

***Report on the work of the
Egyptian-German Mission at Matariya/Heliopolis in autumn 2015 and spring 2016****

by AIMAN ASHMAWY, DIETRICH RAUE, CHRISTOPHER BRENINEK, KLARA DIETZE, THOMAS
GRAICHEN und STEPHANIE SCHULZ

The fall and spring seasons of the Egyptian-German joint mission of the Ministry of State of Antiquities and the Egyptian Museum George Steindorff at the University of Leipzig at Matariya/Heliopolis were carried out from 1 September till 12 October 2015, with restoration works continuing till 30 October. Work was resumed from 21 February till 13 April 2016. Parallel to the March 2016 excavations, a training course in conservation and restoration methods was offered. The excavations (**Fig. 1**) focussed on the area of the main temple west of the obelisk, known as Misraa es-Segun, with the remains of the temple of Nectanebo I (Area 221). Minor investigations were carried out in the temple area 200 and 202 (Suq el-Khamis). A salvage excavation was started in autumn 2015 in the former area of the Army Camp southeast of the obelisk of Sesostri I. (Area 232).

Another rescue excavation had to be carried out in April 2016 south of the recently built Youth Club of Matariya (areas 247-250), which lead to the discovery of a new temple site of Ramses II.¹

* Participants were Aiman Ashmawy, Khalid Mohammed Abu 1-Ela, Hoda Kamal Ahmed, Wagida Abd el-Aziz Mohammed, Amal Ahmed Mohammed, Amira Farag Emam, El-Amir Todros Barakat, Ezzad El-Maghuri Mohammed, Ishaq Halim Gaber, Mahmoud Tharwat, Merwa Adel Sobhy, Mohammed Atef Mahmud, Sahar Abd el-Rady, Sarah Kadry Mohammed, Sheima Mohammed Abd el-Halim, Tamer Ahmed Mohammed Mahmud, Walaa Omar Mohammed, Ashraf Abd el-Samir and the restorers Hajam Azab Mohammed, Hassan Fawzi Amin, Islam Ibrahim Ahmed, May Kamal Abd el-Qader, Mina Mahrouz Soureyan, Mohammed Ali Abdellah, Osama Shokry Fakhory and Ragab Badry Swefy; on behalf of the University of Leipzig: Dietrich Raue, Susi Bergmann, Christopher Breninek, Pieter Johannes Collet, Morgan De Dapper, Klara Dietze, Maximilian Georg, Mariana Jung, Asja Müller, Jakub Ordutowski, Virag Pabeschitz, Lutz Popko, Marie-Kristin Schröder and Stephanie Schulz.

The work in autumn 2015 was funded by the American Research Centre of Egypt by a grant of the Antiquities Endowment Fund. We are also grateful to Nicholas Warner for taking care of the design and production of labels for the recently discovered objects in the Museum of Matariya. Since spring 2016, the Deutsche Forschungsgemeinschaft has supported the project "The Cult Centre of the Sun-God of Heliopolis (Egypt)". Further support was received by the Fondation Schiff Giorgini for the work in the Temple Site 200/Suq el-Khamis and by the European Foundation for Education and Culture of the Rahn-Dittrich Group for the excavation work in the former Army Camp (area 232).

The cooperation includes since January 2016 the University for Applied Sciences Mainz with Kai-Christian Bruhn and Thomas Graichen who joined the team in spring 2016. The training course in restoration was directed by Grit Friedmann (Graeco-Roman Museum of the University of Leipzig).

The Supreme Council of Antiquities was represented by the inspectors Amr Ismail Ahmed, Ishaq Halim Gaber, Mohammed Sayed Sayed, Sabah Abd el-Halim Ahmed and Walaa Omar Mohammed. The mission was kindly supported in autumn 2015 and spring 2016 by H.E. the Minister of Antiquities Dr. Mamduh Eldamaty and by Dr. Mahmud Afifi in the centre of the MSA and by Mrs. Mohga in the store rooms of the MSA in Tell Hisn. We would like to express our sincere thanks to them for their kind support and cooperation. As in the past season, the mission was considerably supported by the German Archaeological Institute. We are grateful to Prof. Dr. Stephan J. Seidlmayer for this indispensable help.

The mission was visited by H.E. the Minister of Antiquities Prof. Dr. Mamduh Eldamaty, H.E. the Minister of Urban Development Dr. Ahmed Badr Zaki and the governor of Cairo Dr. Galal el-Said, on March 12th, 2016. Further steps for clearing the site from debris were discussed.

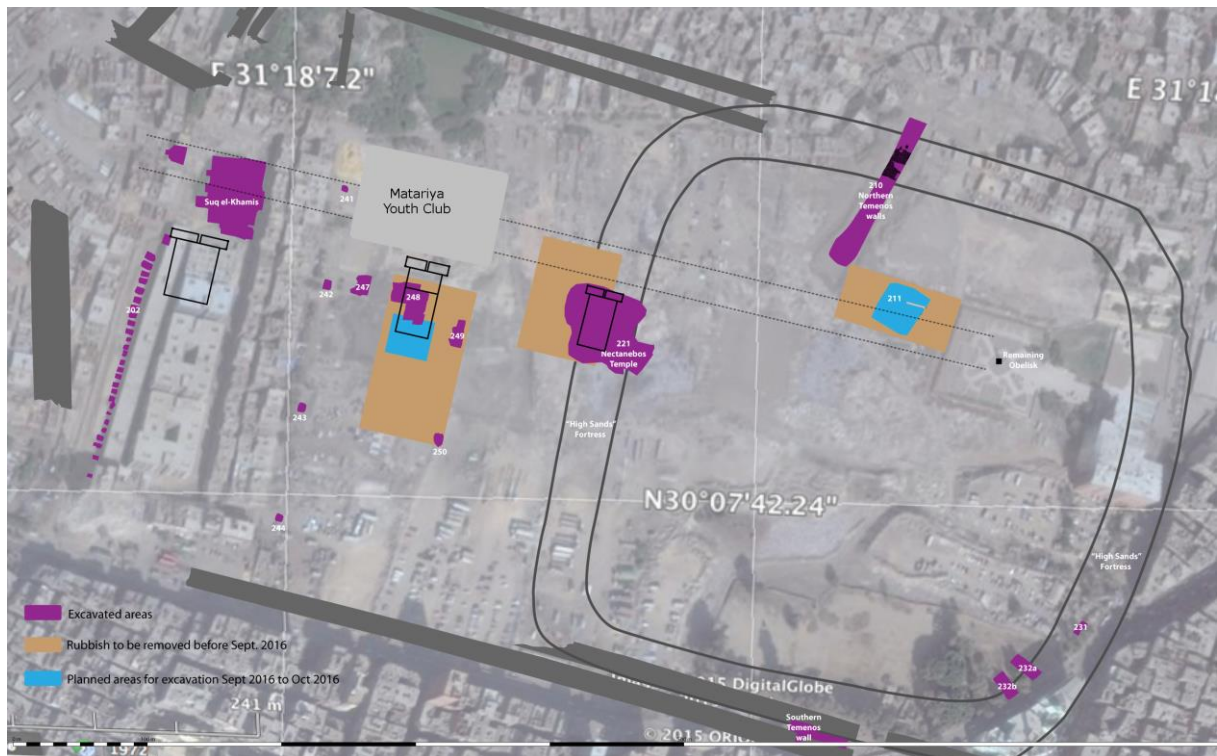


Fig. 1: Areas of investigation in the main temple of Heliopolis (April 2016)

Excavation – Area 221:

The investigation of the remains of the temple of Nectanebo I, about 350 m west of the Obelisk of Sesostris I, was continued in autumn 2015 and spring 2016 (**Fig. 2**). Eleven 10x10 m squares have been partially or entirely excavated so far.² In total 25 new blocks from the basalt dado zone of Nektanebo I were discovered.³ A group of basalt slabs with the geographical procession⁴ was found in two adjoining squares. The reliefs represent the 1st – 8th nomes of Upper Egypt. Some of the scenes, like the depiction and text of the 1st Nome of Upper Egypt, are completely preserved (**Fig. 3**). Their

¹ For earlier publications of the Egyptian-German joint expedition, see A. Ashmawy – D. Raue – M. Beiersdorf, The Thirtieth Dynasty in the temple of Heliopolis, in: *Egyptian Archaeology EES-Bulletin* 47, august 2015, 13-16; A. Ashmawy – D. Raue, The Temple of Heliopolis: excavations 2012 – 2014, in: *Egyptian Archaeology EES-Bulletin* 46, spring 2015, 8-11; M. De Dapper – T. Herbich, Geomorphological and geophysical survey, in: *Egyptian Archaeology EES-Bulletin* 46, spring 2015, 12 – 13; A. Ashmawy – D. Raue – M. Beiersdorf, Report on the work of the Egyptian-German Mission at Matariya/Heliopolis in spring 2015, ASAE (forthcoming); A. Ashmawy – D. Raue – M. Beiersdorf – M. De Dapper – T. Herbich, Report on the work of the Egyptian-German Mission at Matariya/Heliopolis in spring 2014, ASAE (forthcoming), A. Ashmawy – D. Raue – M. De Dapper – T. Herbich, Report on the work of the Egyptian-German Mission at Matariya/Heliopolis in autumn 2012, ASAE (forthcoming) and M. Abd el-Gelil - R. Suleiman - G. Faris - D. Raue, The joint Egyptian-German Excavations in Heliopolis in Autumn 2005, in: *MDAIK* 64, 2008, 1-9.

² The basalt reliefs and inscriptions of the bandeau frieze are found between 40 and 120 cm beneath water table. To begin with the archaeological investigation, each season had to be started by the removal of about 13m of debris that was dumped here between 2011 and 2013.

³ We are grateful to André Blok, Karl Jansen-Winkeln, Dieter Kurth, Christian Leitz and Daniel von Recklinghausen for their advice on these inscription.

⁴For earlier finds of these scenes, see A. Ashmawy – D. Raue – M. Beiersdorf, The Thirtieth Dynasty in the temple of Heliopolis, in: *Egyptian Archaeology EES-Bulletin* 47, august 2015, 15-16.

text formula addresses god “Atum Lord of Heliopolis”. The 2nd nome, for example, is conventionally introduced by its name Wetjez-Hor. It is noteworthy that some texts focus on the sacred places of the nome: The text for the 1st nome of Upper Egypt, for example, refers to the source of the Nile and its annual flood. The 4th nome is represented by its four major sanctuaries, listed from south to north: Armant, Ed-Tod, Thebes and Medamud. As of yet, no trace of the Lower Egyptian sequence has been found yet.



Fig. 2: Area 221. Site of the temple of Nectanebo I



Fig. 3: Geographical Procession of Nectanebo I: The First Nome of Upper Egypt



Fig. 4: Bandeau text of Nektanebo I from Area 221.

Above the geographical procession the decoration of the temple included a horizontal inscription, also carved on basalt blocks. They bear evidence for both text directions and resume the sanctuaries dedication to “Atum Lord of Heliopolis, the Great God, Lord of the Main Sanctuary” and to Hathor-Nebethetepet, the Heliopolitan Hathor and female main deity of the temenos. Other texts praise the king as “one who travels the drowning lands, being a defense of metal for them.”⁵ He is “great of monuments in Heliopolis”. His ritual duties are addressed by “the one who catches (ꜥḥ) the calve (*bḥs*) daily (for the sun god)”⁶. His divine quality is equalled to the sun-child in the morning-barge (**Fig. 4**).

To the west of the slabs, dense layers of limestone chips attest to the destruction and reuse of the fine limestone that formed of the inner part of the temple. The quality of the sunk reliefs is amazing, with its depth of up to 4 cm creating an almost three dimensional effect. These images belong to ritual scenes and large size texts with the name and titles of Nectanebo I.

West of the basalt slabs, the team found large fragments of a gate of Nectanebo I. It was made of yellow-brown silicified sandstone, quarried from nearby Gebel Ahmar (**Fig. 5**). Their stratigraphical position belongs to a later phase of the destruction of the temple.⁷ Some portions of the thresholds and jambs bear inscriptions describing Nectanebo I as “beneficient of monuments in Heliopolis (*ꜥḥ-mnw m Jwnw*)”

⁵ The idea of a king offering shelter to his people can be traced to texts of the nomarchs of the First intermediate Period and from the royal praises of the 12th to the graeco-roman temple inscriptions, H. Grapow, *Die bildlichen Ausdrücke des Aegyptischen. Vom Denken und Dichten einer Altorientalischen Sprache*, 1924, 162-164; for comparing the king with a wall of metall for his people in the later 12th Dynastie, see Elke Blumenthal, *Untersuchungen zum ägyptischen Königtum des Mittleren Reiches I. Phraseologie*, Berlin 1970, 272.

⁶ The offering of white bulls in Heliopolis is attested from the victory stela of Piankhi, where his visit of the sun sanctuary of the „high sand“ is accompanied by a festival offering of white bulls (*jH.w HD.w*), milk, myrrh, incense and all XA.w-essences of sweet fragrance, see Nicolas-C. Grimal, *La stèle triomphale de Pi(ankh)y au Musée du Caire*, MIFAO 105, Le Caire 1981, 130-131 line 102 and pl. X. The animal is depicted as a full-grown bull.

⁷ Most blocks are found above the groundwater level. In one case, a fragment of the gate was found lying on top of parts of the geographical procession (5th nome of Upper Egypt). Others were found on top of 50 cm thick mud layers full of molluscs.



Fig. 5: Fragments of a gate of Nectanebo I

There is evidence for large-size statuary of the New Kingdom to the east and north of the sanctuary remains of the 30th dynasty. A paw of a large sphinx sculpture was discovered among the fragments of the gate of silicified sandstone. The very peculiar way of indicating the joints probably dates to the New Kingdom and finds close parallels during the middle of the 18th dynasty (**Fig. 6**).⁸ This would fit well into the presence of other sculptures of the New Kingdom next to the temple of the 30th dynasty: After the discovery of a larger than life size statue torso of king Merenptah in a lunging pose in spring 2015⁹, a large fragment of the extended left leg with the base was discovered in Autumn 2015. The statue's base is 52cm high and bears faint traces of inscriptions (**Fig. 7**).

⁸ Compare sculptures of Thutmosis III, e.g. Cairo CG 42069, Georges Legrain, *Statues et statuettes de rois et de particuliers*. I. No. 42001-42138, Le Caire 1906, 40-41, Pl. XLI. and Cairo CG 577, Ludwig Borchardt, *Statuen und Statuetten von Königen und Privatleuten im Museum von Kairo II*, Berlin 1925, 126, Bl. 98; see also for sculptures of Hatshepsut: Sphinx. Les gardiens de l'Égypte, Catalogue of the exhibition 19 October 2006 – 25 February 2007, Bruxelles 2006, 107 fig. 10

Sphinxes of the Middle Kingdom bear similar characteristics, e.g. Sphinx of Amenemhat III, Ludwig Borchardt, *Statuen und Statuetten von Königen und Privatleuten im Museum von Kairo II*, Berlin 1925, 11-12, Bl. 63; see also Sphinx. Les gardiens de l'Égypte, 95 and 220 Cat. 68, 73 and 210 Cat. 55.

The sphinxes of Nectanebo I on the other hand show different stylistic features, see for example Cairo CG 661, Ludwig Borchardt, *Statuen und Statuetten von Königen und Privatleuten im Museum von Kairo III*, Berlin 1930, 9-10, Bl. 121, see also: Sphinx. Les gardiens de l'Égypte, 90 fig. 9, 121 and 229-231 Cat. 87-88.

⁹ A. Ashmawy – D. Raue – M. Beiersdorf, Report on the work of the Egyptian-German Mission at Matariya/Heliopolis in spring 2015, ASAE (forthcoming).



Fig. 6: Paw of a large-size sphinx of probably New Kingdom date from Gate of Nectanebo I



Fig. 7: Fragments of the statue of the lunging king, probably Merenptah, from area 221.



Fig. 8: Red Granite head of royal sculpture

A group of red granite fragments was found north of the scattered remains of the temple of Nectanebo I. A head of a king (**Fig. 8**) has unfortunately suffered badly from water and erosion and cannot be dated more precisely as yet. The flat top of the head indicates the presence of a crown made of a separate block as it can be observed quite frequently among sphinxes of the Ramesside Period, for example.¹⁰

During the work in the Temple of Nectanebo I, a relief of Sesostris I (**Fig. 9**) was discovered in the debris layers of area 221. This very remarkable find gives an impression of the fine artistic quality of the temple of Sesostris I. The scene shows the king running in a ritual context, probably the sed-festival. The style evokes – deliberately, for sure – the art of the Old Kingdom and differs very much from counterparts of this reign from his building at Karnak.¹¹ The fragment bears two adjoining decorated faces and might therefore belong to a pillar/Osiris pillar or a pillared façade.¹² At this point, it is the only fragment of a building of Sesostris I in area 221. Further excavation will answer the question as to whether indeed a sanctuary of the Middle Kingdom was erected at a considerable distance from the obelisk erected by the same king, or whether the blocks have simply been reused in later structures.



Fig. 9: Relief of Sesostris I from a pillar or a pillared façade.

¹⁰ The missing part can be reconstructed as a double crown, compare the sculptures of the southern row from the sphinx alley in the first courtyard of the temple of Ramesses II at Wadi es-Sebua, Gaston Maspero, *Les temples immergés de la Nubie: Rapports relatifs à la consolidation des temples*, Le Caire 1911, Pl. CXX

¹¹ Compare e.g. Luc Gabolde, *Le “grand château d’Amon” de Sésostri Ier à Karnak. La décoration du temple d’Amon-Rê au Moyen Empire*, Mémoires de l’académie des inscriptions et belles-lettres Nouvelle Série XVII, Paris 1988, pl. XXVII and especially Pierre Lacau – Henri Chevrier, *Une chapelle de Sésostri Ier à Karnak. Planches*, Le Caire, 1956, Pl. XXV-XXVIII.

¹² Pierre Lacau – Henri Chevrier, *Une chapelle de Sésostri Ier à Karnak. Planches*, Le Caire, 1956, Pl. 2-3, 9, 12-41; Gabolde, *Le “grand château d’Amon”*, Pl. XIX-XX, XXVIII-XXXVIII.

The debris of the temple of the Late Period yielded other finds, including a number of so-called sculpture models and a bronze figurine of a standing goddess Bastet. Finds of coins attest for activity (probably in connection with the destruction of the temple) from the 4th and 6th century.¹³

Excavation – Area 247-250:

In March/April 2016 the mission investigated several areas that are threatened by the current construction plans of the Cairo Governorate.

Area 247: At about 12 m a.s.l., a mud brick enclosure was met. According to adjacent pottery finds it can be dated to the advanced New Kingdom. It might therefore be an enclosure of the temple site area 248.

Area 248: A new temple site inside the temenos of Matariya was detected west of the temple of Nectanebo I.¹⁴ 14 sondages of about 4x4 m were excavated. Fragments of large statuary made of silicified sandstone, like a large crown of Upper Egypt, belonged to statues that were 2-3 times life-size. They were discovered in the northernmost section, pointing to the façade or to a first courtyard since also a fragment of a smaller sculpture of a god was found in the same square (**Fig. 10**). That statue was reworked. It might have originally depicted a deity like Hapi or Nehebkau, before its beard was carefully removed.¹⁵ Further south, fragments of large columns/column bases made of limestone, measuring about 180 cm in diameter were discovered. A wall relief with a large cartouche of Ramses II attests to this king being responsible for at least for the frontal courtyards of this temple. Next, following southwards, a large round-topped stone bearing cartouches of the New Kingdom (probably Ramesside) on both sides was found. It provides evidence for one courtyard with a wall thickness of 122 cm and the characteristics of a sun-sanctuary, e.g. without any peristyle or cavetto cornice CLARIFY HOW. The southernmost block, found about 30 m south of the fragments of colossal statuary, bears again to a wall thickness of 120 cm. This block was probably reworked once and shows the same rough relief technique that was also observed at the temple of Ramses II at Suq el-Khamis in the past seasons. This might point to the later decades of his long reign and would lead us to the observation that two festival temples were erected by Ramses II in the western glacis of the cult-center of the sun-god at the obelisk of Sesostri I. They seemed to be aligned along the axis that led from the *Ity*-Canal in the west via an avenue of sphinxes to the obelisk. Temple site 248 fills the gap between the temple of Suq el-Khamis and the temple of Nectanebo I that was probably also an extension of a

¹³ We are grateful to Hans-Christoph Noeske for dating the coins.

¹⁴ Recent plans for urban development by the Cairo Governorate focused also on this portion of the temple of Matariya. A youth club was built and finished in 2015. Further construction work affected the area south of this centre.

¹⁵ Compare the statue found in Matariya in 1985 and exhibited in the Open Air Museum at the obelisk: Ahmed M. Moussa, Seated statue of NHB-ka.w from Heliopolis, in: *Hommages à Jean Leclant I*, BdE 106.1, 479-483. Magali Massiera argues in favour of an identification as a dedication for Nehebkau, depicting Ramses II., see her contribution “The so called statue of Nehebkau. A comparative study”, in: *Journal of Intercultural and Interdisciplinary Archaeology* 2, 2015, 25-33.

temple of the later New Kingdom, as fragments of sculpture and reliefs of Merenptah and Ramses IV indicate. On the other hand, at least in this area there seems to have been a hiatus in building activity between the Ramesside Period and the 30th Dynasty since no evidence for any relief decoration of the Third Intermediate Period or the Saite Period have come to light.



Fig. 10: Area 248: Fragment of the statue of a divinity, silicified sandstone, New Kingdom

Area 249: This area seems to have been void of larger stone structures. Just a small amount of limestone chips was found on the levels of the Ramesside Period. Instead, strata of the earlier New Kingdom seem to be preserved at a higher level.

Area 250: 2.6 m under the water table no intact archaeological layer was found. This area has been mapped since the 18th century as void of monuments and covered by water. Even though it cannot be stated with certainty as yet, it is possible that this might have been an area containing a sacred lake.

Excavation – Area 202:

The area to the west of the shopping mall “Suq el-Khamis” was investigated in spring 2016 (**Fig. 11**), taking hereby the last chance for observations of the western fringe of the temple site area 200.¹⁶ At the northern corner of this stripe of 190x10 m, a corner block from the pylon of the Ramesside temple at the Suq el-Khamis was found (**Fig. 12**). Close by, a large block with the cartouches of Ramses IV was found. It served as a later addition that was part of the exterior decoration.¹⁷

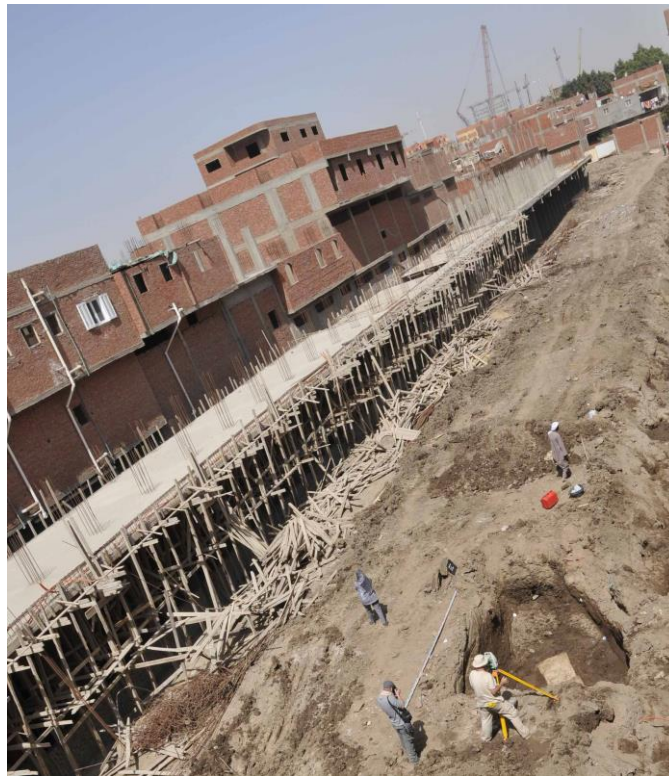


Fig. 11: Rescue excavation in area 202/Suq el-Khamis



Fig. 12: Corner block of Ramesside Pylon from Area 202-north

¹⁶ Also this area will be occupied by streets and buildings of the shopping mall in due course.

¹⁷ For other examples of additional inscriptions by Ramses IV close by texts of Ramses II, see Dietrich Raue, *Heliopolis und das Haus des Re*, ADAIK 16, Berlin 1999, 382.



Fig. 13: Column of administrative building west of the temple in area 202

They point to administrative units built south of the temple proper. Among them, there are lintels and doorjambs made of limestone as well as a column with the lower part of a palm-leaf capital (**Fig. 13**). The column finds close parallels in the administrative units in the northern perimeter of Heliopolis at Tell Hisn, excavated by the late professor Abd el-Aziz Saleh in the 1970s.¹⁸ Indeed, the general layout of the precinct west of the Suq el-Khamis temple might have had a similar character. A minimum of three building units can be distinguished thanks to the door elements made of limestone, located about 10-20 m apart.

The southernmost part of area 202 was instead occupied by a small sun altar, as a staircase indicates. In the same area, and probably from the same context, a kneeling statue of Sethos II was earlier discovered.¹⁹

Aiman Ashmawy and Dietrich Raue

¹⁸ Abd el-Aziz Saleh, *Excavations at Heliopolis I*, Pl. XXXIV-XXXVI; Raue, *Heliopolis und das Haus des Re*, 337.

¹⁹ Ahmed el-Sawi, *A Limestone Statue of Sety II, from jwn (Heliopolis)*, in: *MDAIK* 46, 1990, 337-340.

In autumn 2015 excavation work began on the southeastern edge of the inner temple precinct, known as "Hyksos Fort" of Heliopolis (**Fig. 1**). The site was for a long time inaccessible for archaeological research since it was part of the former Egyptian military camp at Matariya, which left the site in 2015. This allowed for the investigation of the area close to the innermost temple enclosure wall (**Fig. 14**).²⁰



Fig. 14: Area 232A. Workshop and habitation of 4th – 2nd century BC.

Further south, a number of architectural elements were gathered from about 1 m below groundwater. The field work of the recent two campaigns focused on understanding the stratigraphy of the area. Three different strata can be distinguished: Stratum A correlates to various layers of surface debris dating to modern periods. Below this level, stratum B revealed several elements of extensive mud brick architecture from the mid-Ptolemaic period. Broad walls, up to one meter wide, could be identified as the foundations and the lower brick courses of Ptolemaic buildings.²¹ The installation of such solid foundations for buildings indicates that they were

²⁰ The investigations focussed on the eastern fringe of the former camp as this is threatened by development plans to widen the adjoining street.

²¹ Overview of settlements of the 1st millennium in Lower Egypt can be found in: F. Leclère, *Les villes de Basse Égypte au 1er millénaire av. J.-C.*, Analyse archéologique et historique de la topographie urbaine, BdE 144 (Cairo 2008). Towerhouses were recently discovered in Tell el-Dab'a, see M. Lehmann, 'Tower houses in Tell el-Dab'a. The late and ptolemaic period', in S. Marchi (ed.), *Les maisons-tours en égypte durant La Basse époque, Les périodes ptolémaïque et romaine*, Actes de la table-ronde de Paris Université Paris-Sorbonne (Paris

deliberately constructed to take weight of various upper floors. The southern trench bore evidences for workshop mudbrick architecture of the Ptolemaic period: Within a room of a building, at its southern fringe, three tiny circular-shaped structures were discovered, two of them built of mudbricks and one shaped by pottery sherds. All three show an opening formed by the interspace of two bricks on their front side, which is oriented northwards. This may indicate that the structures belong to the foundations of small furnaces using the predominant north wind. So far, the exact use of these furnaces is unknown.

The western brick wall in the northern trench (**Fig. 14**) is related to a circular mudbrick structure that possibly served as a silo for the production work on the area. By analyzing pottery finds and coins²², stratum B can be dated to the mid-Ptolemaic period in the 2nd century BC. Furthermore, the archaeological examination of this stratum produced a whole series of noteworthy findings: Among various faience amulets, two bronze statuettes of the god Harpocrates, one seated (**Fig. 15**) and one standing on a rectangular basis, and a fragment of a wooden scribal palette with a hieroglyphic new-year's inscription were found.



Fig. 15: Bronze figurine of Harpocrates from area 232A

IV)29-30 novembre 2012, Nehet 2 (Paris, 2014), 57-68. For findings from previous excavations in Heliopolis, see: Abd el-Aziz Saleh, Excavations at Heliopolis II, Ancient Egyptian Ounut, the site of Tell e-Hisn-Matariyah (Cairo 1983). Parallels can also be found in Naukratis: http://www.britishmuseum.org/research/online_research_catalogues/ng/naukratis_greeks_in_egypt/topography.a.spx.

²² The date of the two coins is based on the numismatic evaluation of Dr. Hans Christoph Noeske/Frankfurt am Main. They were minted in the reigns of Ptolemaios VI/VIII around 170-163 BC.



Fig. 16: Area 232A. storage facilities and charcoal/ash layers of stratum C

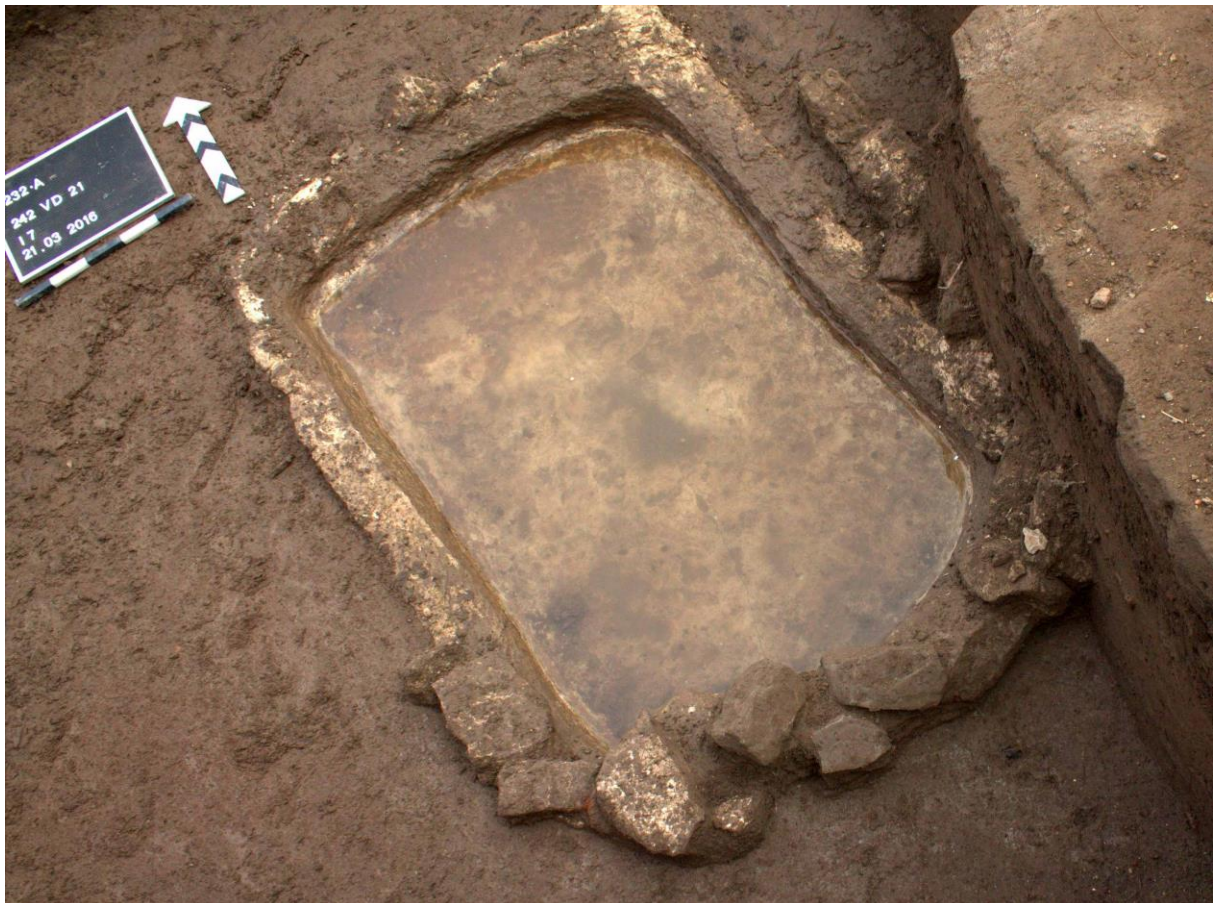


Fig. 17: Limestone basin from area 232A-east



Fig. 18: Area 232: faience wig, probably New Kingdom.

The mid-Ptolemaic stratum overlies stratum C, dating to the 4th/3rd century BC. It appeared that the complete site was covered by a large number of thin layers, all including a high percentage of burnt charcoal and ash (**Fig. 16**). The constitution of the layers points to a long-term industrial use of the area. Therefore, not less notable, are the many inclusions of blueish and greenish slag, which were regularly observed within the industrial layers. The fact, that the area was used for highly industrial demands, was furthermore proven by the incredibly huge number of roughly-worked pottery fragments, all belonging to the same type of roundish tray with flat base and raised rims, which could have served for the production of bread. Also a vast number of animal bones, primarily of cattle²³ was recorded. All these indicators point to large-scale food production.

Two nearly perfectly circular silos, built of mudbricks, are preserved in the northern trench. Underlying mud brick structures, also showing a roundish form, were observed also. So far, it remains unclear, whether these belonged to an earlier phase of construction or were installed as an element of selective stabilization for the silos. Furthermore, a limestone staircase, belonging to the structures of stratum C, shows how quickly the level of the area rose and is proof for an intermediary phase.

Another area where the stratigraphic relationships are complex and unclear is in the southeastern corner of the northern trench, where a monolithic limestone basin was discovered (**Fig. 17**). On top of the basin's shallow rims the team found shattered pieces of former temple reliefs, partially dating to the Old, Middle and earlier New Kingdom. This may indicate that the limestone block of the basin originally belonged to the temple as well, and was reused in later times. The pottery finds that cover the basin primarily date to the

²³ For the identification of the bones we thank Salima Ikram.

Ramesside period, although many fragments of older vessel types were also found. Of great interest is a faience-wig (**Fig. 18**), belonging to a statuette and made in separated pieces, which was found in between the fill-layers of the basin. Further excavations will be carried out in order to establish if this corner is genuinely of the New Kingdom, or if the New Kingdom material is due to movement of earth and the disposal of objects deemed useless in the 4th century BC.

In 1903-6, the Italian Mission, supervised by Ernesto Schiaparelli, excavated an area in the north of area 232. Here, Schiaparelli described a structure that he called „favissa“: some mazelike mud brick structure with not properly understood masonry bonds. The excavation of the area produced a high number of important finds, for example the fragments of the Djoser-Naos²⁴. All of the objects, now on display in the Egyptian Museum of Turin, were shattered into small pieces. Regarding its extensive mud brick architecture as well as the shattered temple inventory, it is very likely that area 232 provides the same stratigraphical sequences. Also, Schiaparelli's „favissa“ might be identified as at least two strata of domestic buildings and industrial workshops throughout different periods of reutilization of former temple inventory.

Klara Dietze and Stephanie Schulz

Study of sculpture of the Middle and New Kingdom at Suq el-Khamis (area 200)

The excavation of the site 200 began in 2001²⁵ and was continued in the subsequent campaigns²⁶. During this work, in addition to talatat-fragments, pottery and small finds, a number of fragments of red granite were uncovered. Since autumn 2015, these fragments were systematically recorded. The documentation focussed on photographing the finds in detail. The objective was to create 3D models of the individual fragments (*structure-from-motion*), which would enable one to reconstruct the number, the types and the original context of these statues.²⁷

²⁴ Important finds are listed in F. Contardi, *Il Naos di Sethi I da Eliopoli, un monumento per il culto del dio Sole*, Catalogo de museo egizio di Torino serie prima – monumento e testi XII (Milano 2009). Furthermore we are deeply grateful to Federica Ugliano for insights on her ongoing dissertation. See also F. Ugliano/A. M. Sbriglio, *Re-excavating Heliopolis*, unpublished archaeological data from the archives of Ernesto Schiaparelli and Missione Archeologica Italiana. in *Current Research in Egyptology 2014* (Oxford 2014).

²⁵ Y. Hamid Khalifa and D. Raue, *Excavations of the Supreme Council of Antiquities in Matariya: 2001-2003*, in: *GM* 218, 2008, 49-56.

²⁶ M. Abd el-Gelil - R. Suleiman - G. Faris - D. Raue, *The joint Egyptian-German Excavations in Heliopolis in Autumn 2005*, in: *MDAIK* 64, 2008, 1-9; A. Ashmawy – D. Raue, *The Temple of Heliopolis: excavations 2012 – 2014*, in: *Egyptian Archaeology EES-Bulletin* 46, spring 2015, 8-11.

²⁷ This subproject was financed by the Schiff Giorgini Foundation.

The existing sawing and chisel marks make clear how the statues were destroyed. Large cotters were driven into the rock to split the statues into pieces or/and saws were used to divide the stone.²⁸ Probably the statues were destroyed to obtain the core fragments so that they could be used as building materials.

The fragments were classified into four groups: The first group, made up of 46 pieces, consists of fragments with polished surfaces, the second group of 35 pieces consists of fragments with straight surfaces, the third group of 36 pieces, consists of fragments without polished surfaces but with identifiable shapes, and the fourth and last group of over 100 pieces are core fragments.

At least seven individual statues have been identified. Four heads with a nemes-headress, which may be dated to the Middle Kingdom (**Fig. 19**)²⁹; besides them, a part of a white crown, the knee of a smaller than life-size striding statue, and a colossal shoulder, which so far does not match to any other fragment due to its proportions.



Fig. 19: Royal heads of the Middle Kingdom reused in the Ramesside temple area 200



Fig. 20: a: Back-slab of a dyad/triad, mentioning Ramses II and Isis; b: Mitrahina Group

²⁸ J. A. Harrell – Per Storemyr, Ancient Egyptian quarries – an illustrated overview, in: Quarry Scapes. Ancient stone quarry landscapes in the eastern Mediterranean. Geological Survey of Norway. Special Publication, 12, 2009, 7.

²⁹ See M. Abd el-Gelil - R. Suleiman - G. Faris - D. Raue, The joint Egyptian-German Excavations in Heliopolis in Autumn 2005, in: MDAIK 64, 2008, 6-7, Taf. 5.

The back slab of a dy- or triad shows the names of the goddess Isis and of king Ramses II (**Fig. 20**). A similar example of such a slab is exhibited in the museum of MitRahina/Memphis. Here the goddess Sakhmet stands to the left of Ramses II, with Ptah on his right side.

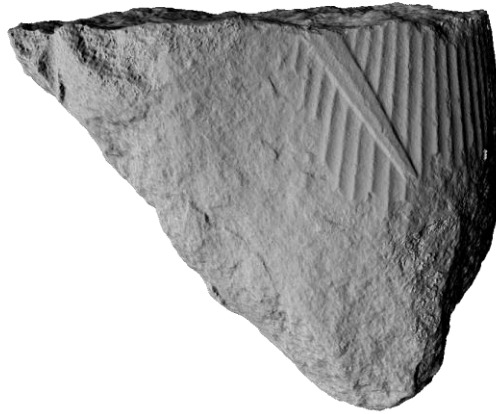


Fig. 21, a: apron fragment RG108; b: Colossus of Ramses II in Mitrahina Museum; c: apron with dagger from Mitarahina Colossus.

Also, a lower part of an apron, on which a dagger is carved, was found (**Fig. 21a**). This compares with the colossal statues of Ramses II at Mit Rahina, where he reused sculpture of the Middle Kingdom (**Fig. 21b-c**).³⁰ It is possible that this fragment matches one of the heads or the portion of the white crown that was documented in this area.

³⁰ H. Sourouzian, Standing royal colossi of the Middle Kingdom reused by Ramses II, in: MDAIK 44, 1988, 233 Taf. 68.



Fig. 22: actual state of the base of a seated colossal statue from area 200 and reconstruction of statue base:



Fig. 23: Upper part of a seated statue from Amenemhet II. (New York MMA, L.2011.42), for positioning the fragments of a Upper Egyptian crown and its backpillar from Suq el-Khamis.

At least one part, a base of a seated statue, has remained in situ (**Fig. 22a-b**): The back part is broken in the middle. The front part is partly fragmentary. On the upper surface remains of the feet are preserved. Other fragments indicate to further remains of seated statues: three fragments belong to an arm, including the elbow. It seems as these fragments are from a seated statue with a height of approximately 3.80m (**Fig. 23**).

Christopher Breninek

Digital photogrammetry and the Heliopolis Project - A structured approach to on site use and post processing

Structure-from-Motion and similar digital photogrammetry methods as field documentation tools offer considerable advantages compared to more established approaches. Especially with regard to the use of time spent on site in relation to data density and quality, it easily surpasses traditional drawings in terms of efficiency.³¹ Often advertised as “precise under most shooting circumstances”, photogrammetry has seen widespread use in many archeological projects, especially in the advent of numerous consumer oriented software solutions³². Still, most, if not all archeological applications of photogrammetry, fail to follow the most rudimentary standards of scientific photogrammetry, in turn greatly reducing the integrity and reproducibility of their results.³³ Within the framework of the new founded cooperation with the Heliopolis-Project, the Department of Surveying and Geo-spatial Information Technology at the University of Applied Sciences Mainz³⁴ aims to, among other things, provide guidelines to ensure the quality and integrity of computational photography and photogrammetry methods used on site.

During the most recent campaign, the Mainz-based Heliopolis-branch concentrated on establishing ground rules for the reliable, economical and scientifically sound on-site acquisition and processing of photometrically data. Our software of choice was PhotoScan from Agisoft³⁵, mainly due to its performance and level of parameter control in comparison with similar packages.

³¹ Aquisition time incl. measurements for a 10x10m square ranges between 10 and 15min.

³² Among others: Microsoft: Photosynth - Capture your world in 3D. Available at: <https://photosynth.net/> (Accessed: 4 August 2016);, Autodesk: Generate 3d model from photos. Available at: <http://www.123dapp.com/catch> (Accessed: 4 August 2016); Eos Systems Inc: Close-range photogrammetry and image-based modeling. Available at: <http://www.photomodeler.com/index.html> (Accessed: 4 August 2016).

³³ For an introduction to those principles see Neffra A. Matthews, Aerial and close-range photogrammetric technology, 2008.

³⁴ i3mainz (2016) Available at: <https://i3mainz.hs-mainz.de/> (Accessed: 4 August 2016).

³⁵ Agisoft (2016) Agisoft PhotoScan. Available at: <http://www.agisoft.com/> (Accessed: 4 August 2016).

To ensure a sufficiently diverse sample data foundation, 70 3D-models of trenches and findings have been computed from about 8000 photographs taken during the Spring campaign of 2016 (**Fig. 24**), amounting to a total of about 250gb of data, and covering most of the special adverse documentation circumstances that are likely to be encountered on site.³⁶

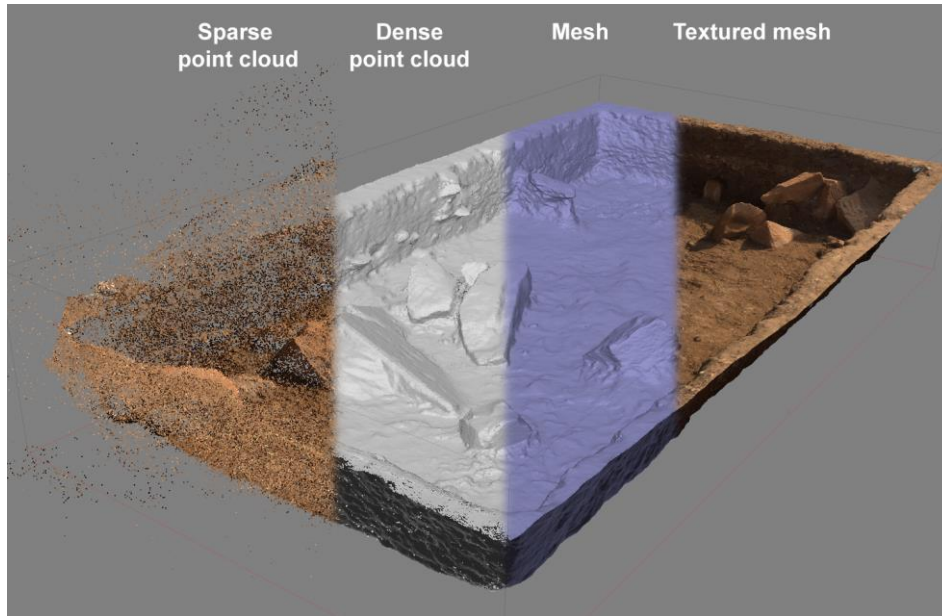


Fig. 24: Processing steps (chron. f.l.t.r.) in Agisoft PhotoScan (Quartzite gate of Nectanebo I from area 221)

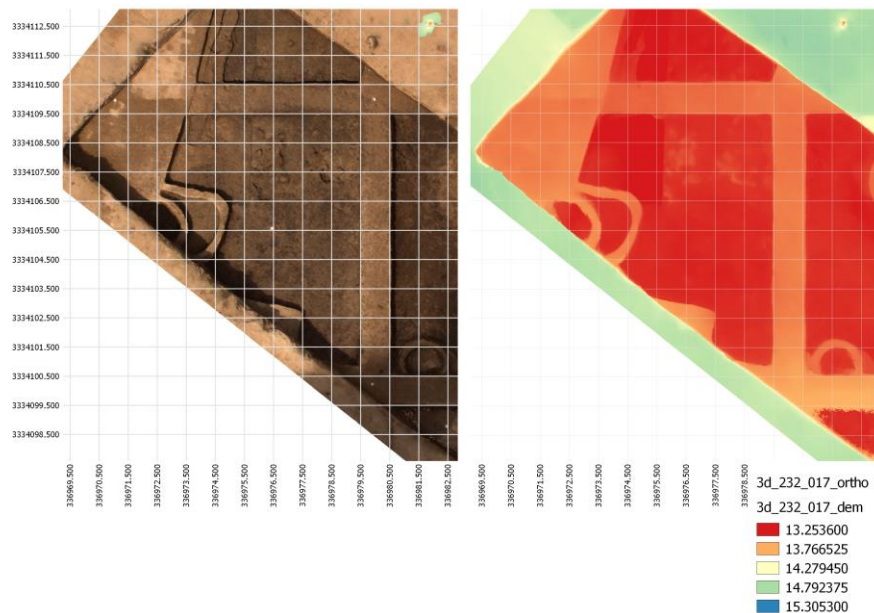


Fig. 25: Georeferenced ortho-image (left) and DEM (right) exported from Agisoft PhotoScan (workshop area of Area 232A).

³⁶ Here especially the high water table, the commotion at the site of photography, and the quickly varying lighting conditions.

Using this data, we were able to identify fallacies in regular photometrically capture practices particular to the nature of the site, as well as bottlenecks and possible overheads in the processing work-flow. This formed our basis to develop an empirical, step-by-step approach to the photographic acquisition on site, as well as to the subsequent processing of the data. These efforts were finally condensed into instruction guides tailored to the specific needs of the Heliopolis Project.

A keystone to our approach was the use of geo-referenced coded targets during photography acquisition, which granted a number of advantages. It allowed for faster processing times while simultaneously improving camera calibration, leading to more precise camera alignment and subsequently to more accurate 3D-models with a quantifiable error margin. The result can be exported as a Geo-referenced orthographical photo and digital elevation model, which can be directly ported into a GIS without manual Geo-referencing (**Fig. 25**).

Our primary focus during the Spring season, as mentioned previously, was to establish a broad data foundation; the number of photographs therefore far surpasses the amount needed under regular conditions. Still, a particular increase in the amount of digital data is to be expected should this method be applied more extensively in future campaigns, and requires new considerations in archiving strategies. To meet these challenges, we developed internal guidelines establishing fixed data nomination, an internal meta-data model and a digital archive structure, thus adhering to scientific standards for digital data and simultaneously ensuring their longevity.³⁷

These two new core concepts of 3D-documentation and data archiving were presented to our colleagues in the form of two separate workshops, and will be implemented on site during the coming summer season of 2016. Mainz will offer remote support and, if needed, refine the concepts and guides after the campaign has concluded.

Thomas Graichen

Abstract

The joint Egyptian-German Mission at Matariya continued work in the temple of Heliopolis. Excavations in the Main Temple Area focussed on the investigation of the temple of Nectanebo I (380 - 363 BC). A second site in the vast area of the Misraa es-Segun turned out to bear the location of a hitherto unknown second separate temple of Ramses II (area 248). Southeast of the obelisk of Sesostri I, a new site (area 232) was excavated after the Egyptian Army had ceded the area of their barracks to the local authorities. A sequence of workshop areas and habitations of the 4th – 2nd Century BC was discovered. Further investigations were devoted to vast number of Red Granite sculpture fragments of the Middle and New Kingdom from the area of Suq el-Khamis, discovered between 2005 – 2015.

³⁷ For extensive examples on this topic see IANUS: IT-Empfehlungen. Available at: <http://www.ianus-fdz.de/it-empfehlungen/> (Accessed: 4 August 2016). and Archeological Data Service: Guides to good practice: Main. Available at: <http://guides.archaeologydataservice.ac.uk/g2gp/Main> (Accessed: 4 August 2016)..

List of figures

Fig. 1: Areas of investigation in the main temple of Heliopolis (April 2016)

Fig. 2: Area 221. Site of the temple of Nectanebo I

Fig. 3: Geographical Procession of Nectanebo I: The First Nome of Upper Egypt

Fig. 4: Bandeau text of Nektanebo I from Area 221.

Fig. 5: Fragments of a gate of Nectanebo I

Fig. 6: Paw of a large-size sphinx of probably New Kingdom date from Gate of Nectanebo I

Fig. 7: Fragments of the statue of the lunging king, probably Merenptah, from area 221.

Fig. 8: Red Granite head of royal sculpture

Fig. 9: Relief of Sesostris I from a pillar or a pillared façade.

Fig. 10: Area 248: Fragment of the statue of a divinity, silicified sandstone, New Kingdom

Fig. 11: Rescue excavation in area 202/Suq el-Khamis

Fig. 12: Corner block of Ramesside Pylon from Area 202-north

Fig. 13: Column of administrative building west of the temple in area 202

Fig. 14: Area 232A. Workshop and habitation of 4th – 2nd century BC.

Fig. 15: Bronze figurine of Harpocrates from area 232A

Fig. 16: Area 232A. storage facilities and charcoal/ash layers of stratum C

Fig. 17: Limestone basin from area 232A-east

Fig. 18: Area 232: faience wig, probably New Kingdom.

Fig. 19: Royal heads of the Middle Kingdom reused in the Ramesside temple area 200

Fig. 20: Back-slab of a dyad/triad, mentioning Ramses II and Isis

Fig. 21: 21a: apron fragment RG108, 21b: Colossus of Ramses II in Mitrahina Museum, 21c: apron with dagger from Mitrahina Colossus.

Fig. 22: actual state of the base of a seated colossal statue from area 200 and reconstruction of statue base:

Fig. 23: Upper part of a seated statue from Amenemhet II. (New York MMA, L.2011.42), for positioning the fragments of a Upper Egyptian crown and its backpillar from Suq el-Khamis.

Fig. 24: Processing steps (chron. f.l.t.r.) in Agisoft PhotoScan (Quartzite gate of Nectanebo I from area 221)

Fig. 25: Georeferenced ortho-image (left) and DEM (right) exported from Agisoft PhotoScan (workshop area of Area 232A).