (Chapter 6). In addition to the elite officials and less high ranking persons, most of the occupants remain anonymous. A range of priest titles of people living on Sai testify that the cultural conversion to Egyptian religion was probably complete. The material remains for state and domestic religion on Sai will be discussed in the next subchapter (Chapter 8.1.2).

[1633] Cf. Smith 2003a, 192–193.
[1634] Budka 2016c, 291.
[1635] Budka 2017f, 177.
[1636] Spence 2004.
[1637] See Adenstedt 2016, 45–56.
[1638] Evidence from the pyramid cemetery SAC5 (see Minault-Gout and Thill 2012) attests to family burials from the reign of Thutmose III onwards, clearly indicating the presence of women and children in the New Kingdom town of Sai.

8.1.2 State religion and domestic religion at Sai

With much awareness of both the "blurred boundaries between state and private religion"[1639] and severe problems of identifying relevant proof in settlement archaeology,[1640] the evidence from the New Kingdom town of Sai shall be discussed in the following. As stated above (Chapter 7.2), one of the central elements of so-called 'temple towns' in New Kingdom Nubia are stone temples of Egyptian type, most often associated with cult for the god Amun. Also at Sai, the official Egyptian cult and religious rituals for Egyptian gods can be traced within the context of Temple A.[1641] At this temple not only Amun-Ra, but also 'Horus the Bull, Lord of Ta-Seti'[1642] was adored. The identity of 'Horus the Bull, Lord of Ta-Seti' has been discussed diversely.[1643] I would follow Florence Thill that this deity is not a local Horus deity but a manifestation of Thutmose III,[1644] therefore showing a close connection of the state cult on Sai to kingship and the ruler. The general invocation of divine royalty and the cult of royal ancestors are evident at Sai from the very beginning of the New Kingdom; Ahmose and Amenhotep I both commissioned *heb-sed* statues in a predecessor of Temple A or maybe a *ḥw.t-kꜣ* (see above, Chapter 1.2).[1645]

The deification of Egyptian rulers was a common practice in Nubia. The most important personalities during the New Kingdom are Thutmose III, Amenhotep III and Ramses II.[1646] The cult of Egyptian kings is not only traceable by evidence from temples, but there are also important sources from domestic quarters.[1647] At Sai, the viceroy of Kush, Nehy, can be named in this respect. As viceroy he was responsible for the religious building activity on Sai in the name of Thutmose III. Therefore, it comes as no surprise that several door lintels show Nehy in adoration before the cartouches of Thutmose III (see also Chapter 6.4.1.2).[1648] These lintels were found in the southern part of the New Kingdom town, associated with the magazine area in the western part of the site.[1649] They find very close parallels at Aniba which are interpreted as the earliest of such scenes.[1650] That the first attestation of an Egyptian official adoring the royal cartouche derives from Nubia and here in particular from the reign of the ruler who overthrew the Kingdom of Kerma and founded a large number of sites and temples in the area is unlikely to be a coincidence (cf. Chapter 7.1 and 7.2).[1651]

Interestingly, several door lintels and jambs in domestic mud brick buildings in New Kingdom Nubia refer to the wish of Egyptian officials to participate in festivals in honour of the king and to see the king in his barque.[1652] Furthermore, a barque and statue cult for the living king is also attested thanks to other documents in both Lower and Upper Nubia.[1653] Thus, in addition to the official royal cult associated with temples and rock shrines in Nubia, the ruling king was also a deity addressed by various means in the domestic sphere, especially for the general well-being of the occupants of the towns. This is well illustrated by scenes of adoring the royal cartouches, found on lintels of private houses. The demonstration of loyalty by the officials to the king was of prime importance in the life of an Egyptian official in general, and especially on representative architecture in the settlement sphere.[1654]

Having mentioned the importance of the king and deified kings in Nubian settlements of the New Kingdom, the most common gods addressed for general protection in the domestic sphere shall be

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1639 Stevens 2006, 17.
1640 Cf. Stevens 2006, 17.
1641 Azim and Carlotti 2012; Gabolde 2012.
1642 See Thill 2016.
1643 Cf. Török 2009, 227 who mentions "Horus Lord of Nubia" and "Amun-Re" as the gods of the temple on Sai.
1644 Thill 2016.
1645 Budka 2015b, 76–80.
1646 Cf. Török 2009, 215–262; Morris 2018, 240.
1647 See Budka 2001 with further literature.
1648 Well-comparable to lintels from Aniba, see Budka 2001, 109–113; Thill 2016; Budka 2017d.
1649 See Thill 2016; Budka 2017d.
1650 Budka 2001 with further references and examples.
1651 See Budka 2017d; Budka 2018c.
1652 See, e.g., Budka 2001, 187, fig. 56 (Buhen).
1653 See Müller 2013, 61–62 and 232–233 (general references in Nubia); Budka 2015b, 78 (for Sai).
1654 See Budka 2001, passim.

named. Whereas well-attested deities such as Amun, Hathor, Thot and Ptah also held important roles in the state religion, Bes and Taweret were primarily associated with private religion.[1655] As essential protectors of women and fertility, these two gods were of major importance for daily life. The same holds true for Hathor as the protector of maternity. This goddess is closely associated with women, health-related issues, childbirth and fertility; aspects of sexuality are also included through her role as the mistress of festivity and drunkenness.[1656] The strong association of the gods addressed in the domestic space with aspects encompassing regeneration, rebirth, fecundity, fertility and sexuality[1657] is in particular typical for the 18th Dynasty. In Ramesside times there was a major development; in this heyday of so-called 'personal piety', almost every deity could be addressed in the private sphere.[1658] References to gods of one's hometown now became very common.[1659] Door jambs from Elephantine and Aniba attest that Theban officials made it very clear in their 'home away from home' that they wanted to return to their hometown, to see the gods there and to participate in the local festivals.[1660]

Finally, the prosopographical evidence from cemetery SAC5 in relation to the state cult on Sai can be mentioned. Some personnel of the religious sphere of Sai are attested in tombs of the 18th Dynasty and must have fulfilled their priestly office in the town, but unfortunately the sources are without indication of the specific local cult they were attached to (see Chapter 6.4.5). Thill has suggested a number of possible readings that include either Ra and/or Horus, proposing to connect such a reconstructed priestly title to a particular cult of Ra-(Horakhti) on Sai which she located at the enigmatic 'pyramid' at SAC5.[1661]

Material remains of private religion at Sai

Objects from the New Kingdom settlement of Sai cover a large spectrum of functions, from personal items and tools (Chapter 4) to storage and food production (Chapter 5), but references to fertility and religious acts are also present. Multi-faceted and variable private religious practices are to be expected in an Egyptian town of the New Kingdom, as highlighted in the seminal study by Anna Stevens on remains from Amarna, introducing the term "private religion".[1662]

Rebirth and creative aspects formed especially important issues in daily life and are traceable in some objects found at Sai.[1663] Several groups of objects from Sai fall into the category of rebirth, fertility and well-being.[1664] Firstly, rudimentary female figurines, faience Nun bowls and also specific ceramic vessels, such as duck-bowls and feminoform vessels, can be highlighted.[1665] All of these objects are known from domestic as well as funerary and temple contexts.[1666] The domestic evidence nicely complements the findings in the cultic sphere. For example, from several domestic contexts of the 18th Dynasty (Memphis, Amarna, Elephantine and Sai Island), female figurines are archaeologically associated with Nun bowls.[1667] Nude female figurines are not only connected to sexuality and childbearing, but with a more complex ideology that is somehow hard to grasp.[1668]

1655 Stevens 2006, 18

1656 See Pinch 1993; Stevens 2006, 35–36, 40 and passim.

1657 In ancient Egypt, sexuality, childbirth, fecundity, regeneration and rebirth merge with each other and there is no clear separation line, cf. Meskell 2000, 260; Budka 2016b.

1658 Stevens 2006, 19. For a recent account of the ideas about 'personal piety', see Luiselli 2008.

1659 Cf. Budka 2008, 95 with references; Budka 2015f.

1660 Budka 2001, 113; Bommas 2003, 42 (Aniba); Budka 2008, 96 (Elephantine).

1661 Thill 2017, esp. 207–208. See also Auenmüller, this volume, Chapter 6.4.5.

1662 Stevens 2006, passim. See also Gahlin 2007; DuQuesne 2011. For a new approach of 'Lived Ancient Religion', focusing on the Roman Empire but of much relevance for exploring daily practices also in Egyptian contexts, see Raja and Weiss 2015; Raja and Weiss 2016.

1663 Budka 2016b; Budka 2018c.

1664 Budka and Doyen 2013, 183–187.

1665 See Budka 2016b.

1666 Cf. Budka 2016b.

1667 See Giddy 1999, 28–31, 267, pls. 8–12; Stevens 2006, 178–179.

1668 Cf. Waraksa 2009; Doyen 2016.

More than three dozen female figurines in low-fired clay were found in the New Kingdom town of Sai, finding close parallels in Egypt and Nubia.[1669] The rudimentary figures in the shape of simple sticks with an incised or dotted area representing the pubic region are of a common Egyptian-style (see Chapter 4.1). The simple hand-modelled clay sticks with representations of the female genitalia are already attested in the earliest level of the Egyptian town on Sai.[1670] As was stressed above, some of the figurines combine a typical Nubian pattern of wavy incised lines[1671] with Egyptian stylistic features (Chapter 4.1).[1672] Similar rudimentary figurines with comparable decoration were found at Buhen.[1673] It remains open how these specific figurines were perceived by the individuals at Sai. However, one can speculate that they were either inspired by Nubian-style manufacturing and decorating processes (maybe carried out by a Nubian craftsperson) or that such figurines directly refer to Nubian tattooed women, maybe considered as something special/desirable by the Egyptian and/or Nubian craftsperson.

All in all, although certain aspects how female figurines, feminoform vessels and also Nun bowls were perceived and communicated within the context of the New Kingdom town of Sai remain unclear, these objects are best labelled as "objects of life".[1674] A wide-range of settings for their use has to be taken into account, depending on the context within the site. Based on the common aspects traceable for these object types in New Kingdom domestic contexts, they can also be understood as icons for themes under the general label of "human health or well-being".[1675]

One of the greatest concerns within the sphere of human health in ancient societies such as New Kingdom Sai was clearly the pregnancy of women including birth.[1676] This concern has triggered several object types as materialisation during the New Kingdom, for which gender aspects and the role of children[1677] would be highly relevant, but are almost impossible to reconstruct within the domestic sphere. A specific object addressing the theme of pregnancy in the New Kingdom town of Sai is the cowroid bead (SAV1W 0723) containing an image of the Egyptian goddess Taweret (Chapter 4.3.2).[1678] Taweret is shown wielding a knife, an iconography commonly attested on Middle Kingdom apotropaic wands.[1679] Clearly, Taweret as the protector of pregnant women and childbirth was being invoked here. Together with the general symbolism of a cowrie shell thought to resemble a female vulva,[1680] SAV1W 0723 seems the perfect amulet to protect a pregnant woman during this vulnerable period. The fact that the cowroid is pierced longitudinally would suggest that it was actually worn by a female citizen of Sai, maybe across the pelvic region as part of a girdle.

Regeneration, as expressed in the female figurines and the Nun bowls, is also closely related to ancestor cult and the commemoration of individuals. At Amara West and Sesebi anthropoid busts attest to the invocation of ancestors within the houses at Egyptian sites in Nubia,[1681] while domestic shrines were identified at Askut and Mirgissa.[1682] Although it might be an illusion, such architectural forms of 'private religion', such as shrines, are traditionally interpreted as belonging to the male sphere. Interestingly, the shrine at Askut combines typical Egyptian cultic installations, such as a niche for a stela and a

[1669] Doyen 2016 and this volume, Chapter 4.3.2.
[1670] Budka and Doyen 2013, 183; Budka 2017j, 158.
[1671] See, e.g., a net weight found at Elephantine in Nubian fabric and with an un-Egyptian incised decoration; see von Pilgrim 1996, 276, fig. 120b.
[1672] Budka and Doyen 2013, 183; Budka 2017j, 168.
[1673] E.g. Millard 1979, no. 747, pl. 53.
[1674] Woods 2009.
[1675] Budka 2016b.
[1676] Cf. Leitz 2000 with references.
[1677] For a recent account of children and religion including aspects outside the sphere of fertility in Ramesside Egypt, see Luiselli 2018.
[1678] See Griffin and Gundlach 2015c.
[1679] Cf., e.g., Capel and Markoe 1996, 64, cat. 12.
[1680] See Golani 2014, 75–76. Cf. also Stoof 2015.
[1681] Spencer 2014a, 49.
[1682] Cf. Smith 2003a, 124–133.

libation table, with votives of both Egyptian and Nubian type.[1683] The so-called ancestors busts, mainly attested from Deir el-Medine, have been interpreted as representations of women.[1684] The small amount of such busts from Nubia should probably not be over interpreted and connected to the gender bias in New Kingdom towns of the area (see above), because also in Egypt examples from outside of Thebes are rather small in number.

Libation and the burning of incense are well attested in the New Kingdom town of Sai by means of ceramics.[1685] It is remarkable that pedestal bowls which often contained organic residues, including incense, were primarily found at SAV1 West (see Chapter 4.2). The white wash or slip of these vessels is clearly related to the cultic sphere.[1686] Comparable pedestal bowls/burners in Nubia were found at Askut and Dokki Gel (see Chapter 4.2). Based on the parallels from Askut, it is possible that a former shrine within one of the structures at SAV1 West has not been excavated yet or has not survived the Post-New Kingdom activities at the site.

Another remarkable group of objects from the New Kingdom town of Sai are small sandstone and clay balls found in all sectors (SAV1 North, the southern part of the town, SAV1 East and SAV1 West). These spherical objects find close parallels at Elephantine and other New Kingdom settlements in Egypt.[1687] Miniature clay balls are well known from Amarna, where they could be connected to the ritual of the first haircut.[1688] Nevertheless, some of these balls from Sai probably represent actual gaming pieces and might have been primarily used as toys by children. One example from the southern part of the town, SAV 003, has been sealed with a finger ring giving the name of Thutmose III, possibly for apotropaic reasons.[1689] This clay ball can, therefore, be regarded as evidence that the king (and divine versions of the ruler) was especially popular in Nubia – not only in the official temple cult, but also in domestic contexts (see above).[1690]

The group of objects presented here covers only a set of nuances of day-to-day activities, highlighting the fact that creative aspects were important issues in daily life at New Kingdom Sai, corresponding to preferences traceable in Egypt proper.[1691] All in all, it seems that the inhabitants of Sai were equipped with a standard set of objects required in an Egyptian settlement of considerable influence. On a high-ranking level it was compulsory to demonstrate an Egyptian appearance, no matter if this was an actual one or a role adopted as inhabitant of the Egyptian site (see above).[1692] Besides the god Amun, the king himself was of prime importance for the occupants within their domestic surrounding.[1693] Loyalty to the king was the key to general well-being and promotion.[1694] Since the Egyptians sent to Nubia in the 18th Dynasty were living in towns set up by the state authority, i.e. the king, this is well understandable. It seems perfectly natural then that they were consequently also putting their faith in the king to arrange a safe burial, common health and most importantly, their return back to Egypt. The pronounced role of the living ruler in New Kingdom towns in Nubia might be regarded as slightly more important than in towns in Egypt.[1695]

Very similar to Egyptian sites in Egypt, there are several levels of religious practices in the Egyptian towns in Nubia. Everything connected with text and inscriptions creates a perfect image of a 'home away from home' where the king was of prime importance, followed by the main state deities. However, if one takes a closer look at the less prominent evidence – the uninscribed objects and pottery vessels –

[1683] Smith 2003a, 132, fig. 5.32.
[1684] Harrington 2005; see also Exell 2008.
[1685] Budka 2016a.
[1686] See Hulin 1984; Budka 2006, 91.
[1687] For balls from Amarna, see Stevens 2012, 232–233.
[1688] See Arnst 2006. Cf. also Budka 2017g, 439, fig. 9.
[1689] Budka 2017g, 439, fig. 9.
[1690] Cf. Budka 2001, 53–54; Spencer 2014a, 48.
[1691] Cf. Stevens 2006, 323–329.
[1692] Budka 2001; Budka 2015f; cf. also Morris 2018, 224.
[1693] Cf. Budka 2001, 62.
[1694] Budka 2001, 99–101.
[1695] See Budka 2001, passim; Budka 2017d.

it becomes clear that the situation is much more complex. For day-to-day affairs, people at Sai trusted gods like Bes, Hathor and Taweret for their well-being.[1696] This picture very closely compares to sites located in Egypt itself.[1697] Similar to Amarna, there is a clear bias between high-ranking/elite references to the state religion and the anonymous finds evoking gods in the domestic sphere. However, there is also an element specific to private religion on sites like Sai: Egyptian objects appear side by side with Nubian-style objects and sometimes also as hybrid-types, combining both traditions and thus most probably reflecting lived realities of the citizens of Sai.[1698] Thus, a complex mixture of lifestyles at Sai, well attested through the ceramic evidence, obviously also affected the private religion. Individual choices and group dynamics may sometimes be more significant than cultural identities,[1699] seen also when it comes to pious practices. It is tempting to associate both the natural stone SAV1W 1184 (Chapter 4.3.2) and the seal-amulets SAV1E 1089 and SAV1E 2865 (Chapter 4.3.1) with such individual choices.

8.1.3 Domestic activities at Sai

For most of the common domestic activities, such as grinding, fishing and spinning, the tools and relevant installations at Sai are typical of contemporaneous Egyptian towns.[1700] The question of the group of net weights which might reflect a "centralized system of food production"[1701] was already discussed above (Chapter 4.1). Some of the whetstones found in the town area might also be related to fishing, representing sharpening tools for metallic fishhooks, which have not survived in the material record at Sai.[1702]

Grinding is well attested at both sectors excavated by the AcrossBorders project, SAV1 East and SAV1 West, by means of abundant grind stones. The only quern emplacement, found in Structure D at SAV1 West (as part of Feature 159, see Chapter 3.3.4), was found within a grind stone but still clearly attested the crushing of grain for the bread making process.[1703] Other than grain, other materials were crushed as well. At Sai this might have been quartz for the gold processing, but definitely pigments for making colours. Colour palettes and mortars were especially numerous at SAV1 West, where also painter's pots appeared. One of the best examples for stone tools associated with making colour is SAV1W 1694, a kind of mortar where red pigment was found inside, obviously being crushed with the pestle SAV1W 1693 discovered next to the mortar (see Chapter 4.4.2).

One has to stress that in all groups of tools from Sai, thus the micro- and macrolithics, the bone tools and the metallic tools, many objects do not allow identifying a precise function. Some were clearly multi-purpose tools, which might also apply to many of the re-used sherds. All in all, diverse activities of grinding, crushing, hammering, polishing and piercing took place in New Kingdom Sai.

Food production was not only one of the main tasks in towns like Sai, but the various tasks connected with it also left a considerable amount of material remains. The quern emplacement and the grinding stones were already mentioned; built remains are the oven room at SAV1 West and several cooking areas at SAV1 East. The latter are located in probably open spaces and the baking and cooking took place on informal surfaces. One baking plate was still found in situ (Feature 63) and left only small spots of ash and burnt material on the surface; this might explain why no proper hearths were found during AcrossBorders' excavation. More of such cooking areas are to be expected.[1704] The so-called fire dogs, which

[1696] Budka 2018c.
[1697] See especially Stevens 2006, passim.
[1698] This can also be observed for the official cult in the Egyptian temples set up in Nubia, see Török 2009, 228–229.
[1699] Cf. Spencer 2014a, 47.
[1700] See already Budka and Doyen 2013, 199–200. For activites in the New Kingdom towns in Nubia see most recently Spencer 2019, 452–455.
[1701] Smith 2003a, 101.
[1702] Budka 2017j, 166.
[1703] Samuel 2000, 561; Lang 2016.
[1704] For similar zones at Amara West, see Dalton 2017.

are presumably also connected with cooking (see below), were only found at sectors SAV1 North and SAV1 West, maybe associated with the large number of Egyptian-style cooking pots from these sites.

To conclude, it is important to consider household and cooking devices in context, within their find spot and architectural framework in the New Kingdom town of Sai. As demonstrated above by the examples of sectors SAV1 East and SAV1 West, the architectural remains within the town of Sai can differ considerably in size, for example, in the wall thickness of the buildings (see Chapter 3.4), but compare well for the material remains, especially the pottery and stone tools,[1705] though with certain dissimilarities regarding the quantities and proportions. This suggests that the prime usage of distinct areas within a town is not always clearly reflected in the material evidence, but may be diluted in the archaeological record.[1706] Sediment thin section micromorphology has the potential to answer questions regarding the functions of buildings and streets which are neither traceable on the macro-scale nor by means of find analysis (cf. Chapter 3.7).

8.2 Comparison with the towns of Elephantine and Abydos

The major goal of the AcrossBorders project was to evaluate the specific living conditions on Sai Island in comparison to the sites of Elephantine and South Abydos – three sites situated across ancient borders and cultures – and to reconstruct the multifaceted lives of individuals (see Chapter 1.4). Is there evidence for a common 'New Kingdom lifestyle' or are there clear differences illustrating the diverse environmental conditions? The results from excavations within the New Kingdom town have clearly demonstrated the need to consider all remains of household activities and material culture in general in context, within their specific find spot and architectural framework. This also needs to be kept in mind for this short outline of AcrossBorders' comparative approach.

Together with the mud brick architecture, the pottery and objects from the main building phases at sectors SAV1 East and SAV1 West are responsible for identifying the sites as parts of an Egyptian town. The material culture is closely comparable not only to sites in Upper Nubia, but also to sites like Amarna and Elephantine in Egypt (see Chapter 4.1). Stone tools are the most common category of finds and are comparable to finds from Egyptian New Kingdom sites, but also find parallels in the Nubian cultures. Object categories like Nun bowls and female figurines are well comparable between the sites of Sai, Elephantine and Abydos. However, the figurines from Sai partly combine their Egyptian appearance with Nubian decorative patterns (see Chapter 4.1).

One of the differences between Sai and Egyptian sites like Elephantine and Abydos is its scarcity of textual evidence within the categories of small finds. As mentioned above, jar dockets are extremely rare and no ostraca have been found to date (See Chapter 4.1). Another difference, which partly applies to the comparison with Elephantine and Abydos, but especially with one to the main residential sites in Egypt like Memphis and Amarna, is that no signs for faience production were found on Sai. Moulds for small faience objects, commonly attested at Egyptian sites, are missing in the material culture from the New Kingdom town of Sai.[1707] Faience and glass production was presumably carried out in the large urban centres of New Kingdom Egypt.[1708]

At present, ceramics are the group of finds which are best suitable to highlight both similarities and differences between the sites. As highlighted in Chapter 4.2, the pottery from the New Kingdom town of Sai compares well with material from Elephantine and Abydos, but with some features attesting to a local style. Especially meaningful is an assessment of the functional pottery at the individual sites which have all yielded ceramics of clearly domestic character. The most common functional vessel types from

[1705] Budka 2016c.
[1706] See Budka 2017j, 170.
[1707] See Budka 2017j, 165–166.
[1708] See most recently Hodgkinson 2018.

all three sites are pot stands, cooking pots and bread plates.[1709] Another quite well-attested functional type is the so-called *Schaelbecken* or fish dishes, also attested at Abydos, Elephantine and Sai (see Chapter 4.2, Fig. 91). In general, these large thick-walled trays with incised decoration on the interior occur both in Marl and Nile clay variants. Here, it seems significant that Marl clays dominate the corpora at Abydos and Elephantine, whereas on Sai primarily local Nile clays were used.[1710]

Amongst the site-specific features of the town of Sai, the large number of fire dogs is especially relevant (see Chapter 4.2). Compared to Elephantine and Abydos, the quantity is much higher and raises the question whether the fire dogs are really only connected with the preparation of food, holding a cooking pot above the fire. It seems possible that fire dogs are also connected with some production process or might have been used as multiple tools. This could suggest some kind of workshop character for parts of SAV1 North and SAV1 West where the majority of the fire dogs were found. Interestingly, the high concentration of fire dogs is comparable to the very large number of stone tools found in these sectors.[1711] Finally, one should not rule out the possibility that fire dogs in New Kingdom Sai received a new kind of meaning and were used in a different way than in Egypt.

Another category of functional vessels which are, like the fire dogs, still not completely understood regarding their function are so-called crucibles, in German "Spitzbodenflaschen". These are well attested at both Sai and Elephantine,[1712] finding parallels at Amarna[1713] and Mirgissa.[1714] Whereas these vessels were frequently found in the contexts of hearths/ovens at Mirgissa and Elephantine, the find contexts on Sai are diverse and the function remains unclear. Common features of all "Spitzbodenflaschen" are that they are produced in coarse Nile C variants and most of them were red burnished.[1715]

The class of spinning bowls, dishes with two handles attached to the interior of the base, is also one of the interesting types within functional ceramics (Chapter 4.2).[1716] Spinning bowls have been recorded at all three sites. Whereas Elephantine and Abydos show a more or less even distribution between Marl clay and Nile clay spinning bowls,[1717] Sai yielded a considerably lower number of Marl clay vessels. Nile clay spinning bowls dominate the corpus at Sai and this represents a contrast to the findings in Egypt.[1718]

In general, functional ceramics from 18th Dynasty strata at all three sites compare well with each other. Despite of close parallels regarding the general corpus and the vessel types, a distinct difference seems to apply to the use of Marl or Nile clay for functional vessels. This can be illustrated by spinning bowls, but also fish dishes ('*Schaelbecken*'), pot stands and *zir* vessels. It becomes therefore evident that the differences between the sites are probably connected with the access to raw material and the closeness/distance to pottery production centres. Much of the functional pottery on Sai seems to have been produced according to the local demand, at least from the time of Thutmose III onwards. The sites in Egypt obviously had access to both imported pieces from main production centres and products from local workshops.

These findings regarding diverse accessibilities to raw materials as reflected in the pottery corpus of Sai in direct comparison to the Egyptian sites of Elephantine and Abydos compare well to observations concerning another group of objects from the New Kingdom town of Sai. Flint tools were primarily produced according to the local demand from locally/regionally available chert and flint pebbles/gravels (see Chapter 4.4.1), even if these stones were of rather poor quality. Just a very a very small amount of

[1709] See Budka 2006, 84–88 for South Abydos; Budka 2018d for Sai and Elephantine.
[1710] Budka 2018d, 162.
[1711] See Budka 2017g, 438.
[1712] See Budka 2018d, 162.
[1713] Rose 2007, 92–93, type SG5.
[1714] Vercoutter 1970, 199–200.
[1715] Budka 2018d, 158.
[1716] See Rose 2007, 60–61, SD 6, 202–203.
[1717] See also the general assessment for this type of functional ceramic based on the evidence from Egypt by Allen1998, 28: "The pottery fabric from which the bowls are made does not seem to be important."
[1718] Budka 2018d, 162.

the flint objects was made in better quality material and imported from Egypt, most likely from Thebes and/or Amarna. It is likely to assume that these imported flints, like Marl clay vessels, were brought to Sai already as finished product and not as raw material.

At present, despite a general similarity with contemporary pottery in Egypt, the Egyptian pottery from Sai Island can be used as a case study that local pottery workshops and traditions are traceable in New Kingdom Nubia. Regional style was mostly expressed by surface treatment and decoration (e.g. the preference of painted triangles or incised lines, see Chapter 4.2).[1719] Accessibility of raw materials and knowledge of production techniques are in general of key significance for assemblages of finds and in particular for ceramics.

The most pressing questions about the pottery from Sai Island, especially with regard to its comparison with Elephantine and Abydos, were the identity of the producers/potters and of the users of the vessels. The answers must derive from respecting a very dynamic microcosm with fuzzy boundaries between cultural identities at the site (see above). As illustrated by other examples with both real Egyptian and Egyptianised pottery, e.g. in the Levant, the following seems likely for Sai as well: "the close and multifaceted links between issues of cultural identity and the production sequence and technology employed in pottery manufacture, as well as the food ways and administrative systems of the individuals who produced and utilized such pottery".[1720] No clear traces of kilns were found at Sai, but part of the material was definitely a local production in Egyptian-style (see Chapter 4.2). Here, it is interesting to mention the situation of pottery production at the Middle Kingdom Nubian forts. Nadejda Reshetnikova and Bruce Williams have convincingly argued that episodic work of potters as itinerant craftsmen travelling from site to site played an important role.[1721] Based on the existence of a ceramic potter's wheel head at Askut, Smith demonstrated that the production and distribution of pottery in Middle Kingdom Nubia was probably quite complex, including industrial workshops at major sites like Askut as well as local production for demands on a much smaller scale at other sites.[1722]

For New Kingdom Sai it would be reasonable to assume an industrial workshop during the heyday of the site. However, since we still know little about the internal structure of the town, it is possible to consider small scale production as well; perhaps the demands of the various sectors within the town were fulfilled on a micro scale. Hybrid versions of New Kingdom and Nubian-style vessels illustrate the close interconnections between Egyptians and Nubians. One has to assume that Nubian potters were being trained in wheel-made production by Egyptians, at least in the first generation. For this training, but also possibly to explain higher quality products in local fabrics as they were found, for example, in Feature 15 at SAV1 East, the presence of Egyptian potters at the site is very likely.[1723]

Nubian cooking pots and storage vessels are regular finds both at Sai and Elephantine and have also been found at Abydos.[1724] Such pots seem to attest to Nubian presence, maybe to Nubian cooks or persons otherwise involved in food production. Nubian fine wares seem a little less clear in this respect; they may also be regarded as 'luxury ware', likewise used by Egyptians.[1725] Nubian fine ware is common at both Sai and Elephantine, but so far lacking from the town of Abydos.

To conclude, the individuals using the pottery within the New Kingdom town of Sai remain difficult to grasp, also after the comparison with Elephantine and Abydos. Of course they were the citizens of New Kingdom Sai, but apart from that, much is still debatable. At present, the most likely scenario would be that both Egyptians and Nubians settled at the site, with the Egyptians probably being the majority, at least in the early phases. That the Nubian pots are the minority confirms to the character of Sai as an Egyptian-style town. Similar to the other groups of the material culture, the pottery corpus seems to attest to people who identified themselves primarily as Egyptian officials and occupants of an Egyp-

[1719] Cf. Smith and Buzon 2018.
[1720] Pierce 2013, 531.
[1721] Reshetnikova and Williams 2016, 500–501. Cf. Budka 2017i, 123; Budka 2018d, 164.
[1722] Smith 2014b.
[1723] Budka 2018d, 164–165.
[1724] See Budka 2006, 85–86, fig. 1.
[1725] Cf. Helmbold-Doyé and Seiler 2012, 36; Raue 2015, 360–361. See also Raue 2018, 78–80.

tian site but may nevertheless have had family ties in Nubia and derive from a local group with a specific cultural identity that was never completely abandoned but much adapted to an Egyptian appearance.

8.3 Summary

Formation processes in all areas of AcrossBorders' excavation within the New Kingdom town of Sai were examined, in particular by micromorphology (Chapter 3.7). It became obvious that daily life activities, such as grinding, storing things, cooking and baking, contributed to the creation and use of space in the town. The mud brick architecture at both SAV1 East and SAV1 West was subject to continuous modification, reconstitution and also re-use. Floor surfaces differ from open to roofed spaces and footways like the "wall street" at SAV1 West experienced several changes of use.[1726]

Pottery, small finds, tools and various types of equipment were analysed in relation to their associated finds, architecture and past human actions. The functional, economic and social significance of these finds was assessed and the question of Nubian versus Egyptian lifestyle discussed (see Chapters 8.1 and 8.2).[1727] Objects of Egyptian type dominate the material assemblage at Sai, reflecting observations made at other Egyptian Nubian towns.[1728] Nevertheless, specific elements which are most probably results of local dynamics and site-specific to Sai were also highlighted (Chapter 8.2).

All in all, the new information from Sai presented in this volume is highly relevant for understanding distinct phases of the Egyptian occupation in Upper Nubia. Evidence from Sai suggests that the Egyptian sites were largely depending on Egypt in the early 18th Dynasty – the region was centrally administered and supplies were brought from Egypt.[1729] Besides the importance of seizing Sai, which was the northern stronghold of the Kerma Kingdom, the Egyptians also seem to have preferred the site because of natural resources of the area (cf. Chapter 7). Egypt's strong interest in gold and sandstone is well known and both materials are available in the region of Sai. Nubian gold was among the main Egyptian economic interests during a long time span.[1730] The sandstone from Sai was most likely also used for pharaonic building projects further north (see Chapters 2.4 and 7.4).

Archaeological findings of recent years illustrate that the 're-conquest' of Nubia and the establishing of Egyptian authority in Upper Nubia was a long process with considerable changes (see Chapter 7). Large scale Pharaonic building activities seem not to be attested before Thutmose III: only then, with the Kerma Kingdom overthrown, the 'temple towns' and large stone temples for gods were realised. Beginning with the reign of Thutmose III, there is also abundant evidence for viceroys, mayors and other officials in Upper Nubia; the system of the *jdn.w n W3w3.t* and *K3š* was established soon after (see Chapter 7.4).[1731] Consequently, life and living conditions in Nubia have changed markedly in character with these major structural changes from the reign of Ahmose Nebpehtyra to Thutmose III. On Sai, this is reflected, among others, in the pottery. An increase in the variability in shapes and wares can be noted from the time of Thutmose III onwards and is most probably related to the heyday of Sai as an administrative Egyptian centre. The ceramics also attest to the full integration of the town within Egyptian international trade routes of the second half of the 18th Dynasty, when the Egyptian administration in Nubia was firmly established.[1732] What must not be overlooked within this macro-approach considering the evolution of Sai is that the Egyptian New Kingdom empire, similar to the Roman Empire, must be understood "as a complicated, multifaceted force of social change in individual lives, rather than a seamless whole."[1733]

1726 Cf. Dalton 2017 for similar processes at Amara West.
1727 Cf. Smith 2003b. See already Budka 2015b, 68–69.
1728 See, e.g., Millard 1979; Smith 2003a, 101 and Chapter 4.
1729 Cf. Budka 2015a, 50–51; Budka 2017b, 57–58.
1730 Cf. Müller 2013, 74–79.
1731 Cf. Morkot 2013b, 925–926.
1732 See Budka 2011, 31.
1733 Boozer 2010, 155

Reconstructing life on New Kingdom Sai has made considerable progress in the last few years and there is new information for the complex evolution of the town site thanks to the application of diverse methods and extended fieldwork in the town, as well as in the main pyramid cemetery, SAC5. It seems now safe to propose that the evolution of the new Kingdom town of Sai, as preliminarily and fragmentarily as it is currently understood, actually reflects the phases of Egyptian involvement in Nubia (Chapter 7). Sai was a changing microcosm throughout the New Kingdom, shaped by different individuals and adapting to historical and economic progress on its own local level. The following three main phases are proposed for the development of the town:[1734]

- Phase A. In the early 18th Dynasty, Sai was probably not much more than a simple landing place, a bridgehead and supply base for the Egyptians during the reigns of Ahmose Nebpehtyra, Amenhotep I and Thutmose I. This is supported by new archaeological evidence from SAV1 East and around Temple A. Scattered proof of Egyptian presence comes from the reign of Hatshepsut. The size and internal structure of the town at this early stage remains unclear; there is no sign of an enclosure wall, although occupation remains were discovered in 2017 at sector SAV1 West parallel to the town wall. One can only speculate that if an enclosure of this early phase existed, it probably had different dimensions than the one established in Phase B.
- Phase B. The 240 × 120m large walled settlement with buttresses and the main city gate in the west was established (or maybe re-established?) during the time of Thutmose III, after the defeat of the Kerma kingdom. The site turned into an important administrative centre with an Amun-Re temple, a governor's residence (SAF2) and an administrative building (Building A). The dating of the foundation of the town wall of this phase is now confirmed thanks to recent work in SAV1 West. The enlargement of the site goes hand in hand with an increasing complexity with varied lifestyles amongst the inhabitants, suggesting a complex social stratification. Sai Island was now the administrative headquarter of Upper Nubia and continued to flourish until the reign of Amenhotep III.
- Phase C. New finds from both the town site and cemetery SAC5 stress the importance of Sai during the 19th Dynasty. The island was still used by high officials including one of the deputies of Kush as burial place. These fresh data add to our knowledge of events in early Ramesside times in Upper Nubia and illustrate that our present understanding is far from complete, especially concerning regional contacts between the Egyptian sites.

These phases based on the archaeological and textual evidence from Sai Island are of relevance in a broader context and contribute to a better understanding of the relations of Upper Nubia with Egypt. The first phase, attested by scattered remains and deposits in the northern, eastern and western parts of the town, can until now not be associated with a town wall. Early New Kingdom evidence at Mirgissa[1735] and Sesebi[1736] might represent parallels for an Egyptian settlement without enclosure wall. Despite of an in some respects very fragmented state of knowledge about Phase A on Sai, it seems safe to suggest that the earliest 18th Dynasty remains are markedly different from the later 'temple town' layout, despite the fact that the earliest remains at SAV1 East seem to show the same grid-arrangement as is later attested with Building A (see Chapter 3.2.3). All of this supports the reconstruction of Sai as an important site for the Nubian campaigns of Ahmose and Thutmose I. Therefore, the following distinction of historic/political phases of Upper Nubia during the 18th Dynasty which cover the Phases A and B of Sai Island can be proposed:

Phase 1a = Phase A) Ahmose Nebpehtyra led several campaigns against the kingdom of Kerma in Nubian territory, reaching as far as the Third Cataract (see Chapter 7.1). Ahmose and his troops probably set up a small camp on Sai Island with several storage installations. The material culture is primarily Egyptian, but with a clear Kerma presence. Nothing indicates that the Egyptians were already involved

[1734] See Budka 2015b; Budka 2017c, 79–80; Budka 2018b, 123–124.
[1735] Vercoutter 1970.
[1736] Spence and Rose 2014, 410.

on Sai on a permanent basis and with large scale building activities. The Egyptian presence in Kush was as limited as it is reflected in the missing data for a sophisticated administration, as it is attested in Wawat. This situation might have changed a bit on a local level during Amenhotep I, when textual evidence suggest a firm presence of Egyptian troops on Sai.[1737]

- Phase 1b = Phase A) Thutmose I managed to go further upstream, as far as Kurgus, and he founded several fortified towns in Nubia. Unfortunately, archaeological proof for the identification of these sites is still lacking (see Chapter 7.1). At Sai, no enclosure wall is traceable during this period. Possibly the camp set up by Ahmose and used by Amenhotep I continued and storage facilities were used – a full account of the site during the reign of Thutmose I is at present not possible. The material culture is primarily Egyptian, but with a Kerma presence indicating close relations between Egyptians and Nubians. The phase of the Egyptianisation of Kush seems to have made remarkable progress.[1738]
- Phase 2a = Phase B) After several contributions by Thutmose II and Hatshepsut,[1739] Thutmose III succeeded in overthrowing the Kingdom of Kush. The *mnn.w* at Sai was equipped with an enclosure wall and extended to a large-scale site of administrative importance, including a stone temple for Amun-Ra built in several phases. Current fieldwork has highlighted that by the reign of Thutmose III, Sai had become one of the most important Egyptian centres in Upper Nubia. The material culture becomes more diverse, bears an international character and compares well to Egyptian sites like Elephantine and Abydos. There is still a mixture of Nubian and Egyptian ceramics, but locally made Egyptian-style vessels prevail. Hybrid types of vessels indicate a complex entanglement of the Nubian with the Egyptian culture. The time of Thutmose III was the first heyday of Egyptian involvement in Kush.
- Phase 2b = Phase B) Amenhotep II, Thutmose IV and Amenhotep III continued Pharaonic building activities in Upper Nubia with a focus on temples and the gold of Kush. On Sai Island, the Nubian component in the material culture is by this time much faded – presumably, the indigenous elements have been largely Egyptianised and are difficult to detect in the archaeological record.[1740] Kush was under the same Egyptian influence as Wawat.

Phase B of Sai Island mirrors – on the meso level – the installation of a permanent Egyptian administration for the region of Kush. At all major sites in Upper Nubia, Egyptian architecture and material culture testify to the presence of Egyptians during this period and to the appropriation of the Egyptian style through indigenous elements, resulting in a complex material entanglement of cultures and a lifestyle that is very similar, but not completely identical to sites in Egypt proper.[1741]

The potential and challenges of analysing the material culture for the question of 'Nubian' vs. 'Egyptian' lifestyle in New Kingdom fortified towns in Upper Nubia, such as Sai, have been discussed throughout this volume. The artefacts and especially ceramics testify to a cultural fusion from the foundation of the town in the early 18th Dynasty throughout the New Kingdom.

Lastly, the essential question of the number of occupants of New Kingdom Sai shall be discussed. According to Morris, *mnn.w* of the New Kingdom in Nubia were densely populated and are comparable to Egyptian towns situated in Egypt.[1742] With 2.76ha,[1743] the town of Sai is rather of small size,[1744] e.g. compared with *c.* 5.4ha of Sesebi.[1745] Since not all of the area of the fortified site has been excavated yet, the number of individual houses must remain very vague. The only proper Egyptian-style houses,

[1737] See Gabolde 2012, 127–128.
[1738] See also the evidence from Kerma, Valbelle 2014, 107. Cf. Williams 2018.
[1739] Cf. Bonnet 2012, 71; see also Valbelle 2006, 33–50.
[1740] See above and compare, e.g., the burials within Tomb 26; see Budka 2017k; Budka 2018e.
[1741] Budka 2017f.
[1742] Morris 2005, 809–814.
[1743] Adenstedt 2016, 24, fig. 7; Budka 2017c, 71; see also Adenstedt 2018.
[1744] For town and city sizes in Egypt and Nubia, see Uphill 1988, 66.
[1745] Uphill 1988, 66. Also Buhen is much larger with 3.55ha.

presumably with two storeys, are located in the southern part of the town between the governor's residence and the area of magazines. At SAV1 West, comparable to SAV1 North, several structures of quite modest character, presumably courtyard houses were documented. These buildings probably only had one storey according to their wall thicknesses.

For mid-18th Dynasty Sai I would propose a size of *c*. 150–200 occupants as quite reasonable. This takes into account that housing for *c*. 30 persons could be provided at SAV1, for *c*. 50 persons in SAV1 West and surroundings and for *c*. 50 persons in SAV1 North and surroundings. Considering that we know little about the unexcavated sectors, 150–200 citizens in total seem probable, also in consideration of the size and the burials of cemetery SAC5. However, a higher number cannot be ruled out at present. As a comparison, the troops of the Ottoman fortress on Sai may be named. The size of the troop is reported as 150 men, all together 300 simple huts were set up in the fortress.[1746] Certainly, the proposed 150–200 citizens of New Kingdom Sai do not necessarily represent the total population of the island – extra-mural settlements, presumably of both Egyptians and Nubians, are very likely, but as yet archaeologically invisible. Not invisible, but difficult to trace, are females and children in New Kingdom Sai (see above). Cooking and grinding[1747] were maybe primarily tasks of the women at Sai, but little is known about the agents of these domestic activities and others, such as fishing, flint knapping and pigment production. The gold processing as well as the storage of goods in the large magazines and the complete administration involved with the *jnw* were probably associated with the male occupants of whom we know some individuals from burial remains in cemetery SAC5 (see above, Chapter 6).

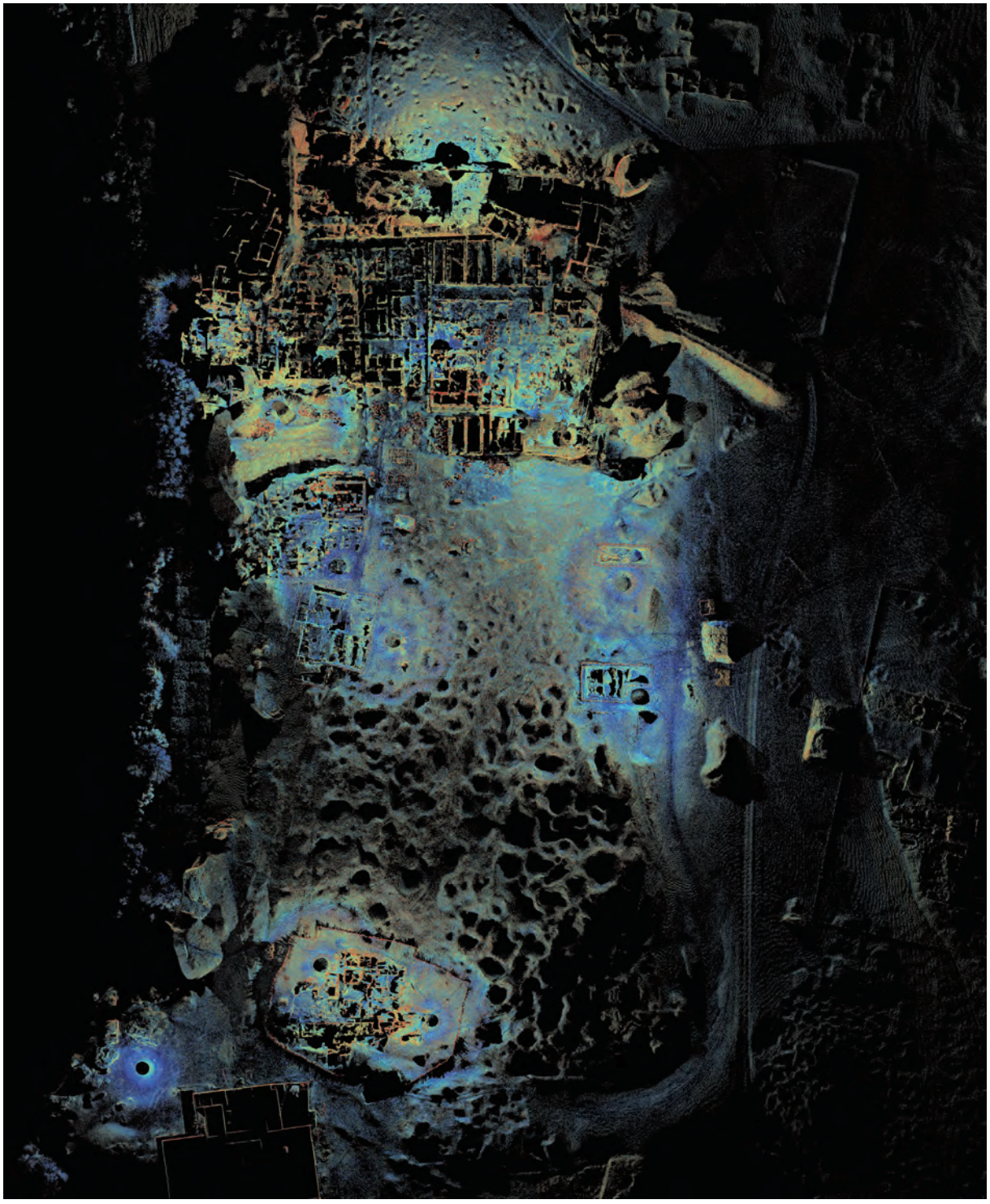
The new data presented here allowed a more complete assessment of the history and nature of the New Kingdom town on Sai Island. The reconstruction of some patterns of the living conditions at one of the key towns of Upper Nubia is significant and holds much potential for further studies. AcrossBorders' bottom-up approach with a strong diachronic focus, similar to that applied to Amara West,[1748] illustrated Sai as a changing Egyptian microcosm throughout the New Kingdom, shaped by different individuals and adapting to historical and economic progress.

The decline of the site and the process of the abandonment of Sai remain at present still partly unclear; this is closely linked to the assumptions why the founding of Amara West was necessary.[1749] Many more open questions were articulated while contextualising Sai and the lived experience on this site during the New Kingdom. It is to be hoped that research on Sai Island will continue and will address further queries connected with the complex way of cultural expressions in New Kingdom Nubia and beyond.

[1746] See Prokosch 1994, 116.
[1747] For grinding as primarily a female task, see Lang 2016.
[1748] Spencer 2014a; Spencer 2017.
[1749] See most recently Spencer 2017.

Plates

Pl. 1 Location of Sai Island in Sudan; location of SAV1 (New Kingdom town) on Sai Island

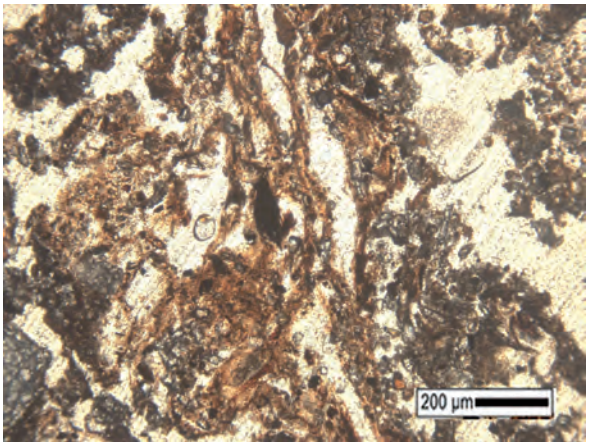


Pl. 2 Results of the 3D scan of the area of the New Kingdom town of Sai. © Robert Kalasek, TU Wien

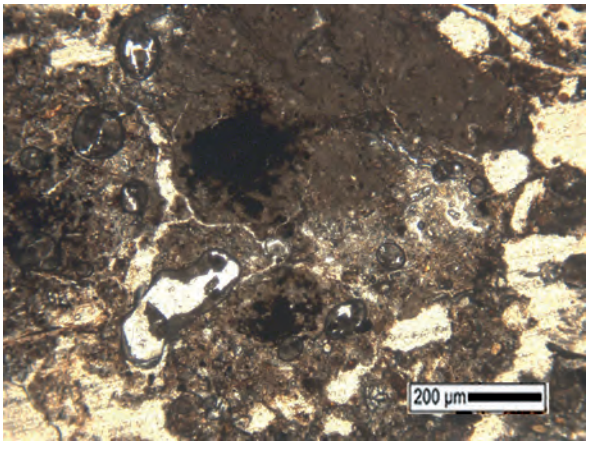
Pl. 3 Nubian sandstone at Sai Island, east of the excavation house showing toppling failure

Pl. 4 Mud brick remains along the eastern side of the New Kingdom town and possible orientation of the enclosure wall

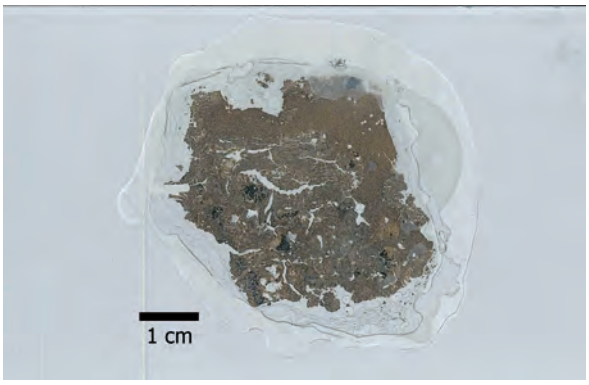
Pl. 5 Stone anchor from the New Kingdom town area



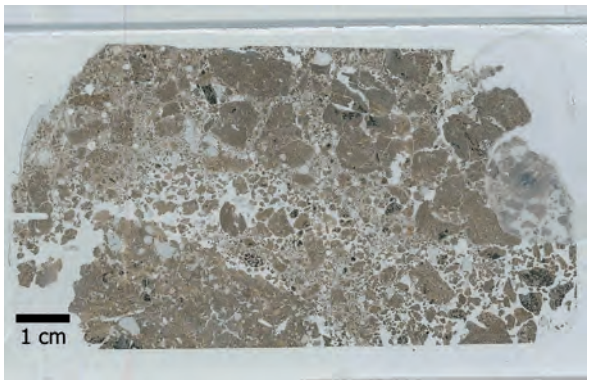
Pl. 6 Thin section of Sample 9/4, humified organic matter in a sandy matrix (PPL)



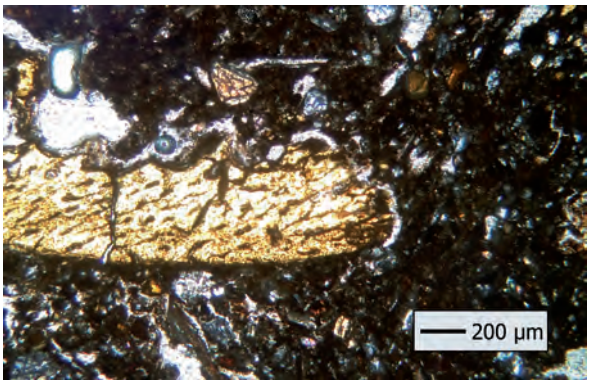
Pl. 7 Thin section of Sample 9/4, dendritic redoximorphic nodule impregnating allochthonous sedimentary crust fragment (PPL)



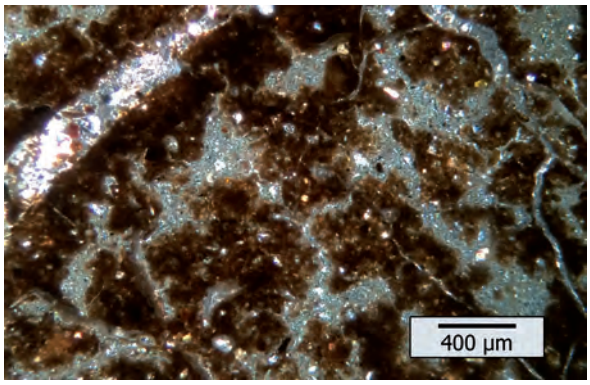
Pl. 8 Thin section of Sample 9/5, macrophoto



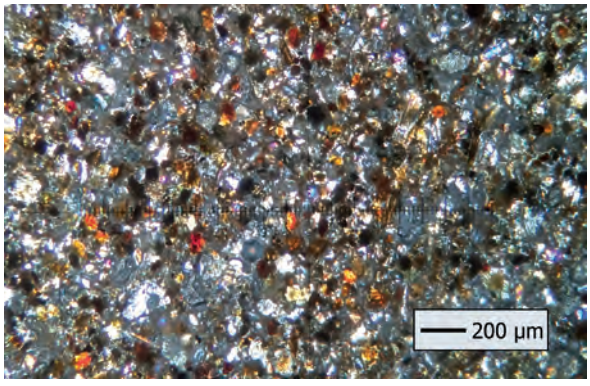
Pl. 9 Thin section of Sample 5/1, macrophoto



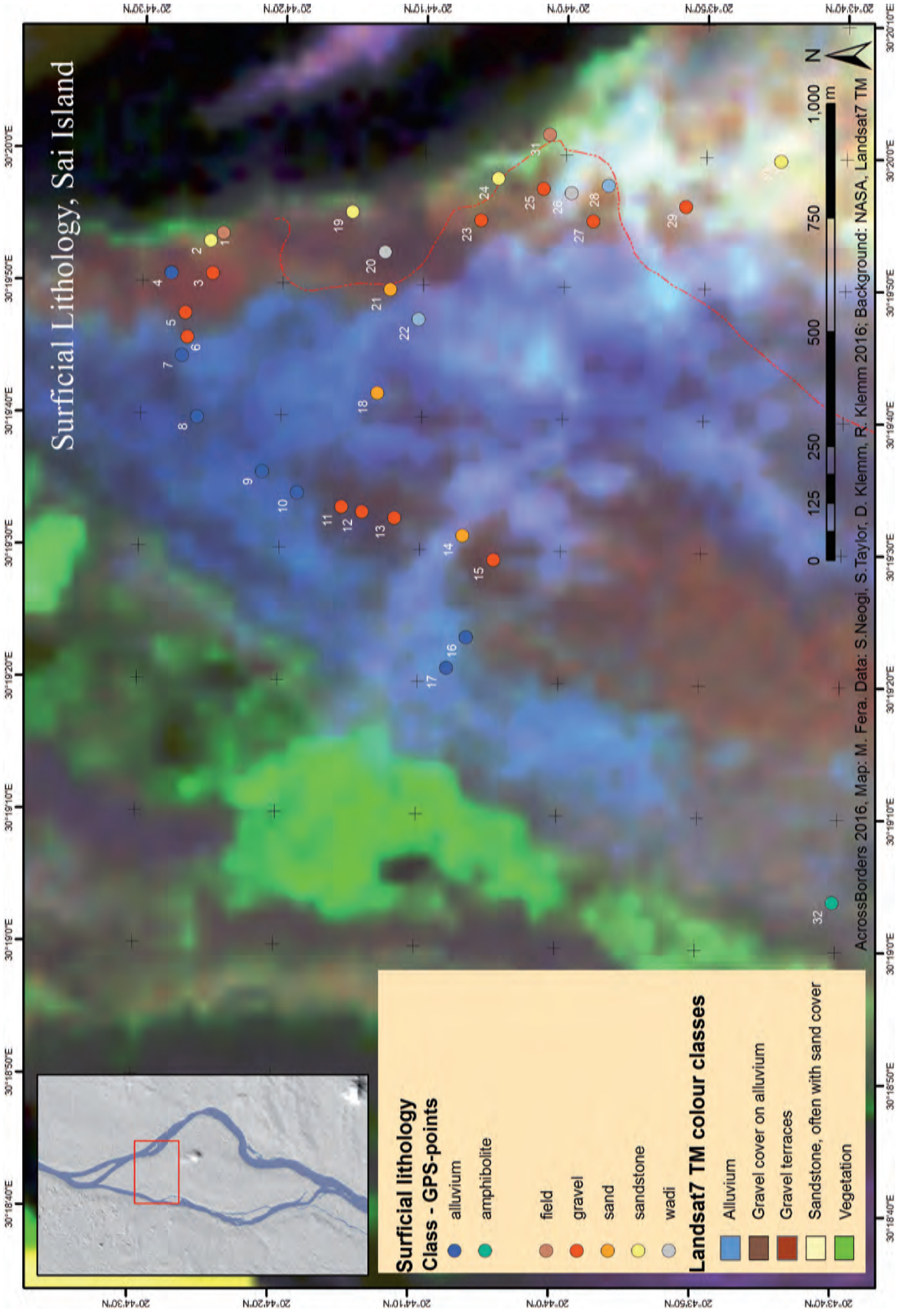
Pl. 10 Thin section of Sample 5/2, fragment of a bone (XPL)



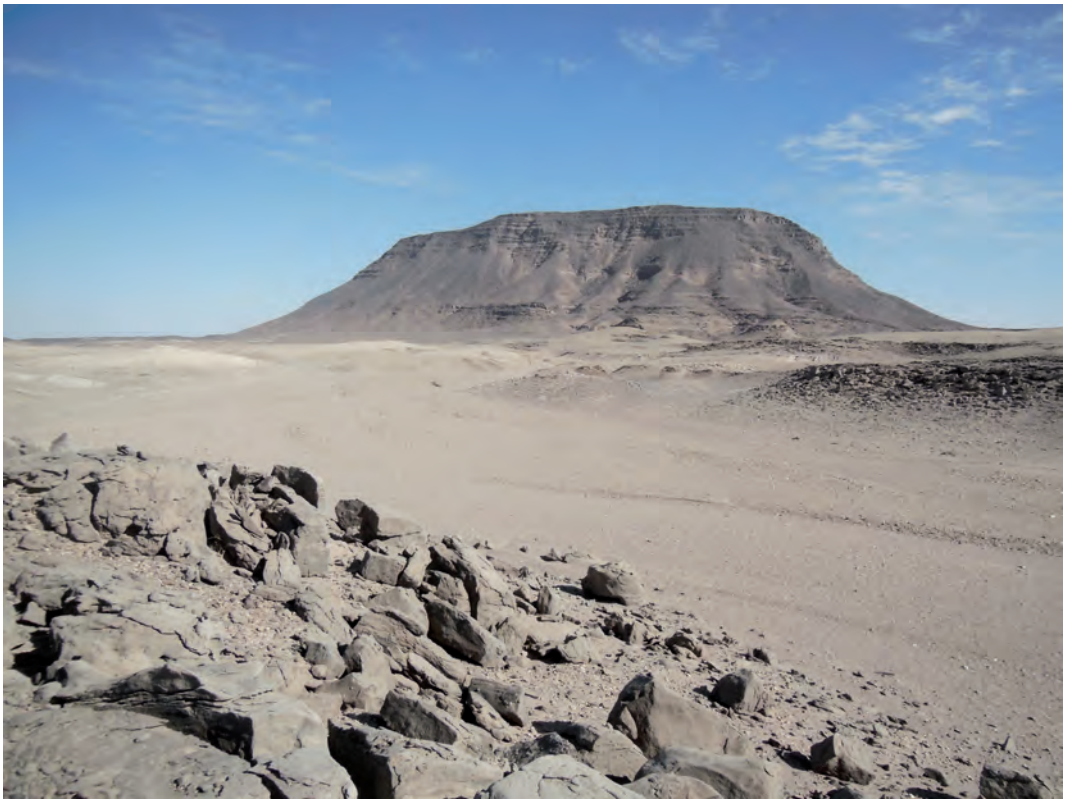
Pl. 11 Thin section of Sample 1/1, crystallitic b-fabric due to re-precipitation of calcium carbonate (XPL)



Pl. 12 Thin section of Sample 2/1, porous sediment. Well sorted sand and the organic matter (PPL)



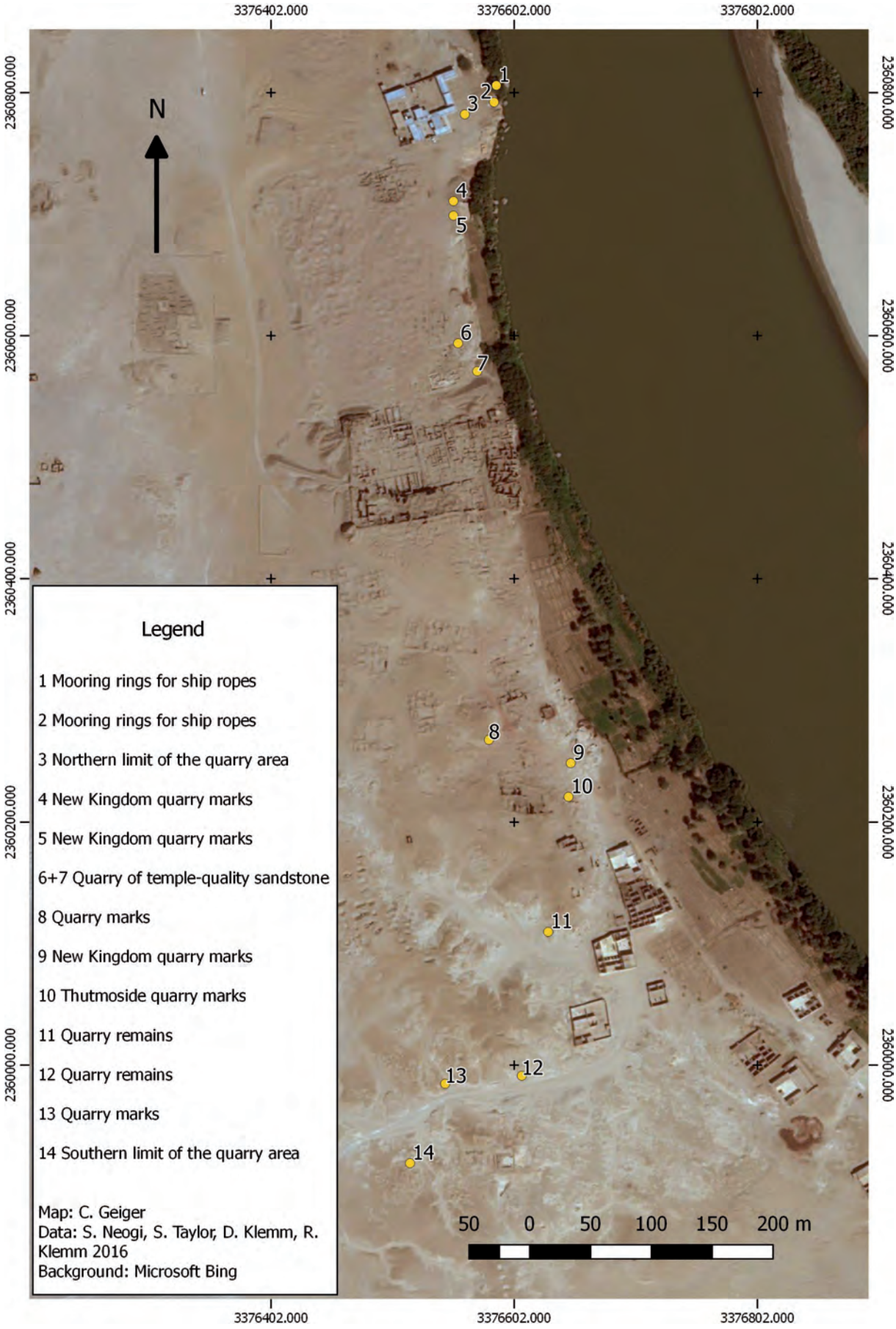
Pl. 13 Surface map of the vicinity of the New Kingdom town of Sai



Pl. 14 Gebel Abri, view from southwest

Pl. 15 Sandstone quarry southeast of the excavation house

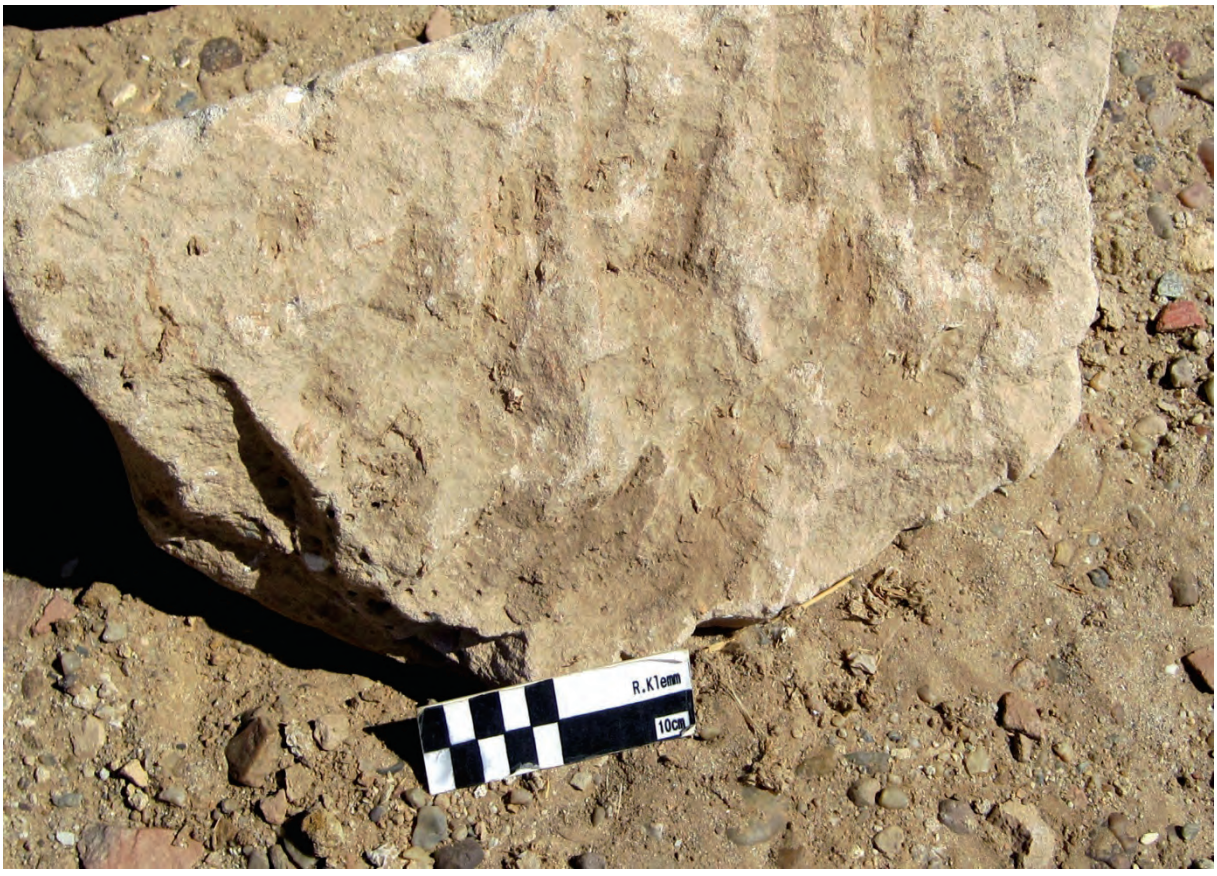
Pl. 16 Sandstone quarry along the eastern side of the New Kingdom town, near the cultural land



Pl. 17 Map of the sandstone quarry remains of New Kingdom Sai

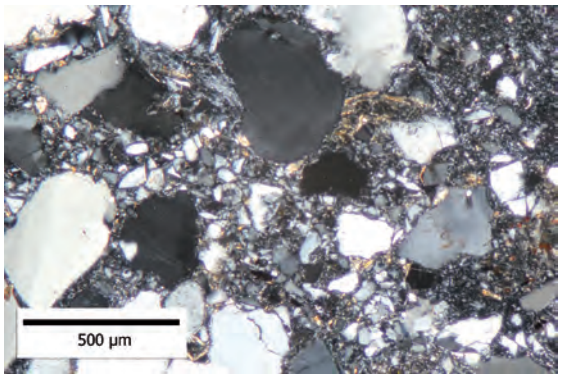
Pl. 18 View of the sandstone quarry east of Temple A

Pl. 19 An out cut for a column drum in one of the sandstone quarries at Sai

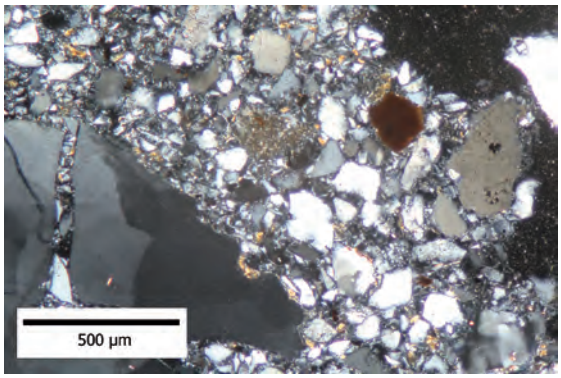


Pl. 20 Quarry marks typical for the time of Thutmose III

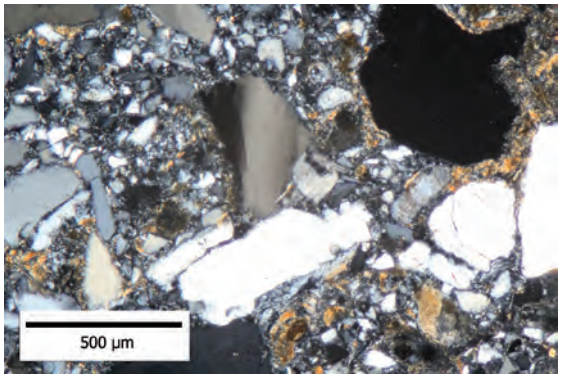
Pl. 21 Herringbone quarry marks



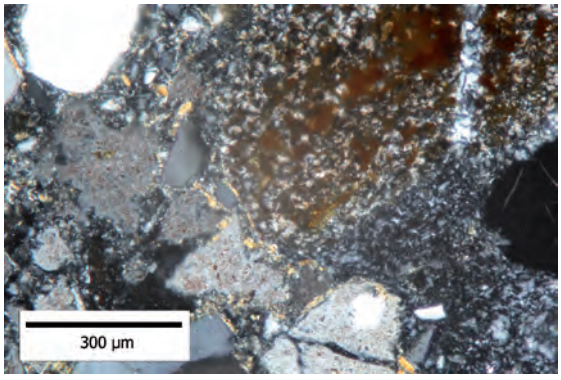
Pl. 22 Thin section Sample 2, heterogenous quartz arenite of very poorly sorted quartz grains, subrounded to rounded



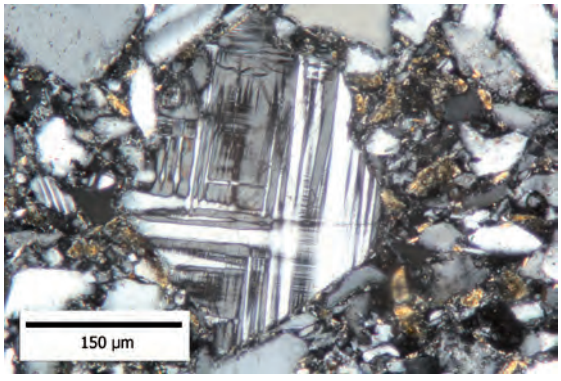
Pl. 23 Thin section Sample 2. This photomicrograph shows a bi-modal grain size



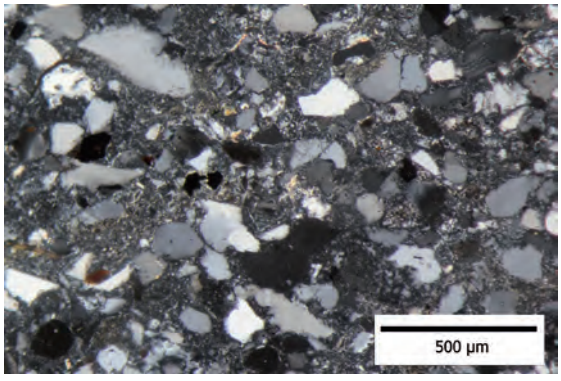
Pl. 24 Thin section Sample 2, a detail of the quartz arenite



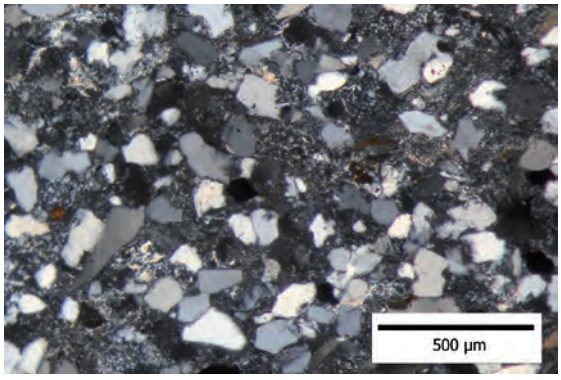
Pl. 25 Thin section, detail of Sample 2



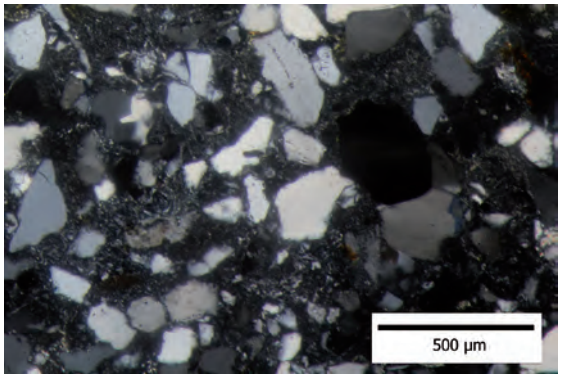
Pl. 26 Thin section Sample 2, detail of the one of the subsidiary minerals, namely microcline



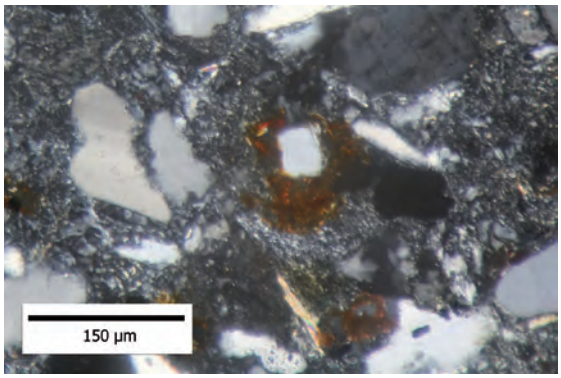
Pl. 27 Thin section Sample 3



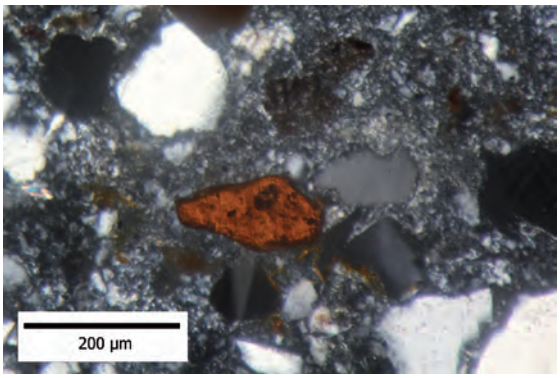
Pl. 28 Thin section Sample 3



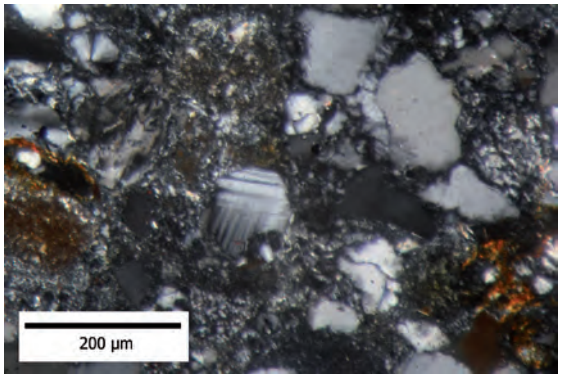
Pl. 29 Thin section Sample 4



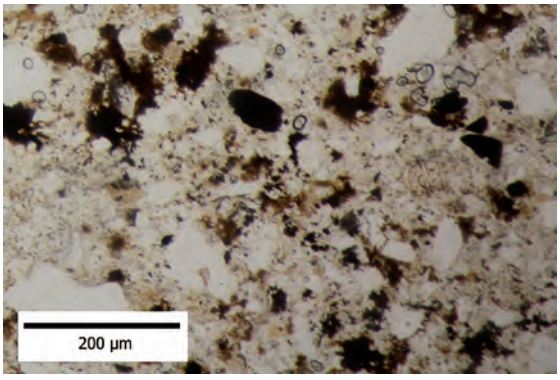
Pl. 30 Thin section Sample 4 (XPL)



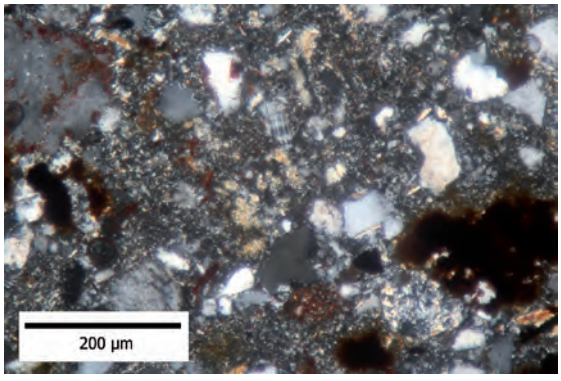
Pl. 31 Thin section Sample 4 (XPL)



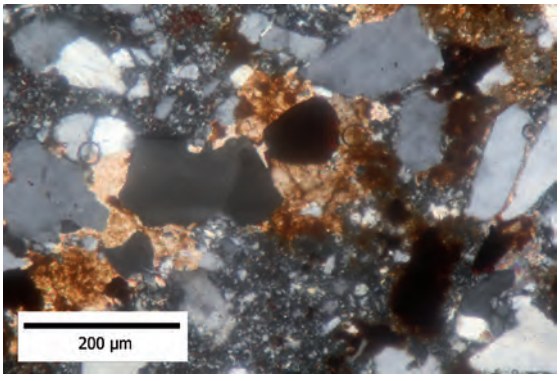
Pl. 32 Thin section Sample 4 (XPL)



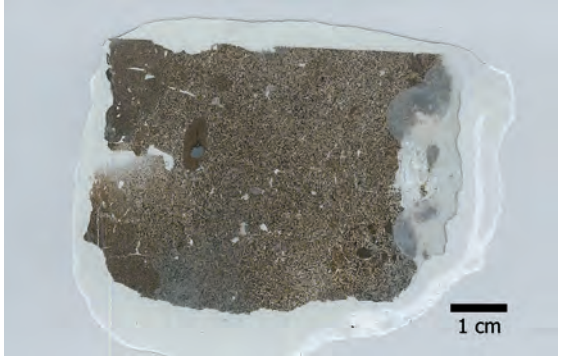
Pl. 33 Thin section Sample 5 (PPL)



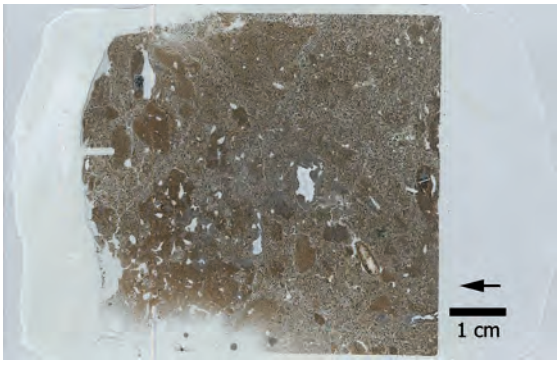
Pl. 34 Thin section Sample 5 (XPL)



Pl. 35 Thin section Sample 5 (XPL)



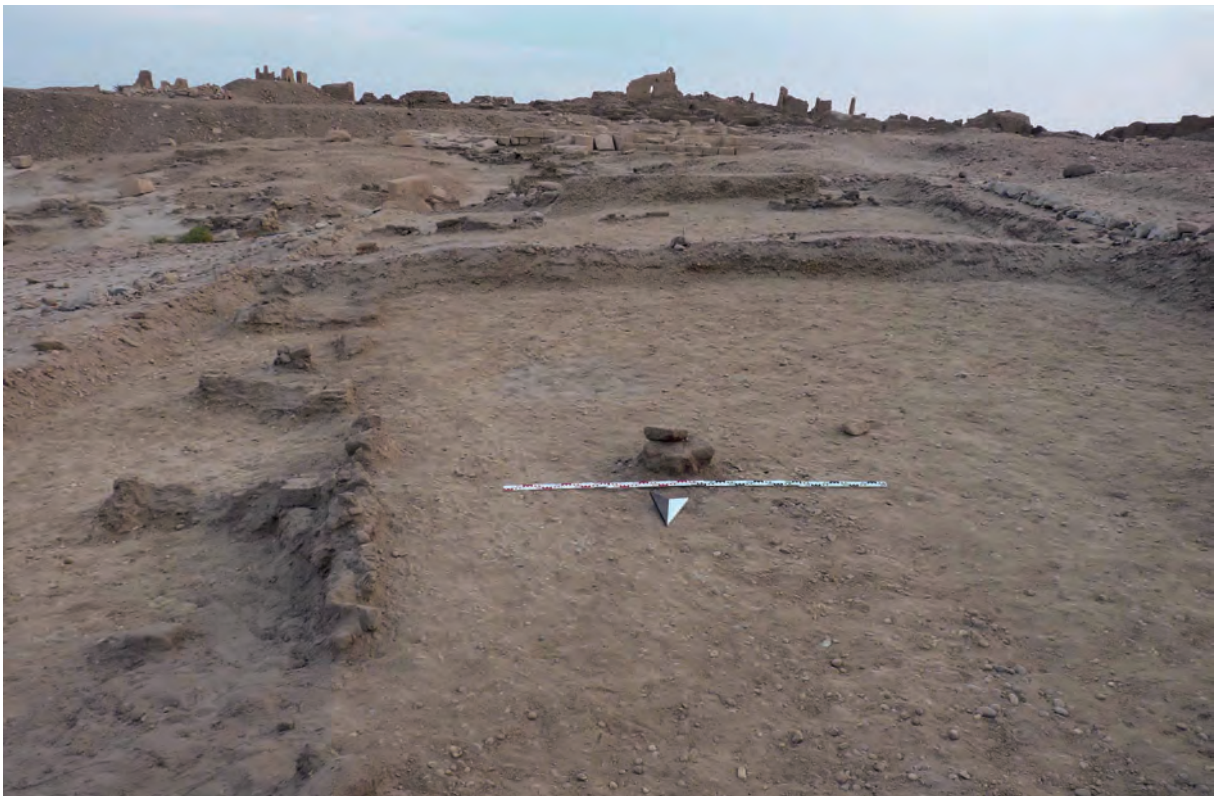
Pl. 36 Thin section Sample 15, East Section, macrophoto



Pl. 37 Thin section Sample 15, South Section, macrophoto

Pl. 38 SAV1 East prior to excavation, view to north

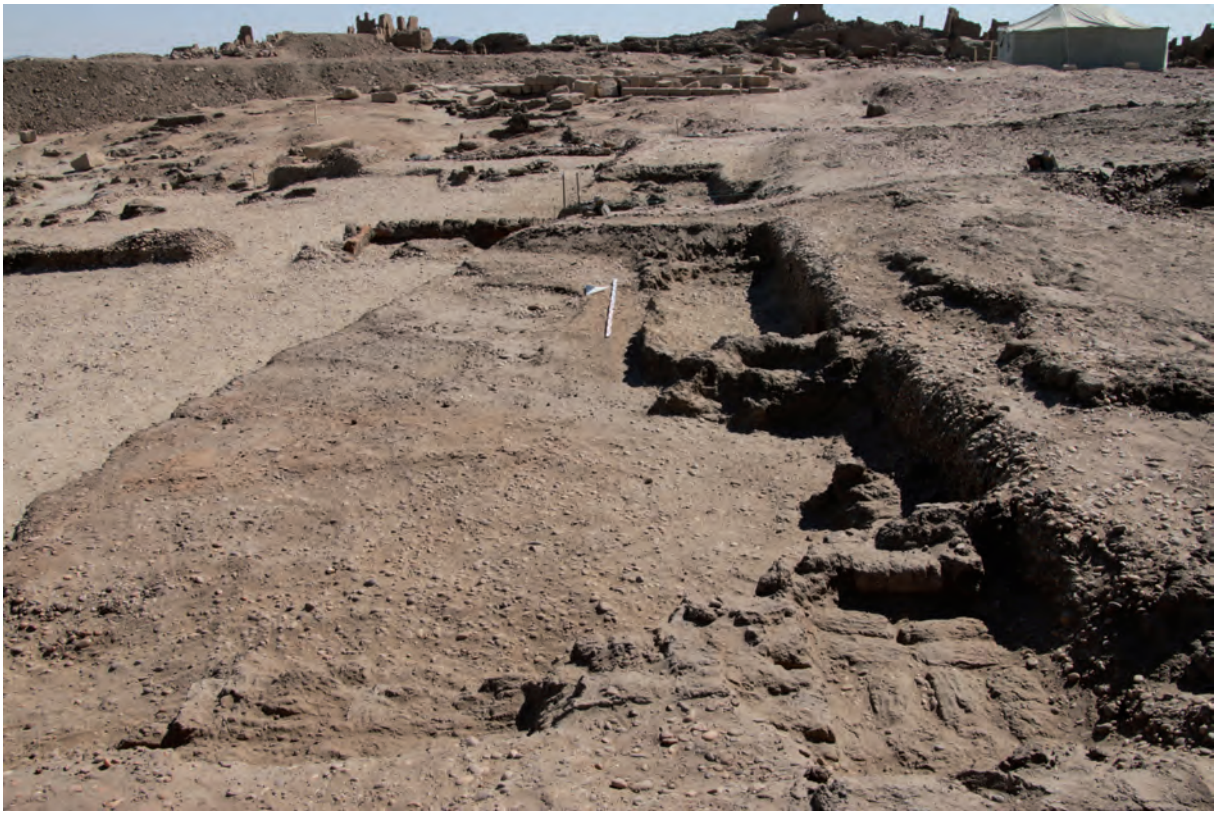
Pl. 39 Northeast corner of SAV1 East. Foundation trench Feature 31 south of Wall 30



Pl. 40 Overview of SAV1 East: Square 1 and Square 2 from the north during excavation

Pl. 41 Feature 14 with in situ vessels of the early 18th Dynasty

Pl. 42 Basket set in Feature 27 (Square 2B), Post-New Kingdom



Pl. 43 SAV1 East, 2014 – overview of the site with terrace structure of Building A

Pl. 44 SAV1 East, southern part, 2015; Feature 57 in context

Pl. 45 SAV1 East, Square 4B1, view from north, column drum and schist pavement

Pl. 46 Orthophoto of final status of Feature 15

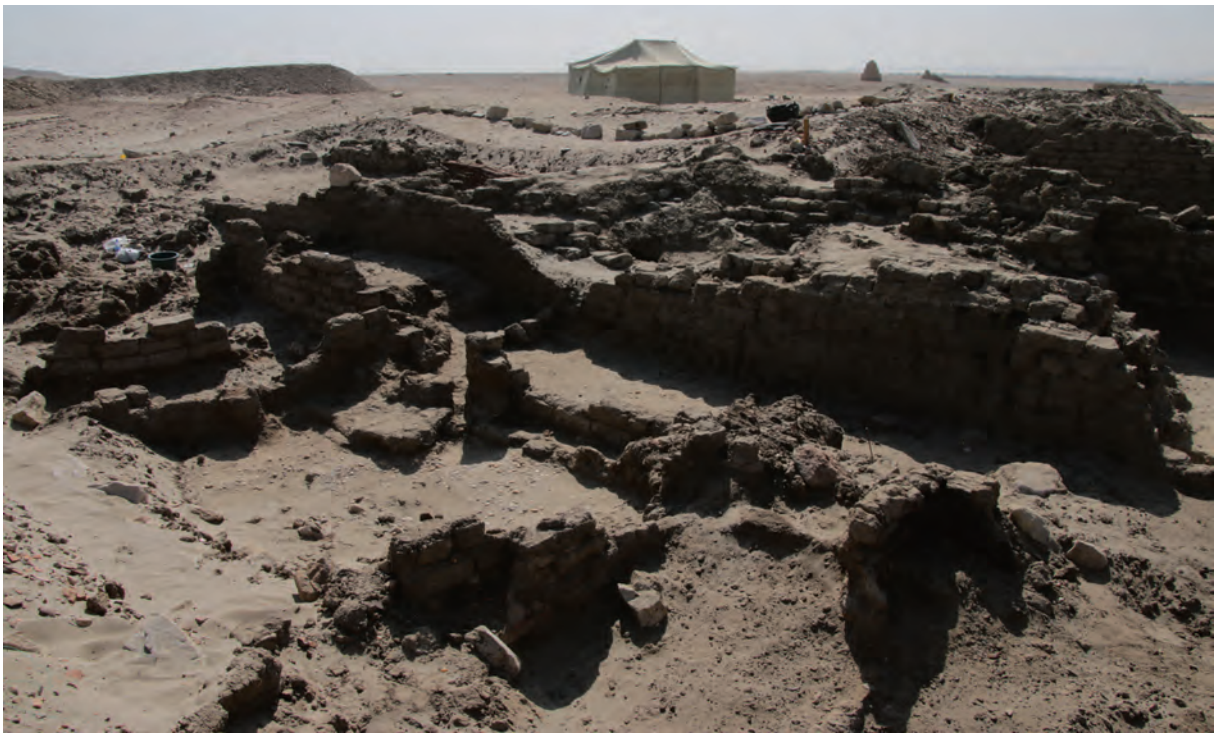
Pl. 47 SAV1 East, Square 4C status 2016, prior to excavation in 2017

Pl. 48 SAV1 West, at start of excavation in 2014

Pl. 49 SAV1 West, Square 1 – first remains of town enclosure; note sandy pits and worked stones

Pl. 50 SAV1 West, Square 1, view into the wall street, status 2014. View to the north

Pl. 51 SAV1 West, Square 2 – status 2014; remains of the enclosure wall. Eastern half of Square 2, looking south



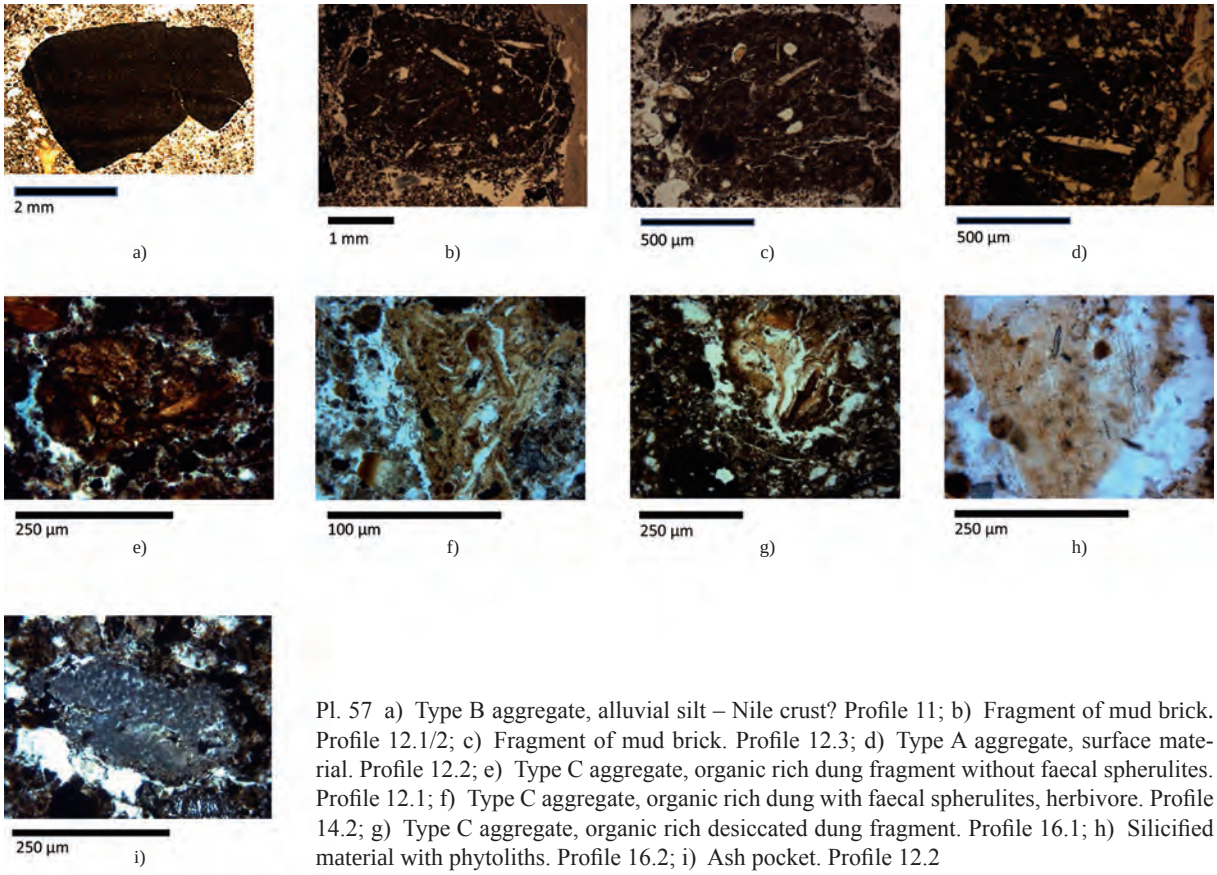
Pl. 52 SAV1 West, season 2015. View to the southeast

Pl. 53 SAV1 West, Square 1S, wall street, status 2017

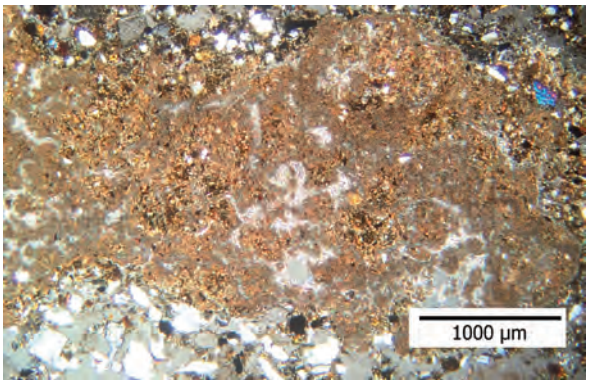
Pl. 54 SAV1 West, stone SAV1W 1752 in its find position above Feature 151

Pl. 55 Re-used Lintel SAV1W 1752

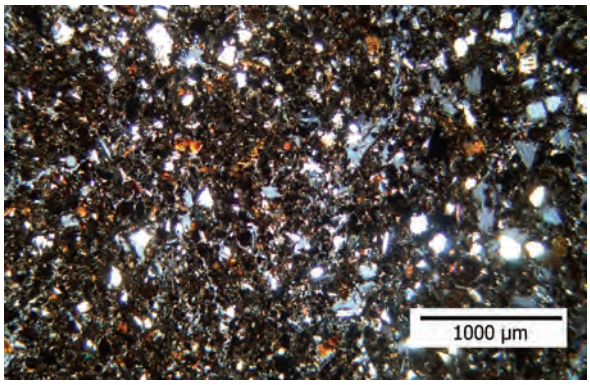
Pl. 56 SAV1 West, season 2017. End status, view to the east



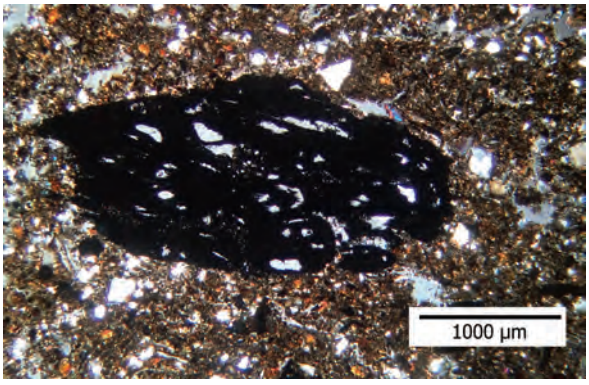
Pl. 57 a) Type B aggregate, alluvial silt – Nile crust? Profile 11; b) Fragment of mud brick. Profile 12.1/2; c) Fragment of mud brick. Profile 12.3; d) Type A aggregate, surface material. Profile 12.2; e) Type C aggregate, organic rich dung fragment without faecal spherulites. Profile 12.1; f) Type C aggregate, organic rich dung with faecal spherulites, herbivore. Profile 14.2; g) Type C aggregate, organic rich desiccated dung fragment. Profile 16.1; h) Silicified material with phytoliths. Profile 16.2; i) Ash pocket. Profile 12.2



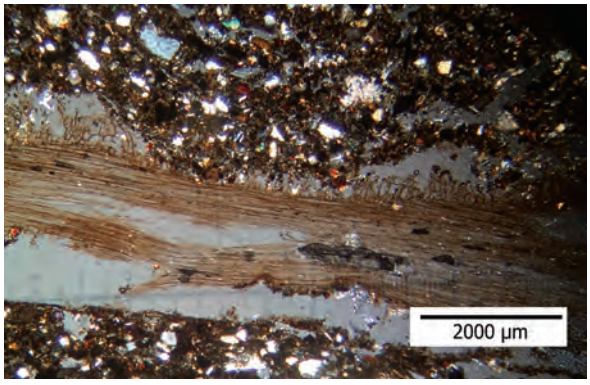
Pl. 58a Profile 18.1. Re-crystallised sparitic calcium carbonate within a carbonate nodule



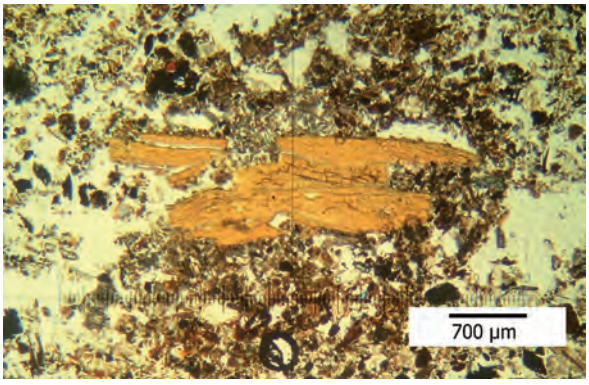
Pl. 58b Profile 18.1. Highly organic and well-sorted groundmass characteristic of alluvium



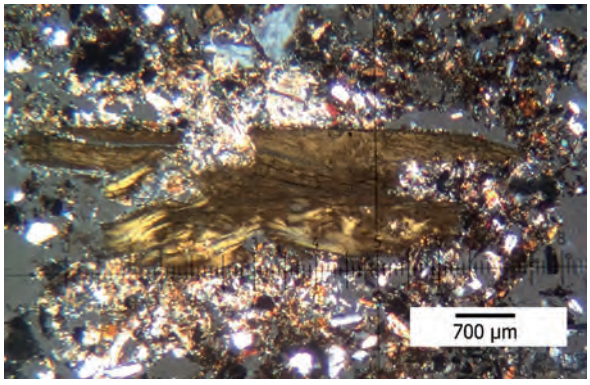
Pl. 58c Profile 18.1. Detail of either highly humified organic matter or weathered charcoal



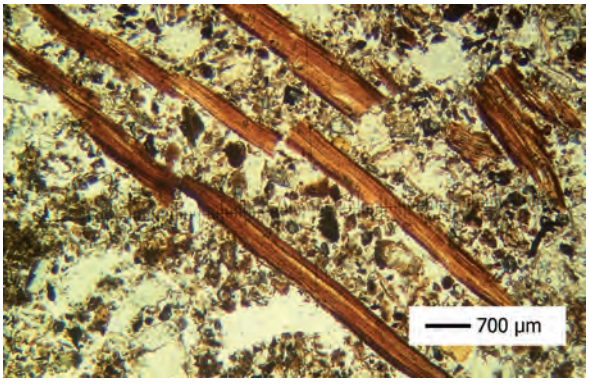
Pl. 58d Profile 18.1. Pseudomorphs with residual tissue fragment within a dense organic groundmass



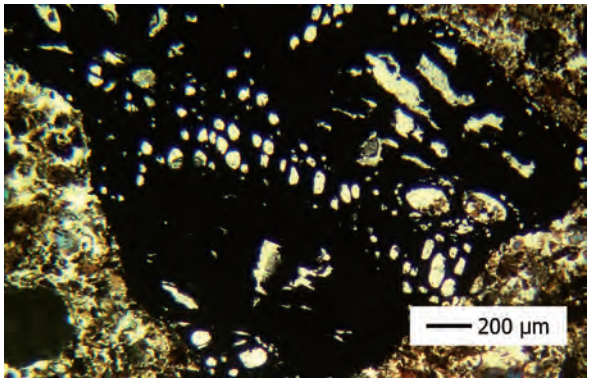
Pl. 59a Profile 19.1. Fragment of bone. Note the calcium carbonate hypo-coating due to the diagenesis and weathering of apatite



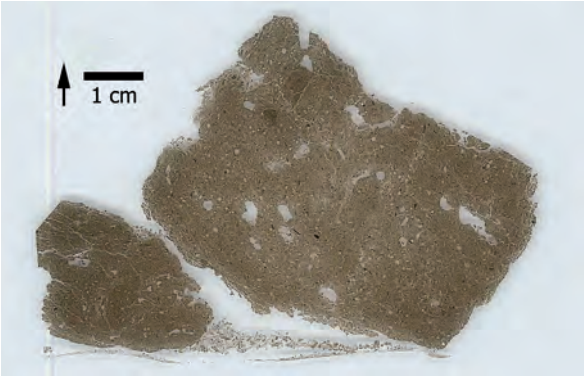
Pl. 59b Profile 19.1. Same as Pl. 59a but in XPL



Pl. 59c Profile 19.1. Organic tissue well preserved showing a parallel referred distribution pattern

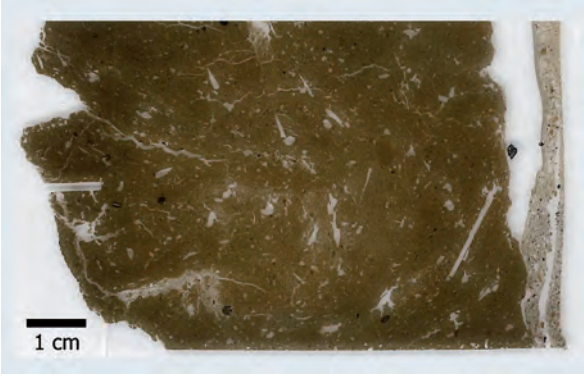


Pl. 59d Profile 19.1. Charcoal

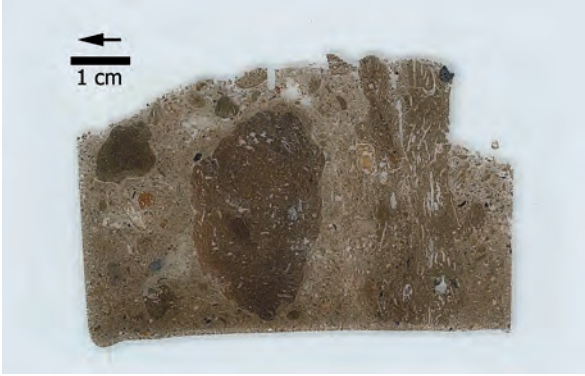


Pl. 60 Profile 19.2. Macrophoto of thin section

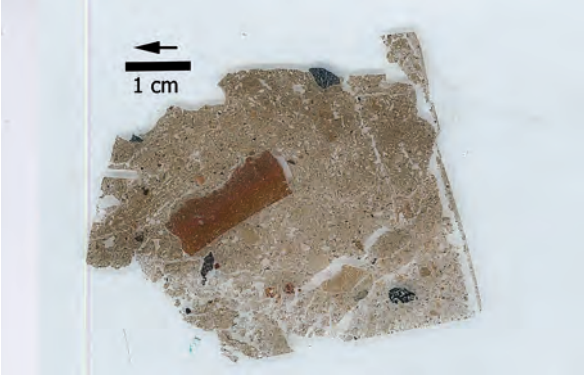
Pl. 61 Profile 13. Macrophoto of thin section



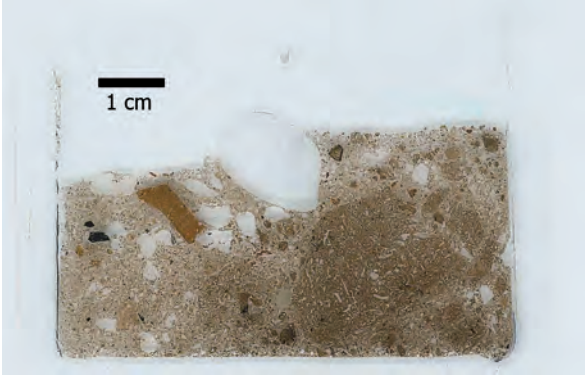
Pl. 62 Profile 21. Macrophoto of thin section



Pl. 63 Profile 22. Macrophoto of thin section

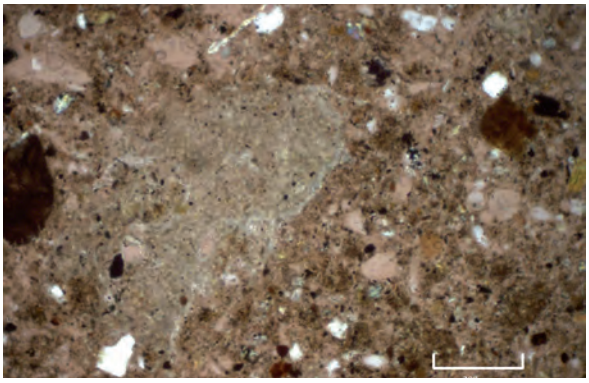


Pl. 64 Profile 23. Macrophoto of thin section



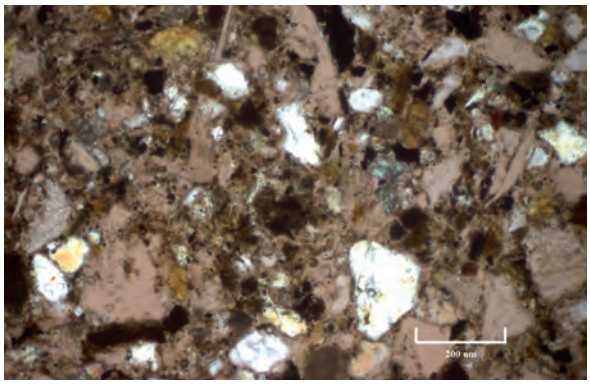
Pl. 65 Profile 24. Macrophoto of thin section

Pl. 66a Thin section 63 from SAV1 West. Macrophoto



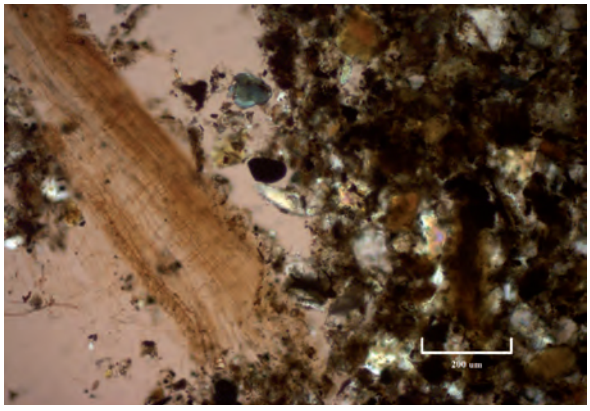
Pl. 66b Thin section 63 from SAV1 West. Detail

Pl. 67a Thin section 56 from SAV1 East. Macrophoto

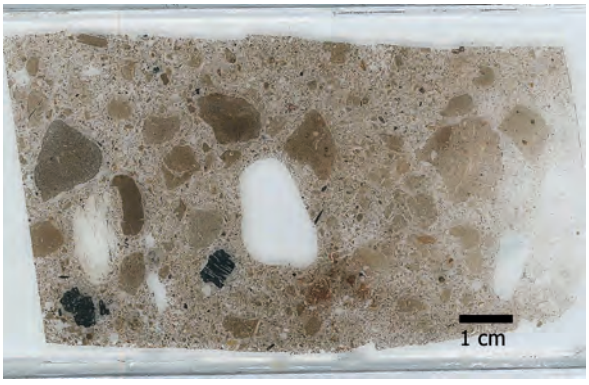


Pl. 67b Thin section 56 from SAV1 East. Detail

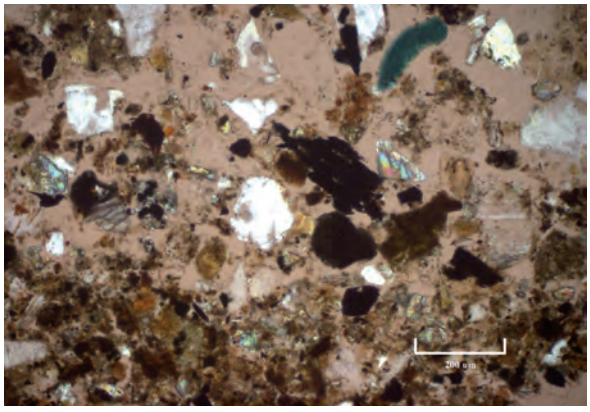
Pl. 68a Thin section 57 from SAV1 East. Macrophoto



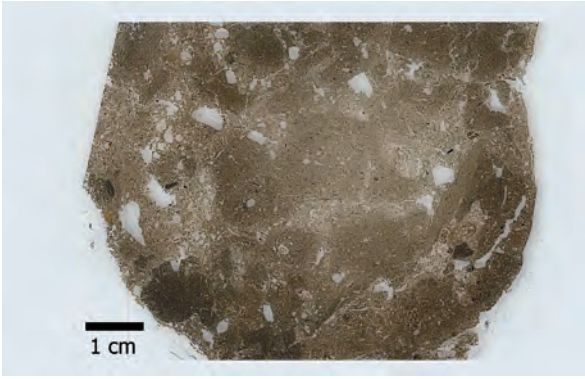
Pl. 68b Thin section 57 from SAV1 East. Detail



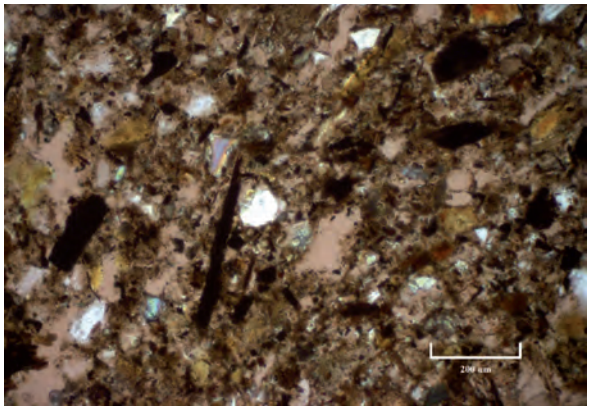
Pl. 69a Thin section 58 from SAV1 East. Macrophoto



Pl. 69b Thin section 58 from SAV1 East. Detail

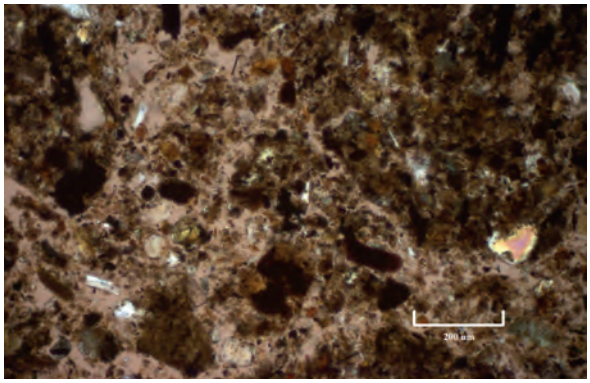


Pl. 70a Thin section 70 from SAV1 East. Macrophoto

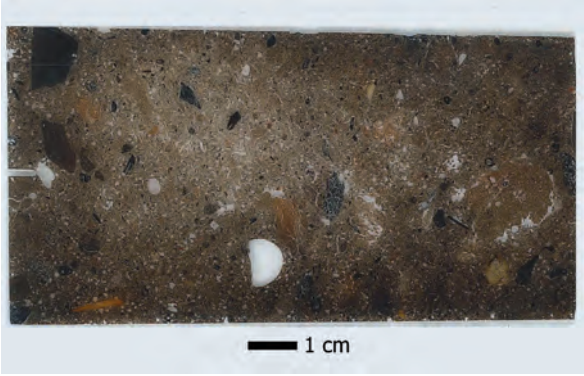


Pl. 70b Thin section 70 from SAV1 East. Detail

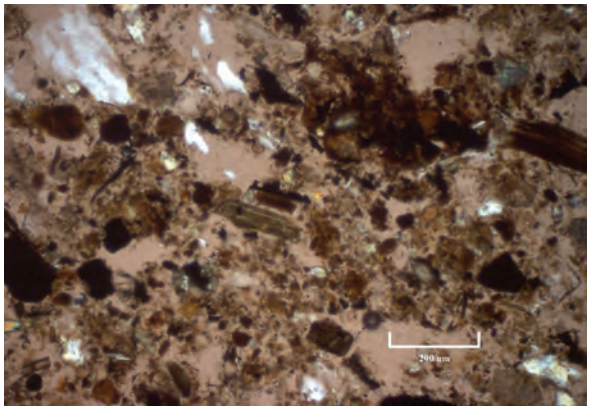
Pl. 71a Thin section 59 from sample of baking area Feature 64, SAV1 East. Macrophoto



Pl. 71b Thin section 59 from sample of baking area Feature 64, SAV1 East. Detail



Pl. 72a Thin section 60 from sample of baking area Feature 64, SAV1 East. Macrophoto



Pl. 72b Thin section 60 from sample of baking area Feature 64, SAV1 East. Detail

Pl. 73 SAV1E 2771, cubic dice

Pl. 74 SAV1E 1468, medieval window grille

Pl. 75 Medieval horse figurines (SAV1E 0733 left; SAV1E 2675 right)

Pl. 76 SAV1W 0800, medieval camel figurine

Pl. 77 SAV1E 2882, faience ring

Pl. 78 SAV1E 2729, faience earring

Pl. 79 SAV1E 0119, clay weight

Pl. 80 Miniature net weight (SAV1W 1753) and normal size net weight (SAV1W 1754)

Pl. 81 SAV1W 1541, possible net weight in stone

Pl. 82 Re-cut sherds used as net weights; SAV1W 0411 left and SAV1W 0496 right

Pl. 83 SAV1E 1285, loom weight

Pl. 84 Miniature balls (SAV1W 1703 limestone; SAV1E 2511, 2602 und SAV1W 1489 clay)

Pl. 85 Example for painted Post-New Kingdom fine ware (SAV1E P001)

Pl. 86 Sherd of Marl clay blue-painted ware from SAV1 West

Pl. 87 Fragment of fire dog, SAV1E P34

Pl. 88 SAV1E 0939, rudimentary female figurine

Pl. 89 SAV1E 2801, rudimentary female figurine

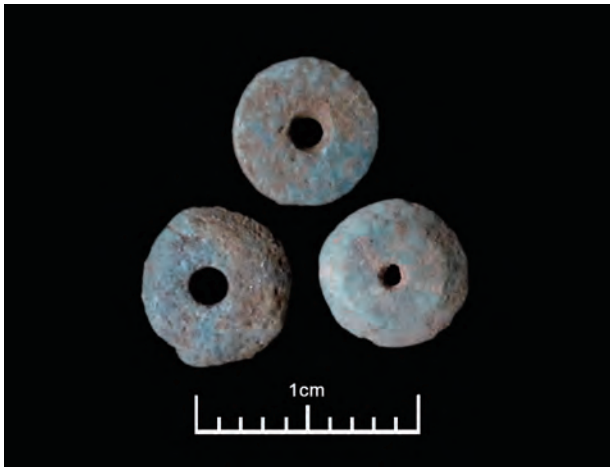
Pl. 90 SAV1E 1065, rudimentary female figurine

Pl. 91 SAV1E 2779, male clay figurine, fragment

Pl. 92 SAV1E 0851, clay figurine of hippopotamus

Pl. 93 SAV1E 1938, stela fragment

Pl. 94 SAV1E 2846, re-used faience sherd



Pl. 95 SAV1W 1440, disc shaped beads

Pl. 96 SAV1W 1647, rudimentary female figurine

Pl. 97 SAV1W 1735, head of a 'Nubian' doll figurine

Pl. 98 SAV1W 1574, clay model boat

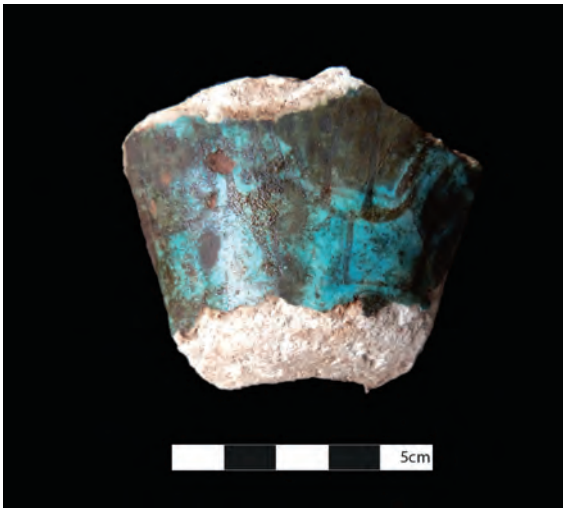
Pl. 99 SAV1W 1451, seal impression

Pl. 100 SAV1W 0031, fragment of stamp/plaquette

Pl. 101 SAV1W 0590, stela

Pl. 102 Interior of stone basin SAV1W 1694

Pl. 103 SAV1W 1693, pestle with traces of pigment



Pl. 104 SAV1W 0544, fragment of a faience chalice

Pl. 105 SAV1W 1749, faience vessel

Pl. 106 SAV1W 0494, re-used sherd

Pl. 107 SAV1E 2875, flint

Pl. 108 SAV1E 2876, flint

Pl. 109 SAV1E 0357, imported flint

Pl. 110 Pounders consisting of natural boulders in different shapes and materials

Pl. 111 SAV1W 0254, pounder with clear traces of red pigment

Pl. 112 SAV1W 0607, intentionally shaped hammer

Pl. 113 Whetstones with and without grooves (sandstone)

Pl. 114 SAV1W 0256, pivot stone, secondarily used as whet-/abrasive stone according to the abraded break (left)

Pl. 115 SAV1W 0467, whetstone

Pl. 116 Grindstones; note the different colours and the differing graininess

Pl. 117 SAV1W 0606, mortar-like grindstone with traces of red pigment on the inside

Pl. 118 SAV1W 0667, grindstone

Pl. 119 SAV1W 0289, grindstone, reshaped as a weight/anchor after breaking (unfinished)

Pl. 120 SAV1W 0104, grindstone

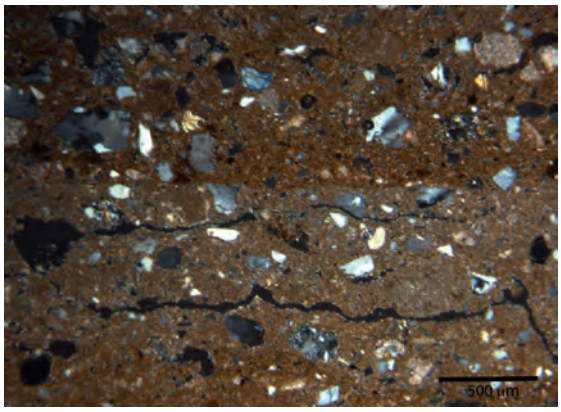
Pl. 121 Hand mills made from quartzite and sandstone

Pl. 122 SAV1W 1581, tethering stone

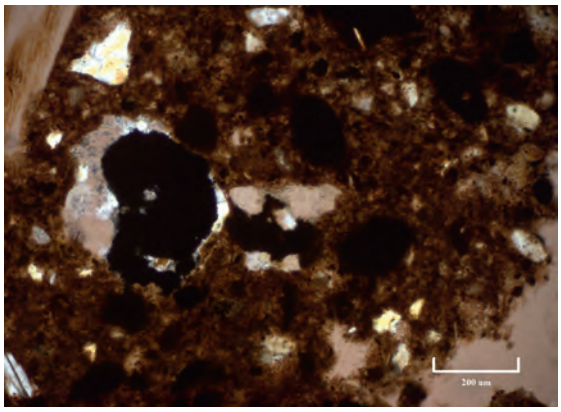
Pl. 123 SAV1E 1840, polishing tool for bone pins?

Pl. 124 SAV1E 1644, mortar with traces of quartz powder? stuck to the inside

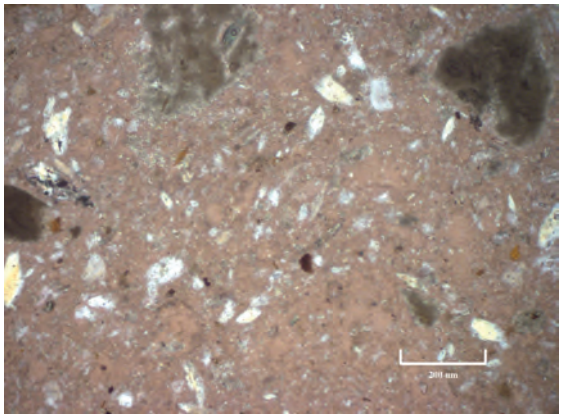
Pl. 125 SAV1E 1499, schist pestle



Pl. 126 Thin section of floor plaster sample from SAV1 East (SU 349 in Square 4C)



Pl. 127 Detail of thin section of mortar sample SM 05, thin section 64 from the town enclosure



Pl. 128 Detail of thin section of mortar sample (thin section 74 from Tomb 26)

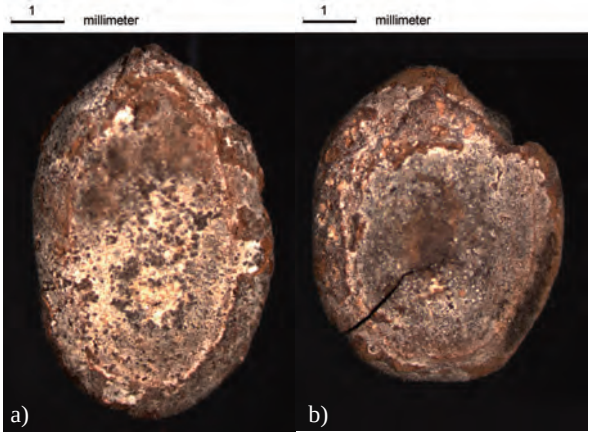
Pl. 129 Example of a mud brick wall (Feature 100, Enclosure wall at SAV1 West), containing MB1 prior to extraction

Pl. 130 MB1 shown following extraction from wall (Feature 100, Enclosure wall at SAV1 West)

Pl. 131 Thick ‘sheets’ of mud plaster on an interior wall in the Ottoman fortress

Pl. 132 Three finger impressions in a mud brick (MB19, SAV1 North)

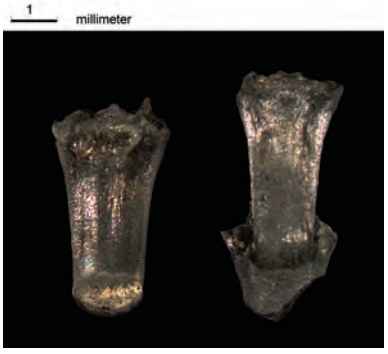
Pl. 133 Profile of temenos wall south of Temple A (SAVI Sur. Temple A) showing a concentration of possible gum arabic



Pl. 134.1a–b Mineralised *Acacia nilotica* seeds; from sample O5

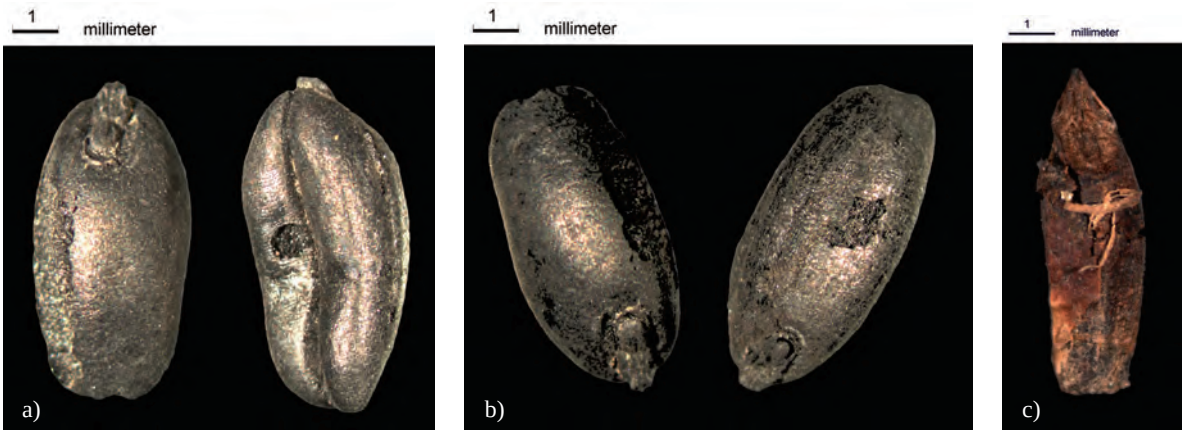
Pl. 134.2 Charred barley floret (*Hordeum vulgare*); from sample CH7

Pl. 134.3a–b 6-row barley rachis (*Hordeum vulgare* ssp. *vulgare*) front (a) and back (b) view; from sample MB2



Pl. 134.4 Charred barley rachis (*Hordeum vulgare*); from sample CH7

Pl. 134.5a–b Desiccated barley rachis (*Hordeum vulgare*) infected with covered smut of barley, front (a) and back (b) view; from sample MB2

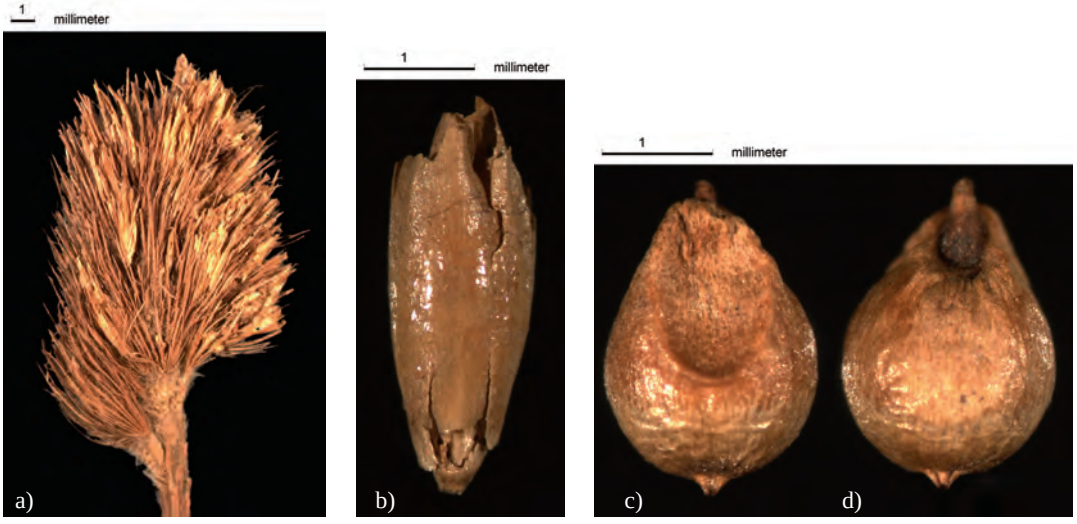


Pl. 134.6a–c Charred emmer wheat grain kernels (*Triticum turgidum* ssp. *dicoccon*), with the dorsal and lateral view of two specimens (a) and the dorsal view of the same specimens (b) from sample CH7 and the dorsal view of a desiccated emmer wheat grain kernel (c) from MB15

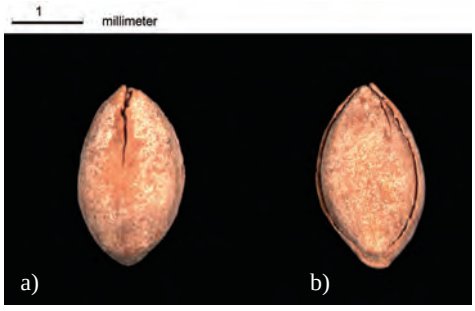
Pl. 134.7 Charred emmer wheat rachis (*Triticum turgidum* ssp. *dicoccon*) – both the internode and the glume bases are present, forming the spikelet forks; from sample CH7

Pl. 134.8 Desiccated bread wheat rachis (*Triticum aestivum* ssp. *aestivum*); from sample MB22

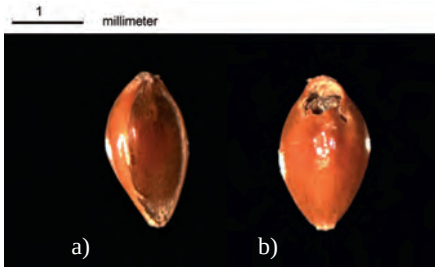
Pl. 134.9 Desiccated wild sorghum (*Sorghum halepense*) chaff. Sample from MB3



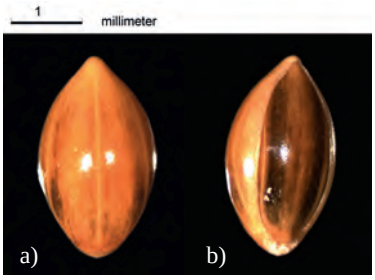
Pl. 134.10a–d Desiccated *Pennisetum* sp. infructescence (a), palea/lemma (b), dorsal view of seed (c), and ventral view of seed (d); from sample S29



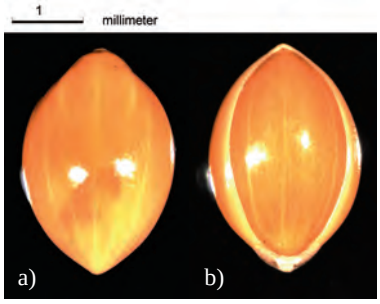
Pl. 134.11a–b Dorsal view (a) and ventral view (b) of desiccated *Panicum* sp. fruit; from sample MB12



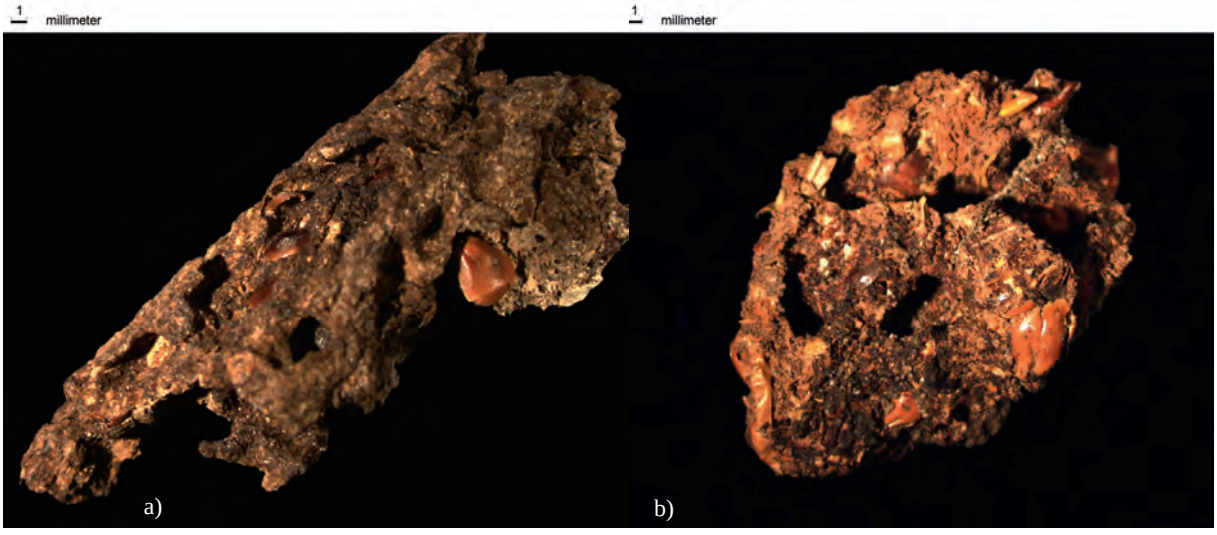
Pl. 134.12a–b Dorsal view (a) and ventral view (b) of desiccated *Panicum* sp. fruit; from sample MB8



Pl. 134.13a–b Dorsal view (a) and ventral view (b) of modern *Panicum turgidum* fruit

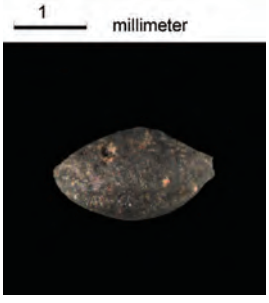


Pl. 134.14a–b Dorsal view (a) and ventral view (b) of modern *Panicum miliaceum* fruit



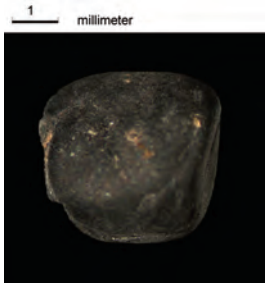
Pl. 134.15a–b Desiccated *Panicum* sp. chaff in dung; from sample S14 (a) and sample S19 (b)

Pl. 134.16a–b Ventral (a) and dorsal (b) view of charred wild barley fruit (*Hordeum vulgare* ssp. *spontaneum*); from sample CH7

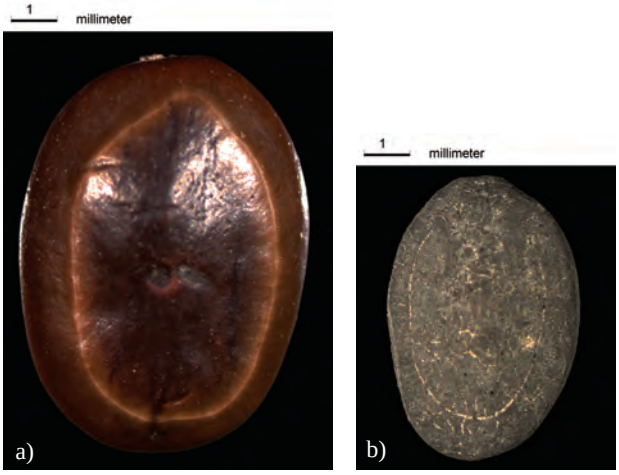


Pl. 134.17 Charred canary grass (*Phalaris* sp.) fruit; from sample MO5

Pl. 134.18 Charred darnel fruit (*Lolium temulentum*); from sample CH7

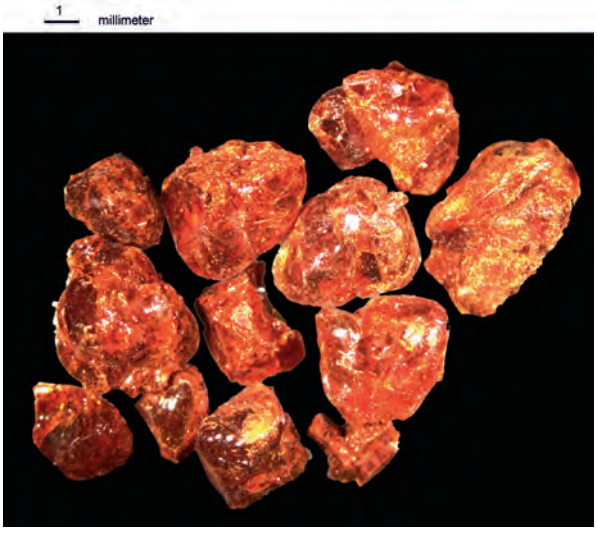


Pl. 134.19 Charred grass pea (*Lathyrus sativus*) seed; from sample CH7

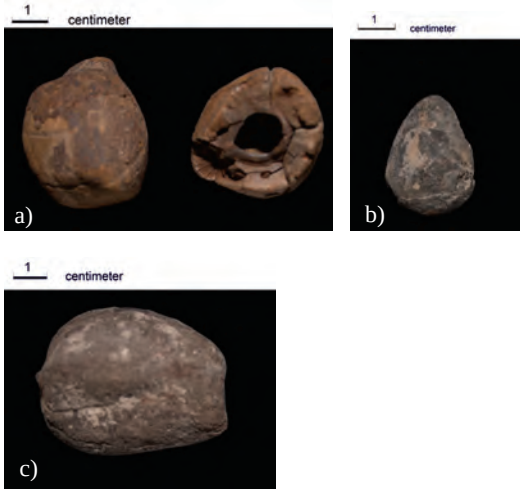


Pl. 134.20a–b Desiccated (a, from sample MB5) and charred (b, from sample CH7) seeds of Nile acacia (*Acacia nilotica*)

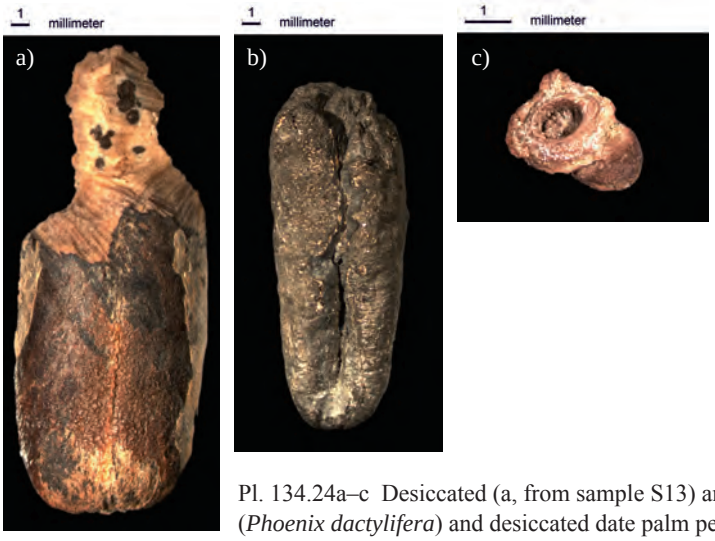
Pl. 134.21 Desiccated (fragment) of Nile acacia fruit (*Acacia nilotica*); from sample O5



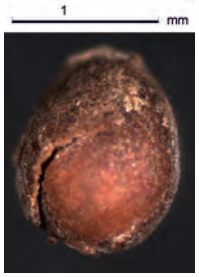
Pl. 134.22 Potential gum arabic; from sample O1A



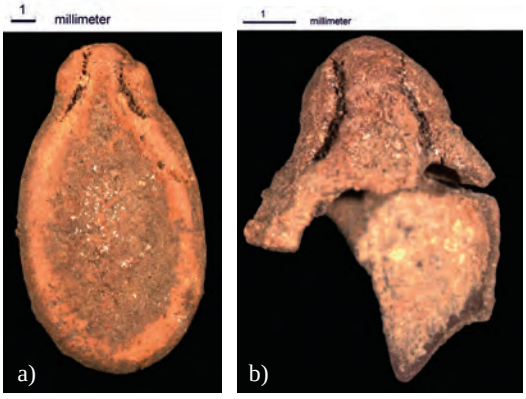
Pl. 134.23a–c Desiccated doum palm (*Hyphaene thebaica*), endocarps (a, from sample S2), a charred doum palm, seed (b, from sample S8), and a charred doum palm, fruit (c, from sample S8)



Pl. 134.24a–c Desiccated (a, from sample S13) and charred (b, from sample S7) date palm seeds (*Phoenix dactylifera*) and desiccated date palm pedicel (c, from sample MB11)



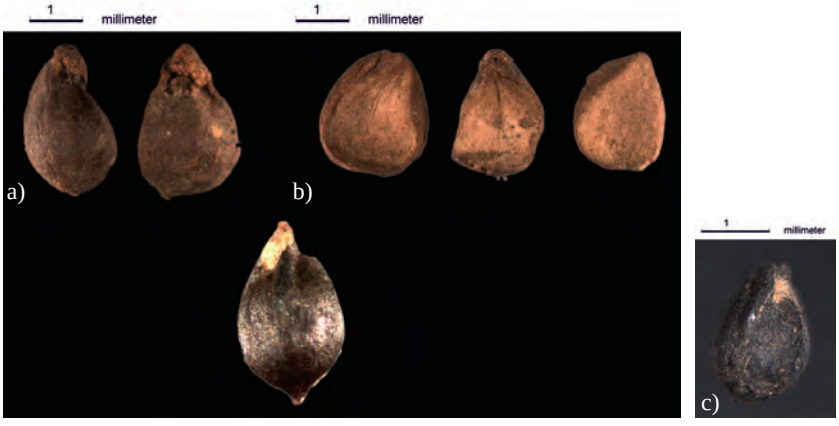
Pl. 134.25 Potential fruit of sycamore fig (*Ficus* cf. *sycamorus*); from sample MO4



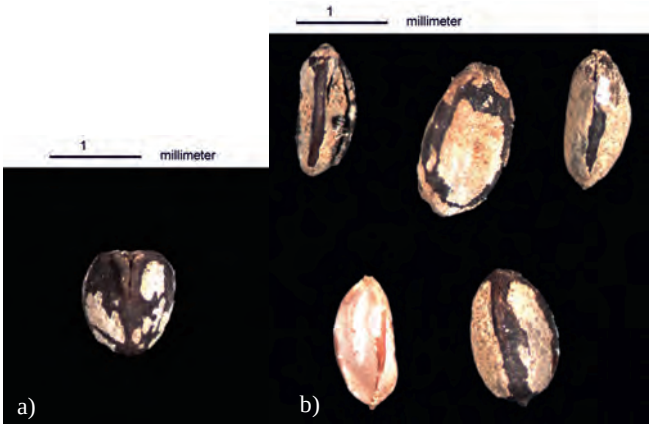
Pl. 134.26a–b Desiccated whole (a, from sample S28) and fragmented (b, from sample MB12) seed of watermelon (*Citrullus lanatus*)

Pl. 134.27 Desiccated *Cucumis* sp. seeds; from sample CH3

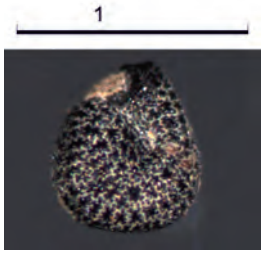
Pl. 134.28 Desiccated grape seed (*Vitis vinifera*); from sample OL1



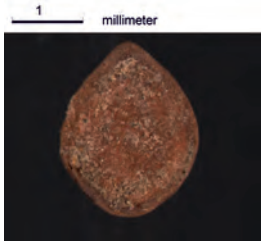
Pl. 13429a–c *Ambrosia maritima* desiccated whole fruits (top) (a, from sample MO5), (b, from sample MO5) with modern fruit (bottom) for comparison, and a charred fruit (c, from sample MO5)



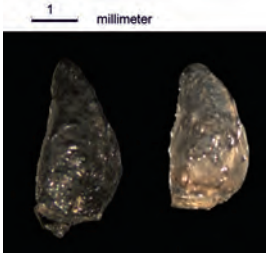
Pl. 134.30a–b Cyperaceae seeds, type 1 (a) and type 2 (b); from sample MB3



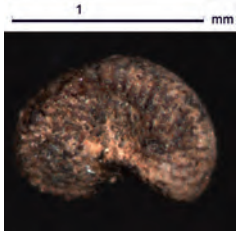
Pl. 134.31 *Portulaca* cf. *nitida* seed; from sample MB3



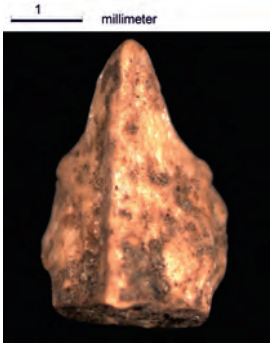
Pl. 134.32 Desiccated seed of Roman nettle (*Urtica* cf. *pilulifera*); from sample MB27



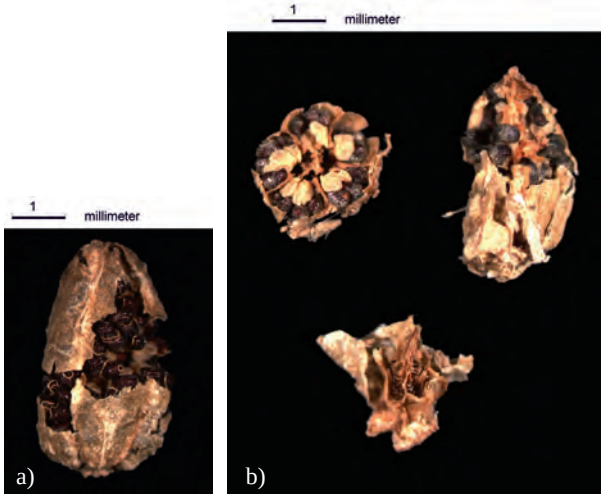
Pl. 134.33 Charred and mineralised seeds of *Centaurea* sp.; from sample CH7



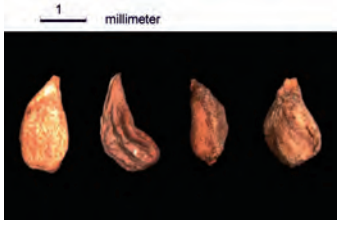
Pl. 134.34 Charred seed of *Silene* sp.; from sample MO4



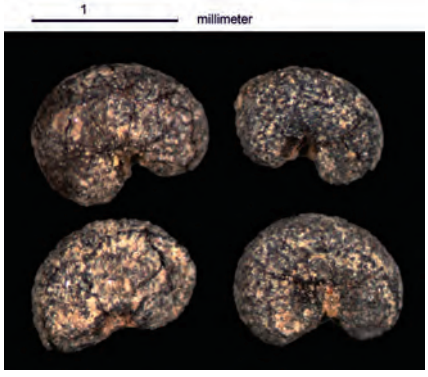
Pl. 134.35 Mineralised seed of *Echium* sp.; from sample MB12



Pl. 134.36a–b Desiccated complete (a, from sample MB2) and fragmented (b, from sample MB3) fruit(s) of Aizoaceae, cf. *Aizoon* sp.



Pl. 134.37 Desiccated Borage family (*Boraginaceae*) seeds; from sample MB17

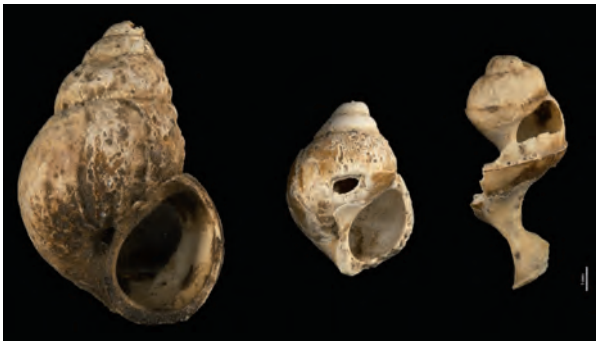


Pl. 134.38 Charred Poppy family (*Papaveraceae*) seeds; from sample MB3

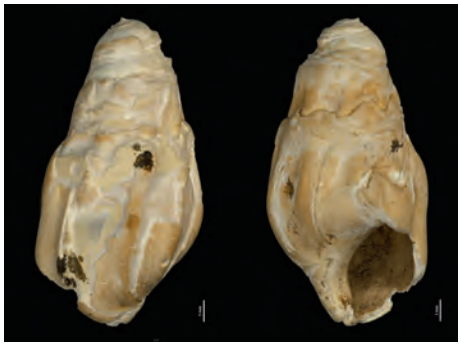
Pl. 135 Mixed shell sample from SAV1E 1676/2015

Pl. 136 *Theodoxus niloticus* (front view) from SAV1W 603/2014

Pl. 137 *Melanoides tuberculata* (front view) from SAV1E 2055/2014

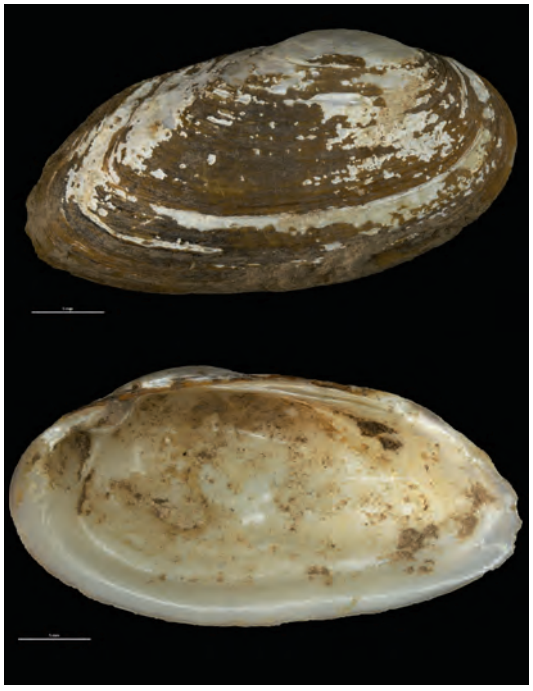


Pl. 138 *Cleopatra bulimoides* (front view) from SAV1E 1676/2015

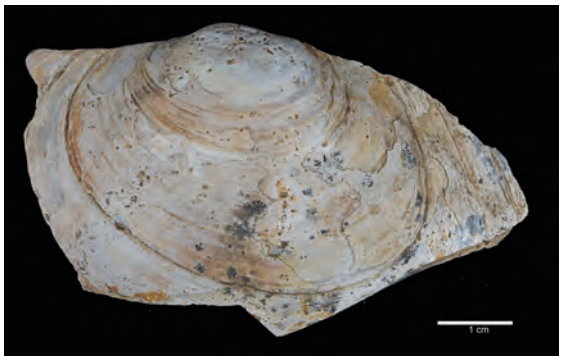


Pl. 139 *Melanopsis praemorsa* (front and back view) from SAV1W 082/2017

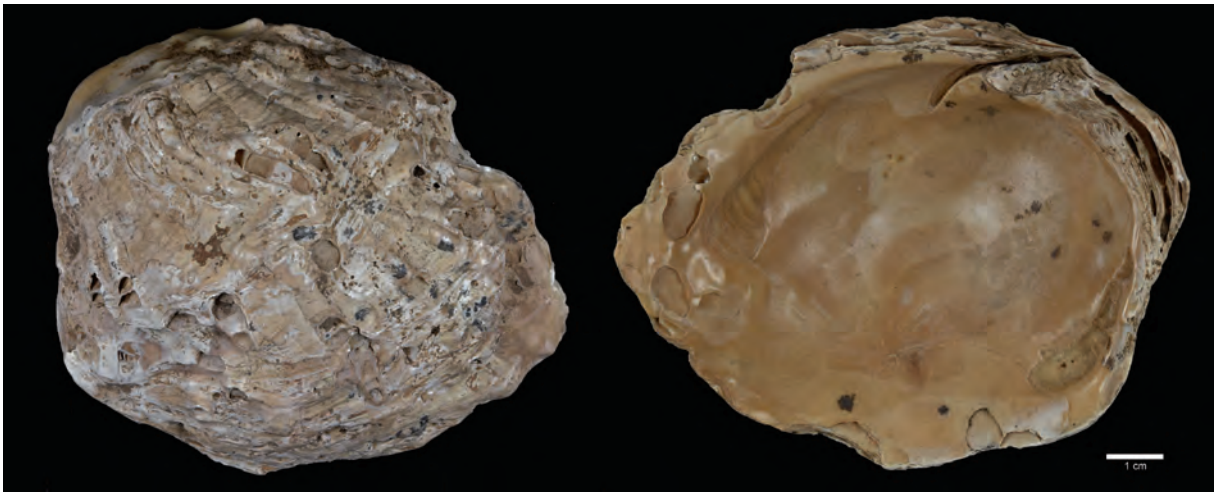
Pl. 140 *Cypraea* sp. (front view) SAV1E 323/2014



Pl. 141 *Nitia teretiuscula* (right valve external and internal) from SAV1W 725/2014

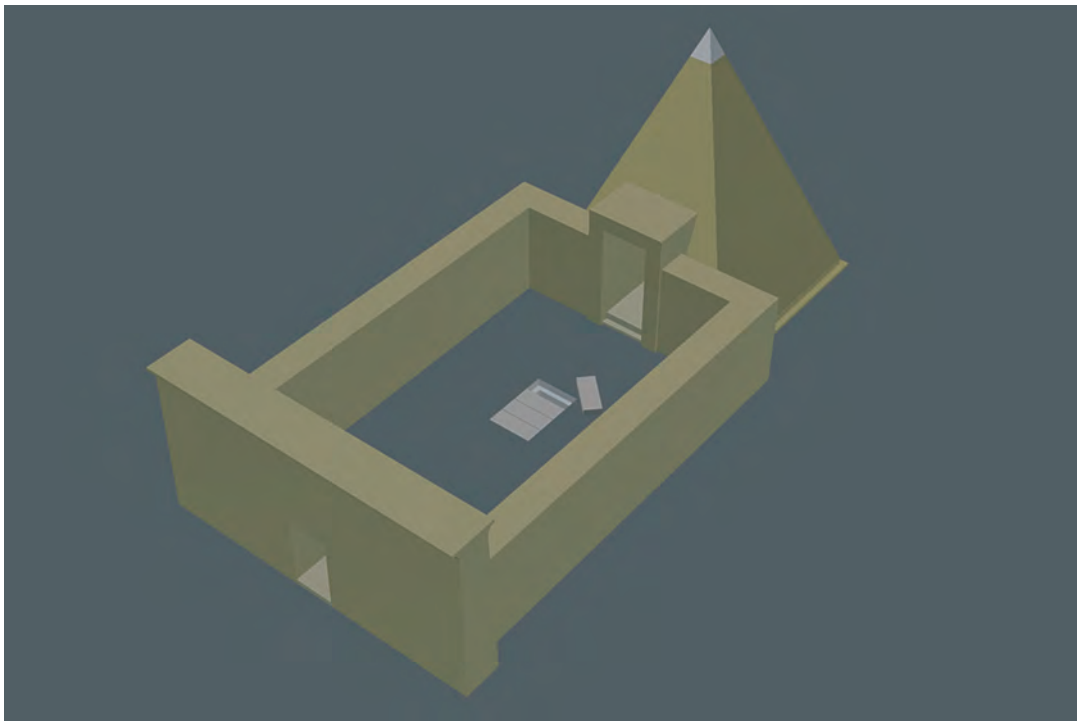


Pl. 142 *Chambardia rubens* (left valve external) SAV1E 1626/2015



Pl. 143 *Etheria elliptica* (right valve external and internal) from SAV1W 325/2017

Pl. 144 *Corbicola consobrina* (left valve external and internal) from SAV1W 011/2015



Pl. 145 Reconstruction of typical Egyptian-type pyramid tomb at SAC5 on Sai

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