

Title: **Temple of Hatshepsut at Deir el-Bahari. Seasons 2008/2009 and 2009/2010**

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# TEMPLE OF HATSHEPSUT AT DEIR EL-BAHARI SEASONS 2008/2009 AND 2009/2010

Zbigniew E. Szafrński

PCMA UW, Cairo Branch

**Abstract:** The Polish–Egyptian conservation effort, coupled with documentation and digging, was continued in the Royal Mortuary Cult Complex on the Upper Terrace of the Temple of Hatshepsut in Deir el-Bahari for two successive seasons, in 2008/2009 and 2009/2010. The lighting system in the Northern Chamber of Amun-Re was set up finally, completing the conservation of this cult place. Documentation work in the Main Sanctuary of Amun-Re was supported additionally with 3D scanning technology. Osirides, sandstone sphinxes, and related sculptures of Hatshepsut were also studied. On the Middle Terrace, the Hathor Shrine vestibule was subjected to the first stages of static consolidation and conservation.

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The present report deals with the conservation effort, coupled with documentation and digging, in the Upper and Middle Terraces of the Temple of Hatshepsut in Deir el-Bahari in two successive seasons: 2008/2009 and 2009/2010.

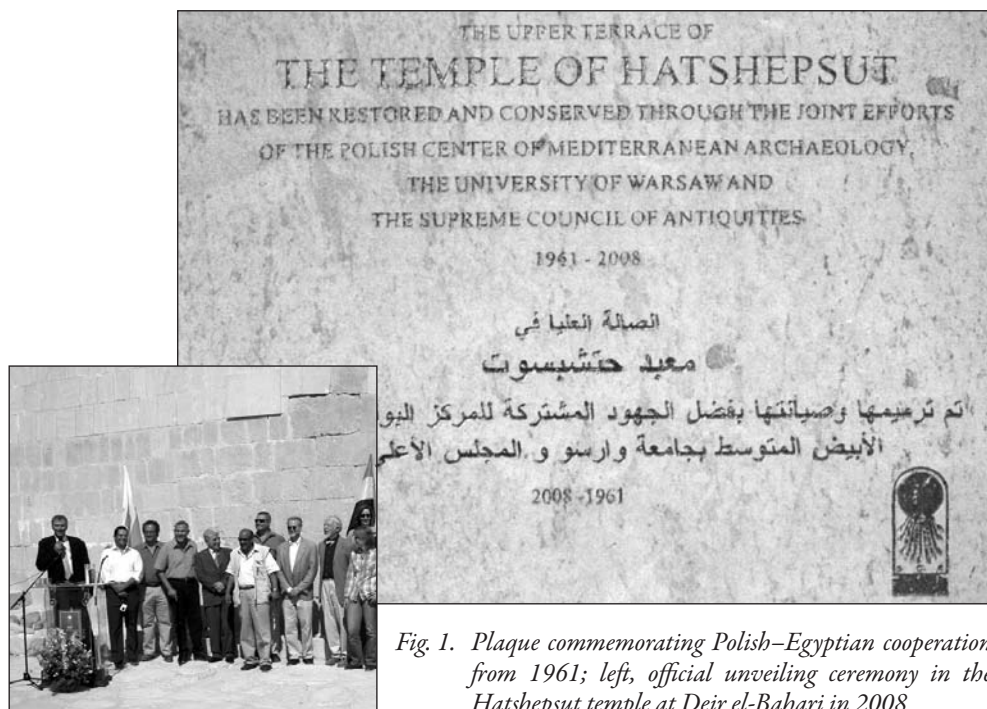
It also gives an overview of the purely egyptological work on assembling fragmentary statues, as well as other research carried out by members of the Polish–Egyptian mission on epigraphic material and other categories of finds.

## I. UPPER TERRACE

### I.1. UPPER PORTICO [UP]

Further research on fragments of heads of limestone Osiride statues from the Upper Portico rediscovered a piece with the White Crown, corroborating what Herbert Winlock had written concerning material previously discovered and exam-

ined: “the crown was not visible but which must have been White” Winlock n.d.: 75). The previous reconstruction of the Osirides, based on available material (Lipińska 1968: 140–141), did not reflect this idea, the figures from the Upper Portico wearing only the Double Crown. From an ideologi-



*Fig. 1. Plaque commemorating Polish–Egyptian cooperation from 1961; left, official unveiling ceremony in the Hatshepsut temple at Deir el-Bahari in 2008*

### Acknowledgments

The generous and constructive attitude of Dr. Zahi Hawass, SCA Secretary General, has been instrumental in letting the work of the mission proceed smoothly. We are also indebted to Dr. Sabri El-Aziz, SCA Under Secretary of State, the Late Mr. Atiya Radwan, SCA Under Secretary of State, and Mr. Magdy El-Ghandur and Dr. Mohamed Ismail, successive SCA Directors of the Department for Foreign Missions Affairs and the SCA Permanent Committee, for their assistance in preparing for the campaigns. Extremely efficient in their decisions were Mr. Ali Al-Asfar, Director of Western Thebes, and Mr. Mansour Boraik, Director General of Luxor Antiquities, as well as Mr. Fathi el-Yassin, without whose readiness to help and organizational capabilities our work would hardly have been possible.

In both seasons, the mission also profited from the practical thinking and organizational talents of its *rais*, Mr. Ragab Yassin Ahmed.

The mission would like to express special thanks to Dr. Lothar Assenmacher, General Director of Leica Geosystem, and Waldemar Kubisz, Director of Leica Geosystem Poland, whose support for the 3D scanning project made it possible.

A limestone plaque commemorating Polish activity and Polish–Egyptian cooperation in the temple since 1961, was immured in the southern wall of the Upper Ramp with the kind help of Frank Helmholtz from the Chicago House, Luxor. The unveiling ceremony took place on 6 November 2008. The Polish side was represented by His Excellency Jan Natkański, Ambassador of Poland, and by members of the Mission and of the Polish Centre of Mediterranean Archaeology (PCMA UW). Representing the Egyptian side was Dr. Sabri Abdel-Aziz, Under-Secretary of State in the Supreme Council of Antiquities (SCA), and members of the SCA. The directors and members of 17 foreign missions working in Thebes attended the ceremony.

cal point of view and knowing Hatshepsut's "exceptional creativity", her Osirides wearing the Double Crown presented in the façade of the Upper Portico seemed entirely possible.

The discovery resulted in a new arrangement of the crowns of the Osirides in the

Upper Portico. Statues located in the southern wing were given the White Crown (Leblanc 1980: type A.7), while those in the northern wing were left wearing the Double Crown (Leblanc's type A.10), following our previous restoration [*Fig. 1*]. The arrangement reflects geographical orienta-

#### Team

##### Season 2008/2009

*Dates of work:* 25 October 2008–10 April 2009

*Director of the mission:* Dr. Zbigniew E. Szafrński (Research Center in Cairo, PCMA UW)

*SCA representatives:* Abdel-Khani Abdel-Rahman Mohamed, Ezz el-Din Kamal el-Noaby

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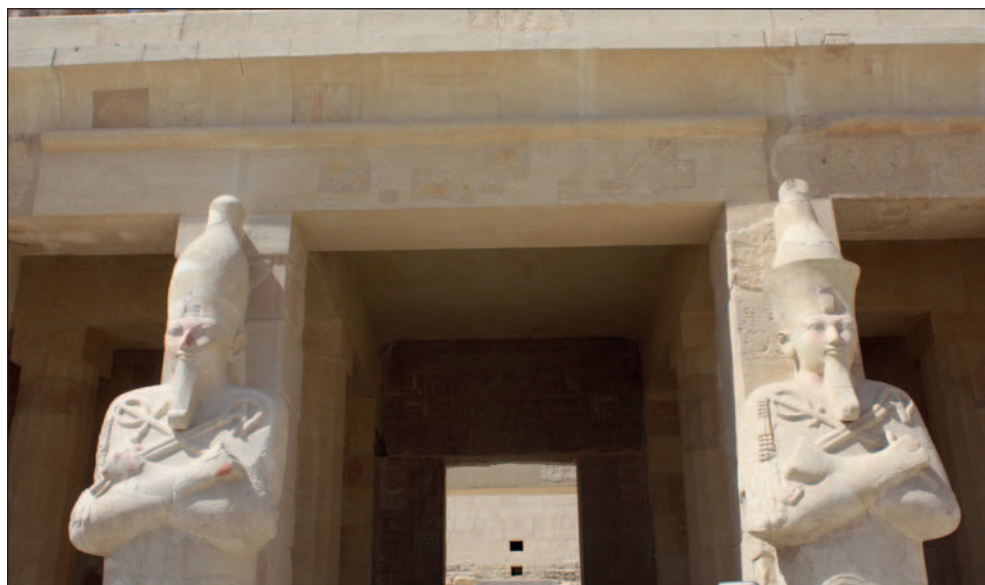
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##### Season 2009/2010

*Dates of work:* 1 November 2009–15 April 2010

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*Fig. 1. Osirides at the Upper Portico entrance wearing the Double Crown (north wing on the right) and the White Crown (south wing on the left) (Photo Z.E. Szafrński)*

*Egyptologists:* Dr. Mirosław Barwik (Deputy Director, Institute of Archaeology, University of Warsaw), Olga Białostocka, Anastazja Stupko, Jadwiga Iwaszczuk (all three PhD candidates, Institute of Ancient and Oriental Cultures, Polish Academy of Sciences), Dr. Andrzej Ćwiek (Adam Mickiewicz University, Poznań), Cynthia May-Sheikholeslami (American University in Cairo), Dr. Aliaksei Shukanau (IFAo scholarship holder)

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tion, that is to say, Upper and Lower Egypt, respectively; this Old Kingdom idea is represented in the royal iconography throughout the temple. The White Crown worn by the king is ascribed to the south, while the Red Crown to the north (Szafrński [ed.] 2001: Figs on pages 66, 67, 202, 240, 241; Sankiewicz 2011: Figs 2, 11). The new arrangement of the Osiride crowns follows an idea depicted on the walls of the so-called “Chapelle Rouge”, where Osirides wearing the White and Double Crowns were shown in front of Hatshepsut’s shrines (Lacau, Chevrier 1977: 166, 168, 171; 1979: Pl. 7; see also Leblanc 1982: 298, 300, Figs 1, 2, Pls 49, 51–53).

All the statues have been restored to the same size, about 5 m in height, setting aside Winlock’s suggestion that four statues were a little larger and that “these four statues came from the same topmost porch, one on each end of the colonnade and one on each side of the central passage at the top of the stairway” (Winlock 1928: 20, 22; also Winlock n.d.: 68B, 69, 73, 74). Nothing resembling any larger statues could be identified in the material collected from the temple in the 1960s (Lipińska 1968: 140–141) and the Osirides were reconstructed by restorer Wojciech Myjak, based on an original study by Waldemar Połoczanin (1980: 87–89).

## I.2. THE ROYAL MORTUARY CULT COMPLEX [CRC]

Continued documentation of the relief decoration and texts in different parts of the Complex resulted in several dozens of new fragments being attributed to different places in the Complex. Of particular interest are the fragments filling gaps in the inscriptions decorating the walls and the ceiling of the cult chapels, those of

Hatshepsut and Tuthmosis I, and of the CRC Courtyard and Vestibule.

### I.2.1. CHAPEL OF HATSHEPSUT [CH]

The east wall (Gazda 2012: 252) and the northern part of the west wall of the Chapel were conserved up to the cornice. Separate decorated blocks and fragments of blocks from the Chapel’s south and north walls were also treated. Limestone blocks from the pavement (with remains of mortar) used in the Coptic church, which had once existed inside the Chapel, were cleaned and reinforced.

Teresa Kaczor-Dziedzic and Mirosław Barwik completed the architectural documentation of the niche in the eastern tympanum of the Chapel, locating its position precisely within the frame of the Chapel architecture. Continued egyptological study and documentation of inscriptions and iconography of the south and north walls, charged to Anastazja Stupko-Lubczyńska, resulted in the attribution of several new blocks, some discovered in the course of re-excavating the Third Intermediate Period tombs inside the Chapel, to these walls.

Documentation and studies of over a thousand fragments of coffins and cartonnages from the Third Intermediate Period necropolis in the Upper Terrace, discovered between 2000 and 2010 in the said shaft tombs inside the Chapel, permitted Frédéric Payraudeau to reconstruct digitally several coffins and cartonnages (using earlier fragmentary restorations by Agnieszka Niemirka and Zbigniew E. Szafrński). It has already been demonstrated that members of royal families of the late Twenty-second and early Twenty-sixth Dynasties were buried in this cemetery located on the Upper Terrace (see Barwik 2011; Szafrński 2011b).

The tombs had been plundered in antiquity and their mixed fill contained diverse finds related to pharaonic times and material from the Late Roman/Early Byzantine period. Glass vessel shards from this fill, recorded and studied by Renata Kucharczyk, were dated to the 5th century AD and later (two pieces, exceptionally, were attributed to the Early Roman period).

## I.2.2. COURTYARD OF THE COMPLEX [CRC-C]

### I.2.2.1. East Wall

Reconstructed in its lower part by Edouard Naville and then by Emile Baraize [*Fig. 2*, bottom], this wall from the early 20th century demonstrated several errors in the upper part. This fragment of the wall was now reassembled with the restored blocks being placed in their correct position and several new fragments, some from the excavations of the tombs inside the Chapel, being attributed to it (Szafrński 2010: 259–261, *Fig. 7*) [*Fig. 2*]. All the blocks, prepared for restoration, underwent conservation treatment. The restoration (Gazda 2012: 251–252, *Fig. 1*) [*Fig. 2*, top] was based on an egyptological reconstruction project prepared by Olga Białostocka (2010; see also Szafrński, Barwik 2008: 320, Pls 15–17).

### I.2.2.2. Vestibule of the Complex [CRC-V]

The documentation and theoretical restoration of Niche B in the east wall of the vestibule of the Chapel of Hatshepsut was finished this season. Niche A in this

wall underwent conservation treatment. Edyta Kopp prepared a theoretical restoration of the south wall of the vestibule. This wall contained a cult-niche and important representations and inscriptions contributing to knowledge of the cult of King Hatshepsut and of the history of the temple.

## I.2.3. EXCAVATION IN THE COMPLEX

This was a continuation of excavations initiated in the previous season.<sup>1</sup> Most of the site was found to have been dug several times before and the main volume of the archaeological material removed was the backfill of modern excavation trenches. The aims of this project were to examine and document the foundations of the temple in order to determine their current state, to find traces of any earlier or later activities in the area, and to verify and supplement the documentation of the previous seasons' work. The area, divided into the southern (L.4/08.S) and northern (L.4/08.N) parts, was excavated over two seasons (2008–2010). Upon the completion of the work, the area was back-filled with sand and material moved from the working area. This consisted of mainly (but not exclusively) material removed from the trench.

### I.2.3.1. Third Intermediate Period tombs

**Tomb XVIII**, in area L.4/08.S, in front of the Chapel of Hatshepsut, is the so-called "Tomb of Monthu Priests", discovered in 1933 by E. Baraize and not documented at the time; the coffins and cartonnages from the tomb were published by B. Bruyère (1956).<sup>2</sup> The re-excavated

<sup>1</sup> The graves were re-excavated by P.M. Barford; the following description is based closely on his field report (Barford 2010).

<sup>2</sup> The material was re-examined by C. May-Sheikholeslami; new finds will be published by Z.E. Szafrński.



*Fig. 2A. East wall of the courtyard of the Royal Mortuary Cult Complex: rearranged restoration of blocks in the wall (Photo W. Wojciechowski)*



*Fig. 2B. Foundation of the wall restored by E. Naville (two upper layers) positioned on blocks and fill of Hatshepsut's foundation (Photo K. Braulińska)*



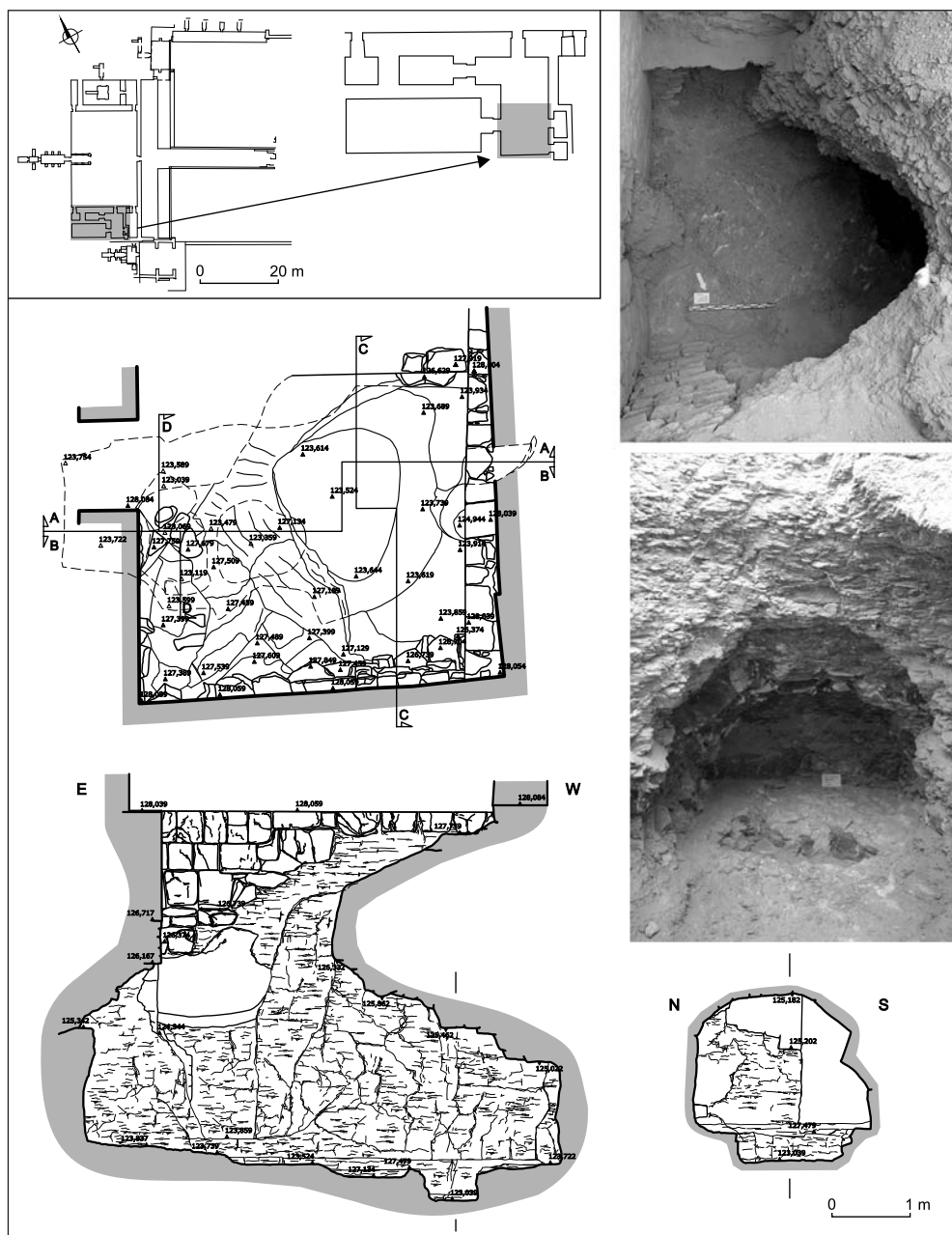


Fig. 3. Tomb XVIII (L.4/08.S), plan and sections through the burial chamber; view of the bottom of the shaft (top right) and of the burial chamber with a shallow rectangular depression in the chamber floor (center right) (Drawing A. Brzozowska; photo Z.E. Szafrński)

tomb was examined and documented. The bottom of the tomb shaft was located approximately 4.30 m below the vestibule pavement [Fig. 3]. The mouth had been destroyed in the past and only a fragment of the northwestern edge was preserved. The undecorated burial chamber, located to the west, was approximately 3 m (E–W) long and about 2.00–2.30 m wide. The chamber, with its ceiling sloping down to the west, was from 2.80 m to 1.30 m high. However, the total length or burial space at the bottom of the tomb, including the width of the shaft and a kind of “niche” located in the east wall of the chamber, was over 6 m.

Parts of the north, east and south walls of the shaft and burial chamber had been reinforced with mortared stone walls positioned on bedrock. The western edge of the excavated trial trench reached the foundations of the southern part of the façade of the Chapel of Hatshepsut. This foundation, below the bottom of the Chapel wall, had been reinforced with one mortared stone layer built on the rock.

**Tomb XIX** (West Shaft, Tomb 2/09) was a shaft tomb in the courtyard [Fig. 4], to the east of the Chapel of Tuthmosis I, under the foundations of the north wall of the Complex. It had been emptied out by previous excavators. At the northern end of this feature, a shaft 0.80 m by 0.80 m was sunk adjacent to the foundations of the north wall. The shaft had steps in the sides formed by irregularities in the rock. From this step there was a vertical drop 0.74 m down to the flat bottom of the burial chamber at 125.965 m a.s.l. (the base of the tomb was 2.10 m below the level of the foundation offset). The walls were roughly vertical.

The burial chamber was contiguous with the walls of the shaft (the entrance was

about 0.70 m wide and 1.15 m high). It was 2.20 m long and 0.74–0.79 m wide (though in one place it reached 1.10 m in width), 1.10 m high at the north end, rising steadily to 1.63 m at the entrance. The walls were unplastered and relatively rough, following the natural jointing of the rock. The floor of the burial chamber sloped down slightly to the north. In the centre there was a shallow depression about 10–13 cm deep, measuring about 22–25 cm by 40 cm E–W. A slight flattening of the bedrock surface to the east of the entrance shaft may have supported a mud-brick kerb.

The archaeological material was mixed and innumerable. A fragment of a carton-nage, bearing the name of a certain Pa-di-w-Amun[///?], was found.

**Tomb XX** (East Shaft, Tomb 1/09, L.4/08.N) was a shaft grave in the northeast corner of the Complex. A flat bottomed irregularly rectangular hole 2.80 x 1.90 m was excavated with vertical sides in the area where the shaft was to be dug [Fig. 5]. The base of the feature was at about 126.64 m a.s.l. (about 1.20 m below the level of the adjacent foundation offset). The southern edge of the foundation offset of the Complex' north wall was heavily damaged above this shaft. This was caused by efforts to remove the paving slabs in order to construct the tomb here.

A vertical shaft (0.80 x 1.10 m) was sunk, cut to a depth of 2.40 m below the level of the foundation offset. The floor was flat, though sloped down to the north (some 0.30 m) to give access to the burial chamber of the tomb. There was a 0.35 m deep step down into the chamber at the northern edge of the shaft. The entrance was 1.00 m wide and 1.30 m high.

The burial chamber was 2.35 m long and 1.02 m wide, and of a height of 0.92 m



*Fig. 4. Tombs in the courtyard of the Royal Mortuary Cult Complex; to the north (top), Tombs XIX and XX; Coptic tomb ("Feature 18") to the west (bottom left) (Photo Z.E. Szafrński)*





*Fig. 5. Tomb XX: top left, entrance shaft and entrance to the burial chamber; top right, view of the burial chamber; bottom, wall of mud brick on the west and south sides of the shaft (Photos K. Braulińska, Z.E. Szafranski)*

at the north end, becoming higher towards the entrance [Fig. 5, top right]. In cross section, the tomb had a vaulted form, with a narrower floor, widening upwards and then a slightly curved ceiling. The walls were unplastered and relatively rough, following the natural jointing of the rock. The floor of the burial chamber was relatively flat, but sloped down slightly to the northern end. The burial chamber was found empty having been bricked up in “1972” (this year was then written in soft mud covering the mud-brick artificial wall).

The upper part of the shaft was then extended upwards to ground level by a construction of mud brick built on the very edge of the shaft [Fig. 5, bottom]. This consisted of a wall of mud bricks on the west and south sides. The bricks of the west wall

(averaging 33 x 8.5 x 14.5 cm) were red-brown in color when wetted. The structure was cemented by clay mortar. The east face of the west wall, and some areas between the exposed foundation stones on the north, were plastered over with a thin layer of soft crumbly white plaster. The upper edge of the mud-brick wall had also been plastered over. Perhaps the shaft was closed with horizontal boards, leaving a plaster-lined cavity below them. The wall on the south side of the shaft was poorly preserved (to a height no more than 0.50 m). The bricks here were different from those in the west wall, they are generally much more compact and harder, dark grey in color. There is no trace of whitewash on this wall.

#### 1.2.3.2. Coptic Tomb with mortar “pillow”

Outside the Chapel of Hatshepsut and running parallel to the northern part of the façade, was a north–south elongated “Feature 18”, 1.23 m deep with vertical walls and 2.30 m long and 0.51 m across [Fig. 6]. The feature had a flat bottom and the walls were unplastered and relatively rough, following the natural jointing of the rock. The western edge of the feature was bounded by the surviving flooring slabs.

The original function of the feature as a grave is suggested by a mortar “pillow” (0.40 x 0.28 m) with a depression in it which looks like the impression of the back of a head.

The fragments of Coptic fired clay brick in the fill could have been redeposited and therefore derived from the superstructure of the grave. On the lip of the grave, at the south end there was a patch of very hard yellow-brown (Munsell 10YR 4/4) sandy mortar adhering to the bedrock. It was 28 cm long and 12 cm wide and 0.60 cm



Fig. 6. Coptic tomb (“Feature 18”), note mortar “pillow” in the southern part of the tomb (Photo K. Braulińska, W. Wojciechowski)



high. The mortar had an upstanding narrow lip on its south edge which suggests that it had formed the seating of some kind of brick structure.

### I.3. NORTHERN CHAMBER OF AMUN-RE [NA]

The work undertaken this season comprised final conservation of the upper parts of the four walls and the ceiling of the Chamber. Iron-beam reinforcement of the entrance slab, made by E. Naville over a century ago, was painted and unified with other walls previously stabilized by the Mission. The entrance to the Chamber underwent conservation treatment (Gazda 2012: 252–253). A lighting system, originally used for the “Seventy Years of Polish Archaeology in Egypt” exhibition in the Egyptian Museum in Cairo in 2007, was now installed inside the Chamber [see *Fig. 8*].

### I.4. UPPER COURTYARD [UC] AND MAIN SANCTUARY OF AMUN-RE [MSA]

Digital drawings of the restored northern part of the east wall and the north wall of the Courtyard were checked and corrected for further publication, which is being prepared by Jadwiga Iwaszczuk.

The astronomical orientation of the temple was measured and documented by M. Michiewicz and A. Brzozowska. The study concerned the alignment of the main axis of the temple with the winter solstice and the lighting of the Main Sanctuary of Amun-Re through its two windows.

A newly discovered head of the eastern of the two figures in the *sema-tawy* scene was restored in its original position on the north wall of the Bark Hall. The scene underwent conservation treatment (Gazda 2012: 253, *Fig. 2*).

## II. MIDDLE TERRACE

### II.1. HATHOR SHRINE

The limestone slabs of the walls and foremost of the ceiling of the vestibule (HS-V) of the Hathor Shrine<sup>3</sup> were examined in view of their poor condition, the goal being to prepare a separate preservation and conservation program. The static condition of the south and north walls of the vestibule was improved, consolidated and protected. The roof slabs and one architrave in the northern part of the vestibule were protected and reinforced with a special iron construction designed by the team's engineer, Mieczysław Michiewicz [*Fig. 8*]. The architrave and the slabs were drilled through and reinforced with three bowstrings

(round (ø 2M) steel rods), with thread (M2M) on their sides. A special resin was injected or pressed inside the holes, in the space between the steel bowstrings and the limestone. On the roof, above the cracked slabs, a steel I-beam, consisting of two gas-welded beams (2I 160), was installed. The bowstrings were twisted to the beam, which was positioned on two low pillars made of white bricks. Cracks in two big ceiling-slabs (each about 160 x 81 x 60 cm) and in two smaller slabs (approx. 92 x 61 x 50 cm and 70 x 40 x 50 cm) from the northern of the niches, D, in the vestibule were also treated. The slabs were drilled less than 40 cm to install steel arbors with thread (M2M)

<sup>3</sup> The Hathor Shrine documentation project is carried out by a Polish–French Epigraphical Mission; the sanctuaries and vestibule were published recently (Beaux 2012).

in their upper edge, using HILTI resin injected into the holes. After 24 hours, the arbors (bowstrings) were screwed to another steel beam (2I 160), which was positioned above the slabs, on two low pillars made of white bricks. The entrance was reinforced inside with an iron frame. The wooden beams, which had supported the ceiling of the vestibule and of the ceiling and lintel in Niche D, were now removed as superfluous.

Excavations to the south and north of the vestibule revealed the roof of Niche D and, to the north of it, a structure (L.1/08) that looked like a rectangular well shaft. This shaft measured approximately 4.00 m by 4.50 m. It stood on bedrock, at about 121.582 m a.s.l., that is, 6.47 m below the level of the vestibule of the Complex of Royal Cult [Fig. 7]. The structure had been emptied and backfilled by previous excava-

*Fig. 7. Structure L.1/08, view from the south  
(Photo D.F. Wiczorek)*



*Fig. 8. Roof of the Hathor Shrine vestibule reinforced with a steel construction  
(Photo W. Wojciechowski)*

tors, leaving no original fill. All four walls of the structure were studied for the presence of building *dipinti* (Wieczorek 2011: 204–206; see also Wieczorek 2009).

The polychromy of the ceiling and the area of the *kheker*-frieze decoration on the walls in the northeastern part of the vestibule was subjected to conservation treatment (Gazda 2012: 254).

## II.2. EXCAVATIONS

Excavations were carried out also in the area between the north wall of the vestibule and the foundation of the southern edge of the Upper Portico (L.01/10). The area has all the appearances of another “well”. Its bottom was temporarily covered with plastic foil to prevent penetration of the walls by winter rains.

## III. LOWER TERRACE

In the Lower Terrace, new benches were built to store objects under conservation and restoration; this project for improving storage conditions will be continued in the future.

The area between the temples of Hatshepsut and Mentuhotep II Nebhepetre was cleaned of remains of former reconstruction and excavation activities

in an effort to arrange properly the area around the temple. Finally, the southern end of the Portico of Obelisks was studied from an architectural point of view, preparing documentation that will be used in the restoration of this part of the Temple of Hatshepsut and of the gate to the ramp that once led to the Hathor Shrine on the Middle Terrace.

## IV. SCULPTURES: STUDY, CONSERVATION AND RESTORATION

### IV.1. STATUES OF AMENHOTEP I

Fragments belonging to a painted Osiride statue of King Amenhotep I in sandstone that had been found in Asasif in 1982 (Szafrński 1985: 257–263, Pls 38, 39a–b), were recovered from secondary fill and restored by Wojciech Myjak (Szafrński 2011a: 199–200, Fig. 7); the reconstructed statue was installed in the Northern Chamber of Amun-Re [Fig. 9]. Fragments of two other statues of Amenhotep I, which were standing in Asasif and which were collected by the Polish team and moved for safekeeping to the site storeroom (Szafrński 1985: 258, Fig. 2, Pl. 39c–d), and of Mentuhotep II (found in recent years by Z.E. Szafrński), 20 in

number, were moved from Asasif to the store on the Lower Terrace of the Temple of Hatshepsut at Deir el-Bahari.

### IV.2. SPHINXES IN THE FORM OF HATSHEPSUT

Numerous and very fragmentary pieces of Hatshepsut’s sandstone sphinxes from her temple and from the causeway at Deir el-Bahari, discovered by Herbert Winlock’s Metropolitan Museum of Art Expedition (1911–1931), had been stored for 75 years in the vestibule of TT 37. They were rediscovered there by the Italian Mission and transported, via the Ali Hassan Storage Museum in El-Tariff/El-Gurna, to the temple (Smilgin 2012). A project for the



*Fig. 9. Statue of Amenhotep I, after restoration, set up in the Northern Chamber of Amun-Re  
(Photo W. Wojciechowski)*



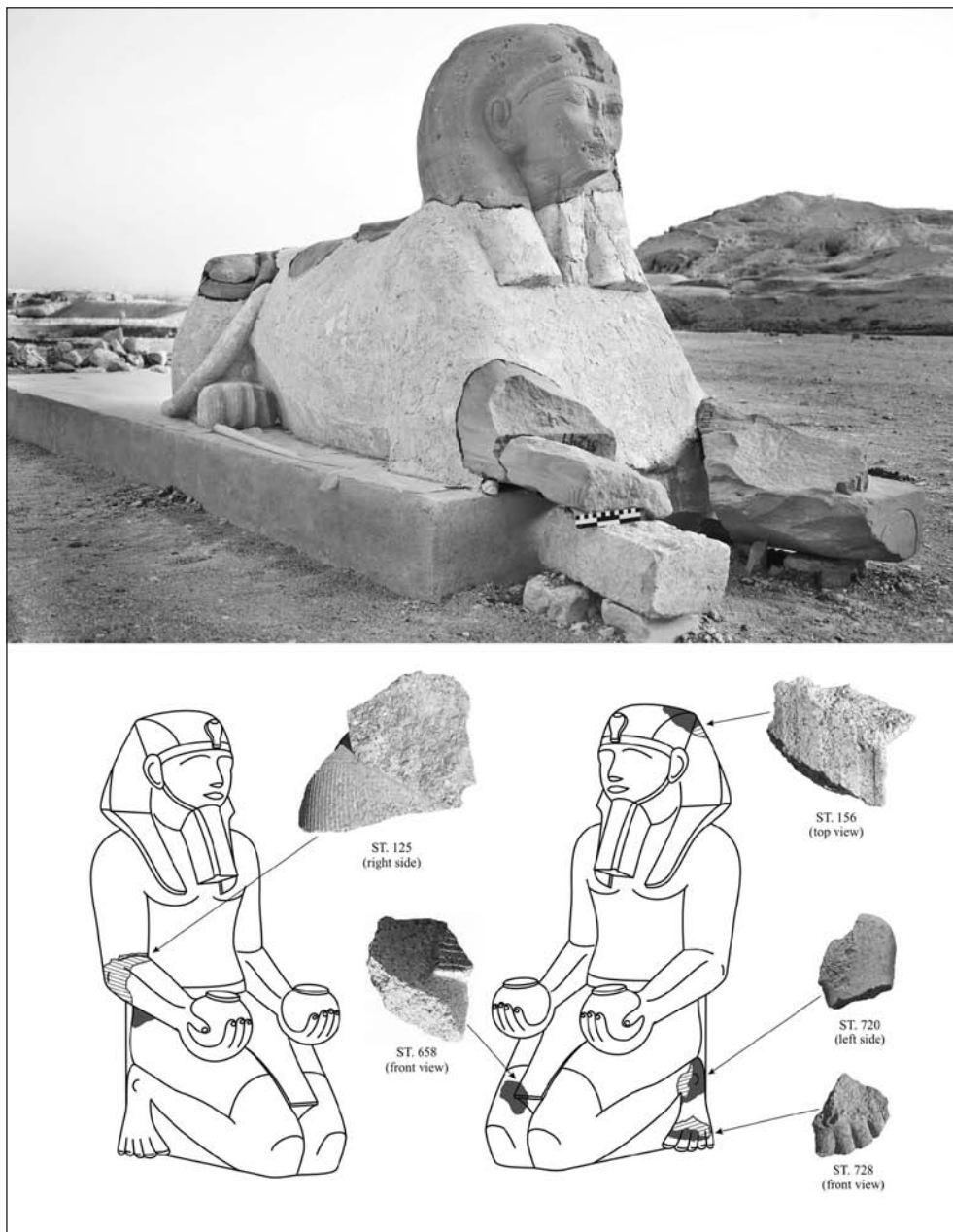


Fig. 10. Preliminary study-restoration of a sandstone sphinx (top); red-granite statue of Hatshepsut wearing the nemes; for other examples of restoration, see below, Figs 1–2 on pages 155–156 (Photo W. Wojciechowski; digital restoration A. Shukanau)



restoration of three or possibly four of these sculptures is underway, carried out by A. Sośnierz [Fig. 10, top]. Once completed, the sphinxes will be set up in their original position in the Lower Courtyard, lining the ancient processional way.

#### IV.3. STATUES OF HATSHEPSUT

Among 1500 stone fragments of different statues preserved in the lapidary of

the Lower Terrace there are more or less 200 fragments originating from one of three types of statues of Hatshepsut. The sculptures were made of granodiorite and of two kinds of granite, pink and red. A digital restoration of examples of the three kinds of statues was prepared by Aliaksei Shukanau based on a preliminary study of the fragments (Shukanau 2013, in this volume) [Fig. 10, bottom].

### V. STOREROOM AND EPIGRAPHIC STUDIES, 3D DOCUMENTATION

Material stored in SCA Storeroom 4 (that is, MMA 828 or Kampp's No. 359, or the so-called "Mummies' Storeroom"), consisted of about 8000 fragments of sandstone and limestone blocks. This material is very fragmented, individual pieces being not more than 50 cm long.

Documentation and study of these fragments by Jadwiga Iwaszczuk has led her to discover the names of a Memorial Temple of Tuthmosis I called Khenemetankh (Iwaszczuk 2012).

Studies were focused also on the hieratic graffiti from the temple representing three



Fig. 11. Example of 3D scanning: northern part of the vaulted ceiling in the Chapel of Hatshepsut (Photos M. Jawornicki; 3D scanning J. Kościuk)

different periods. The first group consisted of building *dipinti* (see Wiczorek 2011) and of marks on the west wall of the Sun Altar Court and the south wall of the Upper Ramp. The second group can be connected with the early Ramesside restoration of temple decoration; these inscriptions are located in the Birth Portico and in the northern part of the Lower Portico. The third group, documented and studied by Mirosław Barwik (2010), consisted of graffiti from the Third Intermediate Period found on the north wall of the Lower Ramp and on the south wall (north wing) of the Lower Portico. The names of the doors and domains in the temple were studied as well (Iwaszczuk 2011).

An extensive 3D scanning project was carried out by Waldemar Kubisz and Jacek

Kościuk from the Wrocław Technical University to check the sustainability of advanced methods of spatial and visual data collection for documenting the Upper Terrace of the temple (see Kościuk 2009) [Fig. 11]. Three areas were chosen for scanning: the Complexes of Royal and Sun Cult and the Main Sanctuary of Amun-Re. A network of 31 reference points was established (Žak *et alii* 2009). A Leica HDS 6000 scanner was kindly provided by Leica Geosystems. The vast amount of data obtained by this method can be used to produce several kinds of final documentation: a point-cloud data base, panorama pictures, plan and sections of the Upper Terrace of the temple, photomosaics and orthophoto of walls with their surface displacement plans.

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POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY  
UNIVERSITY OF WARSAW

# POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

# XXII

RESEARCH 2010





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