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Hatshepsut Temple in Deir el-Bahari, Egypt – research and conservation work

Abstract

Situated in the southern section of the Upper Terrace at Deir el-Bahari, the Hatshepsut chapel is the largest hall chapel in ancient Egyptian architecture. For over a century, archaeological and conservation efforts have been conducted at the temple and Hatshepsut chapel. Much of the research has never been published, while others are mentioned in the mission's annual work reports. The research and conservation work at the site needs to be ordered and summarised.

The article aims to aggregate and structure information on the research and conservation efforts undertaken at the Hatshepsut chapel. Over the last century, various archaeological and conservation missions have worked at the temple and contributed their findings to understand the site's history better. However, much of the work has not been published and is only known from field notes or typescripts.

The research presented in this paper highlights the limited knowledge about Hatshepsut's chapel, particularly in terms of conservation. Egyptological, archaeological, and architectural research conducted in recent years, which is nearing completion, will provide an in-depth understanding of the largest chapel in ancient Egypt. Supplemented with relevant research, particularly in the preservation of stone and polychrome, a comprehensive conservation program can be developed, thus paving the way for the chapel reconstruction project.

Key words: Hatshepsut chapel, Ancient Egypt, Hatshepsut temple, Deir el-Bahari

Introduction

For generations, the relics of the ancient Hatshepsut temple in Deir el-Bahari, Egypt, have been revered as extraordinarily valuable and exquisitely beautiful elements of ancient heritage, seamlessly merging with the breathtaking scenery of the Asasif Valley, nestled in the foothills of Mount el-Kurn. Recognised as a valuable architectural and artistic monument, the temple has been deemed worthy of inclusion – alongside the entirety of ancient Thebes – on UNESCO's World Heritage List.

Since the dawn of heritage conservation, ancient ruins have been regarded as acceptable, albeit sacrosanct forms. It is worth noting that the canons of ancient architecture, based on formalised solutions, could form the

basis of a comprehensive reconstruction. The only acceptable course of action with ancient monuments is anastylosis, which involves carefully reconstructing parts of the ancient architecture while ensuring a clear distinction between the original and new elements [1].

The Temple of Hatshepsut, known for its outstanding Egyptological and architectural research and preservation, draws hordes of tourists from around the globe daily. To cater to visitors' needs and ensure the monument's preservation, the temple of Hatshepsut has been undergoing conservation work since the onset of the 20th century. Extensive research and conservation work is being carried out on every part of the temple, including measures to protect fragile fragments at risk of damage. However, the destructive nature of archaeological research often leads to the discovery of previously unknown vulnerabilities in the temple's structure, which must be quickly addressed to prevent further damage.

This article aims to aggregate and structure information concerning the research and conservation interventions conducted at the Hatshepsut temple. Over the past hun-

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Fig. 1. An overview of the Hatshepsut Temple (photo by author)

Il. 1. Widok ogólny świątyni Hatszeptut (fot. autorka)

dred years, the temple's archaeological and conservation endeavours have significantly contributed to the advancement of research, enabling us to gain a deeper understanding of its history. Much of the work exists only in field notes or typescripts and has not been published.

General description of the Hatshepsut temple

The Temple of Hatshepsut features three terraces, and the highest platform serves as a protective element (Fig. 1). The Lower Terrace is at an elevation of 102.13 meters, the Middle Terrace at 111.75 meters, and the Upper Terrace at 119.9 meters. The temple's highest element, the reconstructed platform, stands at 133.87 meters [2]. On the lowest terrace, there is a courtyard that is bounded by porticoes on its western side. A ramp connects this terrace to the Middle Terrace, flanked by two porticoes on the west side, just like the Lower Terrace. The chapels are positioned on either side of the entrances dedicated to the temple's worshipped deities: the chapel of Hathor is found to the south, and the Chapel of Anubis is situated to the north. On the third level are the main rooms of the temple. One can also access this level through a ramp. On either side of it are pillar porticoes with Osirian statues. The main entrance is located on the axis and leads through a portal into the temple's central courtyard. Beyond the courtyard is the partly rock-cut Sanctuary of Amon, situated in the Festival Courtyard. Additional chapels can be found on either side of the inner courtyard: to the north, an open courtyard with an

altar of sun cult worship, and to the south, a sacrificial hall for Hatshepsut and Tuthmosis I, known as the Royal Cult Complex. The entrance to the Royal Cult Complex can be found in the Festival Courtyard's southern wall on the temple's Upper Terrace. The most important chamber in the Royal Cult Complex at Deir el-Bahari is the Chapel of Hatshepsut, the founder of the entire temple. The Royal Cult Complex is located in the southern part of the temple's highest level and consists of two royal chapels with vestibules and a small courtyard. One of these chapels is the chapel of Hatshepsut, the founder of the entire temple, which is currently under development. A smaller chapel is dedicated to her father, Tuthmosis I.

The chapel is a hall covered by a partially preserved and illusive vault, making it the largest in ancient Egyptian architectural history (Fig. 2). The chapel's fully preserved in situ section is located on the west side. The chapel was designed on an east-west axis, adhering to a rectangular plan. At floor level, the chapel's dimensions are characterised by irregularity. They range from 13.33 m to 13.36 m in length, from 5.23 m to 5.33 m in width, and their height from floor to vault arrow is 6.28 m¹. A 3D scan by LabScan, a division of the Faculty of Architecture at Wrocław University of Science and Technology, was used to determine the parameters. The chapel's entrance is situated on the eastern wall, with the chapel's only surviving equipment, the blind gate stele, positioned on the western wall.

¹ Jadwiga Iwaszczuk [3] gives the following dimensions of the chapel: 13.25 m long, 5.2 m wide, 6.35 m high.



Fig. 2. Hatshepsut chapel, view of the west wall. State as of 2009 (photo by T. Dziedzic)

Il. 2. Kaplica Hatszepsut, widok na ścianę zachodnią, stan z 2009 r. (fot. T. Dziedzic)

History of Hatshepsut temple research and conservation

Since the early 18th century, many travellers, researchers, and collectors have visited the temple of Queen Hatshepsut. They conducted cleaning, documentation, and excavation work. The temple and ruins of the Christian monastery were first visited and described by the English traveller Richard Pococke in 1737 [4]. Pococke's description of the temple showed that it was covered in sand and debris, and he only saw the entrance portal of the highest terrace and one hall, which he identified as the Hatshepsut chapel.² The chapel was used as a church in early Christian times, and Pococke noted an image there representing Christ in glory. He also included a plan of the ruins he saw at Deir el-Bahari. Subsequent visitors to the temple were researchers from Napoleon Bonaparte's expedition to Egypt in 1798–1802, who produced a description and plan of the surviving ruins. The description of the ruins made by Jean Baptiste Prosper Jollois and René Edouard Devilliers contains information about the early Christian period of the temple's use. They also saw a painting representing Christ in the Hatshepsut cult chapel and assessed it as a Christian chapel. Their plan shows relics of the temple of Hatshepsut [5]. The first archaeological excavations were carried out by Giovanni Battista Belzoni and Henry William Beechley in 1817, looking for objects for the collection of the British consul in Egypt. They likely uncovered the entrance to the Sanctuary of Amon. However, they do not mention any Coptic buildings [6].

Gardner Wilkinson coined the name Deir el-Bahari (Dayr el Bahree) in 1843 when he published a book documenting his observations from his travels in Egypt. During his visit to the Asasif Valley in 1827, Wilkinson observed a pair of sandstone sphinxes positioned in front of the temple's entrance, among other notable sights. He noted the existence of a church and monastery from the early Christian period. His publication describes numerous decorated blocks and fragments of polygonal columns, likely arranged in a peristyle. He noticed two names on the granite portal leading into the courtyard: Thebes III and a name that would indicate a woman (king). Wilkinson also visited the chapels in the Royal Cult Complex but only recognised the names of Thebes II and Thebes III; he further mentioned a chapel dedicated to Thebes I, who, according to the inscription, was the predecessor of the founder of the building [7]. Jean-François Champollion copied texts from the granite portals and the walls of the Sanctuary of Amun in 1829, which he used to refine further the hieroglyphic writing he had read earlier. In his description of the temple at Deir el-Bahari, Champollion also reports the presence of unfired brick structures on the northeastern side of the highest terrace, along with plasterwork in Hatshepsut's temple [8]. Scottish anthropologist and artist Robert Hay made several trips to Egypt between 1824 and 1840 and created drawings of the temple of Hatshepsut, possibly dating back to 1832. His concise plan regarding Deir el-Bahari was undoubtedly the most elaborate plan produced at the time. It showed various elements of early Christian architecture. His sketches provide the necessary dimensions for a theoretical reconstruction of the Coptic structures on the temple's second and third terraces. Cross-sectional drawings taken through the ruins show the state of the walls and the nature and

² Richard Pococke [4] calls Hatshepsut's chapel "room C".



Fig. 3. The Hatshepsut chapel as of 1912
(source: Archive of the Maison de l'Orient et de la Méditerranée Jean Pouilloux Université Lumière Lyon)

Il. 3. Kaplica Hatszepsut, stan z 1912 r.
(źródło: Archive of the Maison de l'Orient et de la Méditerranée Jean Pouilloux Université Lumière Lyon)

composition of the debris that blankets the temple area [9]. Karl Richard Lepsius, a German scientist, worked at the temple in the mid-19th century. In 1845, he excavated and documented essential findings, such as the Royal Cult Complex and a section of Hatshepsut's shrine [10]. Nonetheless, Auguste Mariette, a French archaeologist and the founder of the Egyptian Antiquities Service initiated the first organised excavations in 1855. He excavated the Upper Terrace within the courtyard, revealing the southern portion that housed Coptic structures. M. Brune, an architect who collaborated with him, created the first theoretical reconstruction of the temple [11]. According to Édouard Naville, Mariette unearthed Hatshepsut's temple, which showed evidence of use by Coptic monks in early Christian times. He recalls the chapel being equipped with an altar in an alcove and a structure resembling a bed or seats. These structures were made of dried brick. As stated by Naville, these were the tombs of monks, which contained mummies clad in leather aprons and belts but with no other embellishments on them. Naville reports that the chapel's walls were coated in white plaster, concealing the original decorations, and the inscriptions on the granite stele were eroded entirely. He also mentions the chapel's partially preserved vault [12]. One of the most significant milestones in the unearthing of the temple was when Édouard Naville, a professor of Egyptology from Switzerland, led the British mission coordinated by the Egypt Exploration Fund (EEF). In 1891, Naville decided to commence work at Thebes. Collaborating with architect John Ernest Newberry, they cleared out most of the buried courtyards, chapels, and colonnades in the northern part of the temple. In addition to the archaeological work, conservation and reconstruction works were carried out. Furthermore, the walls of the main Amun Sanctuary were fortified, and measures were taken to secure the excavated walls of the upper courtyard, the chapels of the Royal Cult Complex, the Hathor chapel, and the lower northern portico [13]. Another individual involved

in the project was Somers Clarke, who documented the temple's architecture and published it in the sixth volume of a publication edited by Naville from 1895 to 1908. The period was marked by a substantial amount of restoration and conservation work. The archaeological team made an exciting discovery during their work – the wall that once separated the chapel of Tuthmosis I from the Hatshepsut chapel had been toppled. Consequently, the wall underwent reconstruction from 1897 to 1898, utilising new stone material and the original blocks. The placement of these blocks was determined through detailed epigraphic research [14]. In 1911, Herbert E. Winlock began work on the temple of Hatshepsut, heading the American mission of the Metropolitan Museum of Art in New York. Over the next two decades, the Americans involved in the temple project unearthed multiple tombs, sarcophagi, mummies, and sculptures. Winlock has published comprehensive reports detailing the progress made throughout each work season. Winlock's archival photographic records confirm that, during his mission at the temple, the walls of Hatshepsut's shrine were only partially reconstructed (Fig. 3).

Émile Baraize, the French architect, commenced his comprehensive restoration project in partnership with Winlock. He served as the technical director overseeing the Antiquities Service in Upper Egypt. He carried out his work between 1925 and 1952 [15]. He rebuilt most of Naville's reconstructions using natural stone, reinforced concrete, cement, gypsum, and oil paint. He also included original elements in the reconstruction [16]. However, there is no evidence of any documentation about the work that was executed. At the end of 1961, the concession to carry out research and conservation work at the temple of Hatshepsut was granted to the Polish Mediterranean Archaeology Station of the University of Warsaw by Professor Kazimierz Michałowski. Leszek Dąbrowski, the chief architect of the Polish Station's facility in Cairo, led the mission. Archaeological and conservation work focused on the Festival Courtyard and Coronation Portico. The Royal Cult Complex was shielded from the elements solely by installing a canopy [17]. In January 1968, the mission of the University of Warsaw's Mediterranean Archaeology Station was replaced by a mission from the Polish Studios for Conservation of Cultural Property under the direction of architect Zygmunt Wysocki. Architectural research commenced in 1972 [18]. The primary focus of the initial restoration works was on the courtyard and the Coronation Portico, where the predecessors' efforts were continued. The years 1986–1987 and 1987–1988 marked the completion of an architectural survey, an inventory of the existing condition, and the initiation of a project to reconstruct the south wall of the courtyard adjacent to the Royal Cult Complex. As part of the architectural survey, a probing trench was dug beneath the southern wall, specifically within the passage that connects to the room featuring the “window of appearance” (“butchery”). Moreover, a probing trench was excavated at the southern wall of the Upper Terrace within the Royal Cult Complex, situated next to the temple of Thebes III [19]. In 1993, the Centre for Mediterranean Archaeology of the University of Warsaw, led by Franciszek Pawlicki, PhD, resumed its mission to excavate the temple of Hatshepsut.

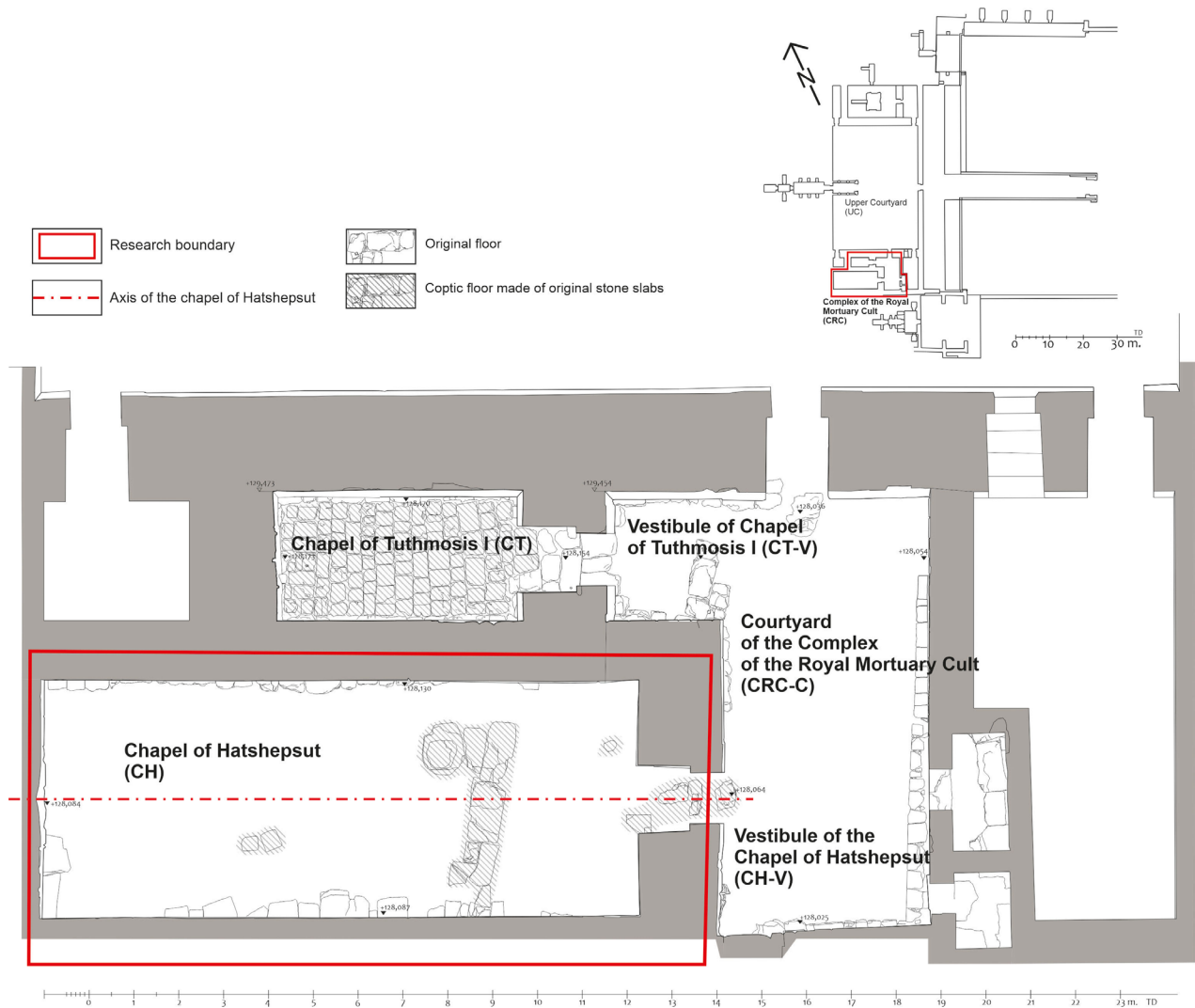


Fig. 4. Marked location of Hatshepsut's chapel within the Royal Cult Complex (drawing by T. Dziedzic)

II. 4. Zespół Kultu Królewskiego z zaznaczoną lokalizacją kaplicy Hatshepsut (rys. T. Dziedzic)

The approved conservation programme, endorsed by the Egyptian Antiquities Organisation, focused on researching and conserving the third terrace of the temple. A comprehensive examination of the architectural and epigraphic components was undertaken to guide the development of the Upper Terrace courtyard reconstruction [20]. The work was focused on continuing the reconstruction of the south wall of the Festival Courtyard. Once the rock rubble filling the wall's interior was stabilised, attention was turned to stabilising the individual blocks of the wall. The focus of the restoration work in the following season was on the section of the south wall in the courtyard, specifically in the vicinity of the "window of appearance" room. From 1999 to 2019, the mission was led by Zbigniew Szafranski, PhD. Initially, the mission was dedicated to work within the Sun Cult Complex. In contrast, the Royal Cult Complex has been the site of ongoing research in Egyptology, archaeology, and architecture for several years. Out of all the conservation efforts, only the reconstruction of the eastern wall in the complex's courtyard has been executed [21].

State of preservation

The Hatshepsut chapel and its vestibule are only partially preserved *in situ*, and the present-day dimensions of both result from reconstructions carried out primarily in the early 20th century. The heights of the walls' sections differ, ranging from 3.5 m to the chapel's fully preserved height of 6.28 m in the western section. Original blocks were used to supplement the walls during the reconstruction work, although they were not always inserted correctly³ or replaced with contemporary blocks. The Royal Cult Complex was constructed entirely with limestone sourced from the local area. Tests performed on mortar samples collected from the temple of Hatshepsut indicated that the mortars used for masonry and plastering combined gypsum and calcium carbonate [22]. The chapel is bedded on a foundation of levelled clay rock, specifically Esna slate.

³ A reconstruction study of the chapel is being prepared by a team of Egyptologists led by Mirosław Barwik of the University of Warsaw.

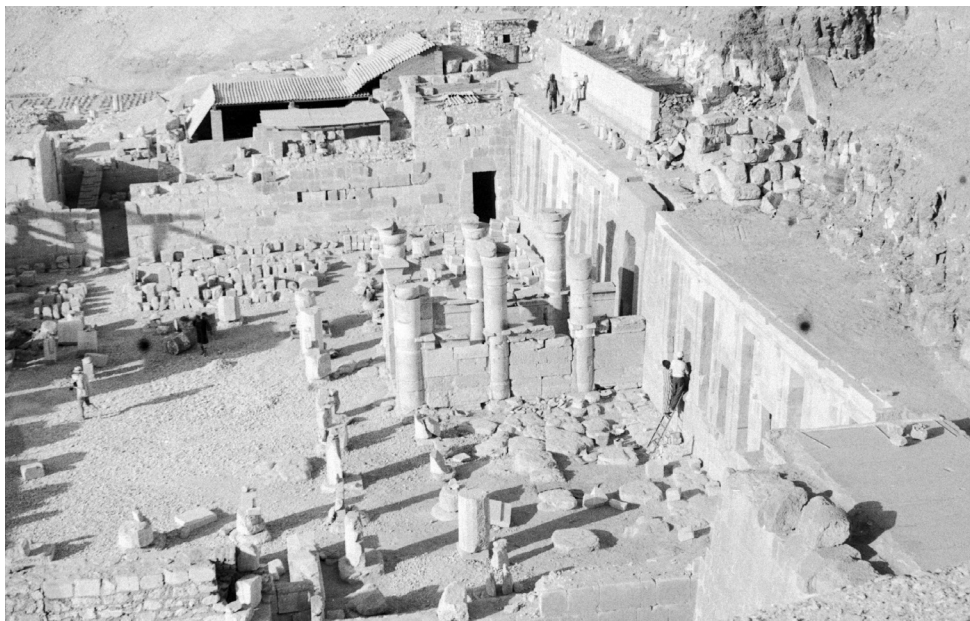


Fig. 5. View of the temple's upper terrace with the royal cult complex in the background and the chapels covered by a provisional roof. State as of 1969–1970 (source: Archive of the Centre for Mediterranean Archaeology, University of Warsaw, negative no. 0149)

Il. 5. Widok na taras górny świątyni, w głębi Zespół Kultu Królewskiego z kaplicami przykrytymi dachem tymczasowym (źródło: archiwum Centrum Archeologii Śródziemnomorskiej Uniwersytetu Warszawskiego, negatyw nr 0149)

The foundation under the walls comprised one or two layers of stone blocks laid directly on levelled rock. The original foundation blocks were not fully intact beneath all the walls, so modern preservation efforts involved filling in the gaps with new limestone blocks or bricks. Several sections around the chapel walls still have traces of the original floor. One-third of the chapel's length features exposed floor blocks that date back to the early Christian period, which are reused ancient blocks (Fig. 4).

Research and conservation work at the Hatshepsut chapel

Somers Clarke made the earliest observations regarding the preservation and protection of the temple's relics. He stated the adverse effects of too-dry air on the temple's stone edifice, which absorbs water rapidly at the slightest rainfall. Clarke highlighted that the temple's stone building quickly absorbs water, causing the paintings to run down and the carvings to flake. In addition, he pointed out the detrimental effects of significant differences in daily temperature [23].

During the Egypt Exploration Fund mission, restoration was carried out at the Hatshepsut chapel, filling the cavities in the north and west walls with original and newly excavated limestone blocks. The restored section on the north wall starts 1.48 m from the northwest corner and is 2.61 m long. In the 1912 photograph (Fig. 3), we see the restoration work already completed after the mission led by Naville.

In the 1960s, the chapels of Hatshepsut and Tuthmosis I in the Royal Cult Complex were protected by a timber-framed roof with an eternity cladding (Fig. 5).

The initial documented architectural examination of the chapel took place in the 1980s when the foundations of the southern wall in the chapel vestibule were uncovered⁴. During excavations in the south section of

the chapel vestibule, the foundations were uncovered, and their depth was determined. In the southwest corner, the foundations rested on a bedrock of clay shale and reached a level of 0.60–0.9 m, measured from the floor surface. Conversely, in the southeastern corner, the foundation level extended to a depth of 2.9 m below the floor level. It was also established that the south wall of the Hatshepsut chapel vestibule stands on an original foundation built of regular blocks but was re-bricked to be reinforced with several blocks in cement or cement-lime mortar. The Winlock mission undertaken in the interwar period likely played a significant role in securing it [24]. Further work in the chapel was not carried out until 2003–2004, when the foundations of the chapel's north wall were unveiled. This work was undertaken in response to discovering several fractures in the wall, which may suggest underlying issues within the foundation or bedrock. Furthermore, the decision was taken at that juncture to commence an archaeological survey of the region, given that the unearthing of a burial shaft had already been recorded in 1982. The investigation of the foundations uncovered that in the wall section reconstructed by Naville in the north–west corner, much like the northeast corner, the underlying rock bed under the foundation blocks is destabilised by excavated shaft graves. The excavation unveiled two graves from the late period (S.7A/82 and S.1/04). Shaft grave S.7A/82 was partially uncovered in 1982 but unexplored then. The burial chamber, devoid of decorations, contained artefacts that provided evidence of a combination of the Third Transitional Period, New Kingdom, and early Christian materials. This supports the assertion that the tomb had already been tampered with at the turn of the 20th century. Grave shaft S.1/04 was located in the northeast corner of the chapel, and its entrance was discovered to be 0.8 m below the level of the chapel floor. Previous repairs to this section of the

⁴ Probe excavation "B" (S-2/88) [24].

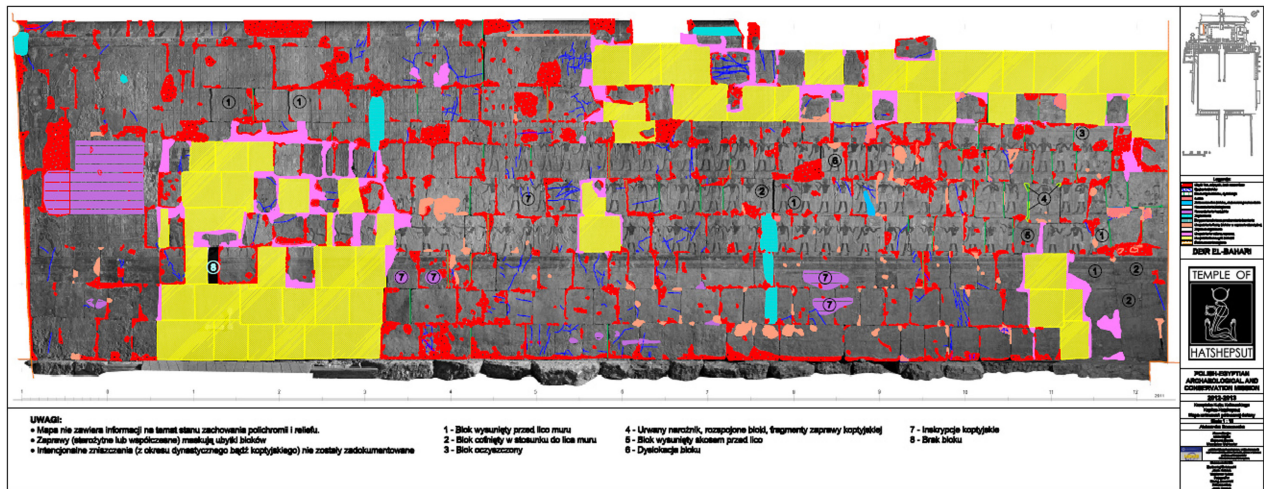


Fig. 6. Damage map – fragment, north wall of Hatshepsut Chapel, 2013
(source: Archive of the Centre for Mediterranean Archaeology, University of Warsaw)

Il. 6. Mapa zniszczeń – fragment, ściana północna kaplicy Hatszepsut, 2013
(źródło: archiwum Centrum Archeologii Śródziemnomorskiej Uniwersytetu Warszawskiego)

wall foundations were unveiled and found to be made of fired brick in cement-lime mortar. Engineer Mieczysław Michiewicz's structural analysis revealed that the brick foundation, instead of serving its intended structural purpose, was merely a superficial covering for the internal backfill⁵. The north wall was reinforced in its two sections on the east and west sides. A double-angle bracket was placed beneath the foundation blocks and above the entrance to the grave shaft. This bracket provides additional support for the weakened parts of the wall by resting on the cleared rock surface. Regarding the southern wall of the chapel, only ad hoc cleaning of the relief fragments was performed during this work cycle, specifically to establish their authenticity for epigraphic research [25]. During archaeological work carried out during the 2004–2005 season, another grave – S.7B/82 – was uncovered in the southwest corner of the chapel. A shaft hollowed out in the rock had also weakened and destabilised the rock base beneath the south wall. The absence of several blocks of wall foundation magnified the resulting gap. The wall foundation consisted of a single layer of blocks, which also served as the floor blocks [26]. A rock rubble backfill, consisting of limestone fragments and dried brick, was found beneath the wall in a specific section measuring approximately 1 meter and located 1.60 meters from the southwest corner. The depth of the void varied from 0.36 m to 0.64 m and from 1.2 to 1.3 m in several places, and the depth of the blocks of the first wall layer ranged from 0.4 m to 0.42 m. The stability of these blocks relied partially on loosely positioned crumbled foundation blocks resting on eroded rock. Mieczysław Michiewicz deemed the support inadequate, prompting the decision to implement point support for this wall section. Work began by covering the rock foundation with adhesive to

isolate the rock (Esna slate) from the wet masonry work. The foundations underneath the wall were reinforced using limestone blocks, and the missing fragment of the floor was subsequently completed by reusing the three original blocks⁶. Archaeological excavations occurred along the south wall between 2005 and 2007, revealing its foundation and enabling an assessment of its condition. These wall sections no longer required structural reinforcement of the wall foundation.

In 2009, architectural documentation of the Hatshepsut temple was carried out, mainly encompassing its Upper Terrace. The Hatshepsut Chapel underwent scanning, which involved taking orthophotos that formed the basis of the architectural and conservation research. The scanning was carried out by a team from the 3D Scanning and Modelling Laboratory (LabScan3D) and Leica Geosystems Poland under the direction of Professor Jacek Kościuk. The entire scanning project took place in two phases – scanning and documenting previously scanned areas with high-resolution digital images. A detailed discussion of the documentation process has been published by Jacek Kościuk [27].

In 2013, maps of the damage to the walls of the Hatshepsut Chapel were created using 3D scanning and orthophotos, which served as the foundation for the conservation guidelines. Architect Aleksandra Brzozowska, art conservators Rajmund Gazda and Maria Gašior, and engineer Mieczysław Michiewicz compiled the documentation (Fig. 6).

The damage map revealed significant cracks, losses, displacements, and damage in the form of face flaking in the stone blocks. Biological build-up, near-surface staining of stones, and discolourations were noted on the surfaces of the walls. Significant elements on the walls were surviving fragments of early Christian silt

⁵ Based on own field research.

⁶ Based on own field research.



Fig. 7. Installation of a manhole to the tomb of members of the royal family from the 23rd–25th dynasties (S.7A/82), 2013 (photo by T. Dziedzic)

Il. 7. Montaż włazu do grobu członków rodziny królewskiej z 23–25 dynastii (S.7A/82), 2013 (fot. T. Dziedzic)



Fig. 8. Hatshepsut Chapel. Conservators Rajmund Gazda, Teresa Dziedzic and Mieczysław Michiewicz (photo by U. Krośniewska)

Il. 8. Kaplica Hatshepsut. Konserwatorzy Rajmund Gazda, Teresa Dziedzic i Mieczysław Michiewicz (fot. U. Krośniewska)

mortar and additions to the block form in ancient mortar. During a macroscopic examination, several types of ancient mortar were observed, which may indicate repairs already undertaken at Hatshepsut Chapel. The damage map did not include information on the state of preservation of the relief and polychrome due to the numerous intentional ancient and early Christian damages, which should be analysed by Egyptologists and painting conservators.

In 2013, a significant conservation project was undertaken at the Hatshepsut Chapel to expose and open up the tomb of members of the royal family from the 23–25th dynasty (S.7A/82) (Fig. 7). A manhole was designed, and a steel ladder permanently installed. The manhole was made of insulated glass (three layers of bonded reinforced glass) with a stainless-steel frame. The design accounted for the glass's load-bearing capacity of 4 kN (four people) and the convenience of opening the hatch using gas struts. The ladder's fixing anchor spacing was determined based on the type of steel, step spacing, and strength calculations. The grave shaft and its chamber were equipped with electrical installation. The entire project was designed by engineer Mieczysław Michiewicz, who supervised the project.

The only mortar survey within the Hatshepsut shrine was carried out in 2015. In this case, only two samples were analysed: the mortar from the vestibule (south wall) and a sample from the chapel vault. The research was conducted by a team from the Technology and Conservation Laboratory of the Faculty of Architecture at Wrocław University of Science and Technology in collaboration with Wojciech Bartz, PhD, from the University of Wrocław. The findings were published in the article *Mineralogical characteristic of mortars from the Temple of Hatshepsut at Deir el-Bahari: Preliminary report*. The research was preliminary due to insufficient material. Extending the scope to include analyses of additional mortar samples would enable a better understanding of the chemical composition of the building materials used to construct one of the most important structures in architectural history and their detailed characterisation.

Conclusions

The research findings presented in this paper shed light on the limited awareness regarding the conservation of the Hatshepsut temple. The Egyptological, archaeological and architectural research conducted by the mission's members in recent years will provide a comprehensive understanding of ancient Egypt's largest temple. Supplemented by relevant research, particularly in preserving stone and polychrome, an extensive conservation program can be formulated, paving the way for the temple reconstruction project.

References

- [1] Jokilehto J., *A History of Architectural Conservation*, Oxford 1999.
- [2] Szafrński Z.E., *On the foundations of the Hatshepsut Temple at Deir el-Bahari*, [in:] D. Kessler, R. Schulz (eds.), *Gedenkschrift für Winfried Barta*, Munich–Wien–New York 1995, 371–373.
- [3] Iwaszczuk J., *Sacred Landscape of Thebes during the Reign of Hatshepsut Royal Construction Projects*, t. 1, Warszawa 2017.
- [4] Pococke R., *A Description of the East, and Some other Countries*, t. 1, W. Bowyer, London 1743.
- [5] Jollois J. B., Devilliers R. E., *Description de l’Égypte*, C. L. F. Panckoucke, Paris 1821.
- [6] Belzoni G. B., *Narrative of the Operations and Recent Discoveries within the Pyramids, Temples, Tombs, and Excavations, in Egypt and Nubia; and of a Journey to the Coast of the Red Sea, in Search of the Ancient Berenice; and Another to the Oasis of Jupiter Ammon*, John Murray, Albemarle-Street, London 1821.
- [7] Wilkinson G., *Modern Egypt and Thebes: A Description of Egypt*, John Murray, Albemarle Street, London 1843.
- [8] Champollion J.-F., *Lettres écrites d’Égypte et de Nubie en 1828 et 1829*, Firmin Didot Frères, Libraires, Paris 1833.
- [9] Godlewski W., *Le monastère de St Phoibammon*, Państwowe Wydawnictwo Naukowe, Warszawa 1986.
- [10] Lepsius K. R., *Denkmäler aus Aegypten und Aethiopien: nach den Zeichnungen der von Seiner Majestät dem Könige von Preussen Friedrich Wilhelm IV nach diesen Ländern gesendeten und in den Jahren 1842–1845 ausgeführten wissenschaftlichen Expedition*, t. 1–12, Berlin–Leipzig 1913.
- [11] Mariette A., *Deir-el-Bahari: documents topographiques, historiques et ethnographiques recueillis dans ce temple*, J.C. Hinrichs, Paris 1877.
- [12] Naville E., *The temple of Deir el Bahari IV. The shrine of Hathor and the southern hall of offerings*, London 1901.
- [13] Szafrński Z. E. [in:] M. Gawlikowski, G. H. James Thomas, A. Kwaśnica, J. Karkowski, M. Barwik (eds.), *Królowa Hatshepsut i jej świątynia 3500 lat później*, Warszawa 2001.
- [14] Karkowski J., *Deir el-Bahari 1973–1974* (travaux égyptologiques), “EtTrav” 1978, 10, 397–406.
- [15] Arnold D., *A chronology. The later history and excavations of the Temple of Hatshepsut at Deir el-Bahari*, [in:] C. Roehrig (ed.), *Hatshepsut from queen to pharaoh*, New York 2006.
- [16] Wysocki Z., *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologiczno-Konserwatorskiej Deir el-Bahari w sezonie 1982–83*, Gdańsk 1983 [manuscript].
- [17] Dąbrowski L., *Preliminary report on the Reconstruction work of the Hatshepsut Temple at Deir El Bahari during the 1961–1962 Season*, “Annales du Service des Antiquites de l’Égypte” 1964, 58, 37–60.
- [18] Wysocki Z., *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologiczno-Konserwatorskiej Deir el-Bahari w sezonie 1983–84*, Gdańsk 1984 [manuscript].
- [19] Wysocki Z. [in:] W. Połoczanin, P. Dąbrowski, A. Kwaśnica, Z. Szafrński, W. Konikowski, K. Bielenia (eds.), *The temple of Queen Hatshepsut. Vol. 4. The report of the polish-egyptian archaeological and preservation mission Deir el-Bahari 1980–1988*, PKZ, Warszawa 1991.
- [20] Pawlicki F., *Deir el-Bahari, Hatshepsut Temple: Conservation Project 1993/1994*, “Polish Archaeology in the Mediterranean” 1995, 6.
- [21] Szafrński Z.E., *Temple of Hatshepsut at Deir el-Bahari. Seasons 2008/2009 and 2009/2010*, “Polish Archaeology in the Mediterranean” 2010, 22, 131–151.
- [22] Dziedzic T., Gąsior M., Bartz W., *Mineralogical characteristic of mortars from the Temple of Hatshepsut at Deir el-Bahari: Preliminary report*, “Polish Archaeology in the Mediterranean” 2015, 24 (2), 93–112.
- [23] Clarke S., *Architectural description*, [in:] E. Naville (ed.), *The temple of Deir el Bahari VI*, London 1901.
- [24] Stefanowicz A., *Świątynia królowej Hatshepsut w Deir el-Bahari. Wykop sondazowy w południowej części Górnego Tarasu*, Ośrodek Architektury Egipskiej PP PKZ Oddział Gdańsk, Gdańsk 1988 [manuscript].
- [25] Szafrński Z.E., *Temple of Hatshepsut. Seasons 2003/2004*, “Polish Archaeology in the Mediterranean” 2004, 16, 223–237.
- [26] Szafrński Z.E., *Temple of Hatshepsut. Seasons 2004/2005*, “Polish Archaeology in the Mediterranean” 2005, 17, 241–254.
- [27] Kościuk J., *3D scanning and modeling of the upper terrace of the Hatshepsut Temple in Deir el-bahari as an example of architectural heritage documentation for restoration purposes*, “Wiadomości Konserwatorskie” 2009, 26, 705–717.

Streszczenie

Kaplica Hatshepsut w Deir el-Bahari w Egipcie – badania i prace konserwatorskie

Kaplica Hatshepsut, największa istniejąca kaplica halowa w architekturze starożytnego Egiptu, jest położona w południowej części Tarasu Górnego świątyni w Deir el-Bahari. Przez ponad sto lat w świątyni i kaplicy Hatshepsut prowadzone były prace archeologiczne i konserwatorskie. Wiele z przeprowadzonych badań nie zostało nigdy opublikowanych, inne są wspomniane w corocznych raportach z pracy misji. Prowadzone na miejscu prace badawcze i konserwatorskie wymagają uszeregowania i podsumowania.

Celem artykułu jest zebranie i uporządkowanie informacji o przeprowadzonych badaniach i ingerencjach konserwatorskich w kaplicy Hatshepsut. W ostatnich stu latach pracujące w świątyni misje archeologiczne i konserwatorskie dokładały swoją cegiełkę do badań pozwalających lepiej poznać i zrozumieć dzieje tego obiektu. Wiele przeprowadzonych prac nie zostało opublikowanych i znane są tylko z notatek terenowych lub maszynopisów.

Zaprezentowane wyniki badań pozwalają zauważyć, w jak małym stopniu rozpoznana jest kaplica Hatshepsut, przede wszystkim pod względem konserwatorskim. Badania egiptologiczne, archeologiczne i architektoniczne prowadzone w ostatnich latach, będące na ukończeniu, pozwolą na dogłębne poznanie tej największej kaplicy starożytnego Egiptu. Uzupełnione o niezbędne badania, szczególnie z zakresu konserwacji kamienia i polichromii, umożliwią sporządzenie całościowego programu konserwatorskiego, a w dalszej kolejności – opracowanie projektu rekonstrukcji kaplicy.

Słowa kluczowe: kaplica Hatshepsut, starożytny Egipt, świątynia Hatshepsut, Deir el-Bahari