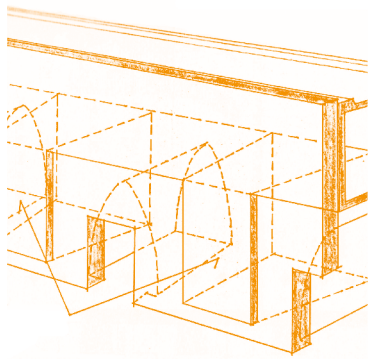
Research and conservation work on the Northern Colonnade at the Temple of Hatshepsut at Deir el-Bahari



Abstract: This article is a summary presentation of the meticulous research, conservation, and construction efforts undertaken on the Northern Colonnade on the Middle Terrace of the Temple of Hatshepsut. Over the past 150 years, the Temple's archaeological and conservation missions have contributed invaluable research, enriching our understanding of its historical context. A significant portion of this work, often overlooked, remains unpublished and is only documented in field notes or typescripts, the sole testament to the thoroughness and dedication of these endeavors. This article draws on these unpublished reports, as well as on the results of the authors' own fieldwork focused on the analysis of the construction techniques of the Northern Colonnade and the state of preservation of this part of the Temple.

The effects of the work carried out in the 1970s and 1980s could only be assessed after years of closely monitoring the preservation of the north wall on the Temple's Middle Terrace. After numerous attempts and analyses, the technique employed to secure this particular part of the Temple proved effective, ensuring that the wall remained structurally sound.

Keywords: ancient Egypt, history of conservation, Middle Terrace, construction, site protection

Teresa Dziedzic[1]
Aleksandra Filipek-Wyskiel[1]

[1] Wrocław University of Science and Technology, Faculty of Architecture

The Temple of Hatshepsut at Deir el-Bahari, renowned for its well-preserved ruins, showcases an extraordinary display of architectural excellence that has not

Polish Archaeology in the Mediterranean 34.1 | Dziedzic and Filipek-Wyskiel 2025: 563–580
https://doi.org/10.37343/uw.2083-537X.pam34.1.02
received 7 May 2024 | received in revised form 21 November 2024 | accepted 29 January 2025 | available online 28 May 2025

been fully acknowledged and explored. Scholars are still puzzled by the modest Northern Colonnade, which occupies the Middle Terrace of the Temple and features four undecorated chapels. Positioned against the rock slope, the Colonnade is particularly vulnerable to forces exerted upon it. Changing weather conditions and seismic activity have resulted in numerous cracks and even destabilization of the entire structure. Consequently, it has been the focus of several conservation and construction initiatives, and its technical condition is continuously monitored up to the present day.

GENERAL DESCRIPTION AND STATE OF PRESERVATION OF THE COLONNADE

The Temple of Hatshepsut [*Fig. 1*] was designed with three terraces, the highest serving as a protective structure. The Lower Terrace is at an elevation of 102.13 m, the Middle Terrace at 111.75 m, and the Upper Terrace at 119.9 m above sea level. The highest part of the Temple —a reconstructed platform— stands at 133.87 m above sea level (Szafrański 1995: 371–373). The Lower Terrace comprises a courtyard with porticoes along its western side and a ramp leading to the Middle Terrace. Like the Lower Terrace, the Middle Terrace is flanked by two porticoes. On either side of these porticoes are chapels dedicated to deities worshipped in the Temple: the Hathor Chapel to the south and the Anubis Chapel to the north. The Temple's main rooms are located on the third, Upper Terrace, which is accessed via a ramp. This

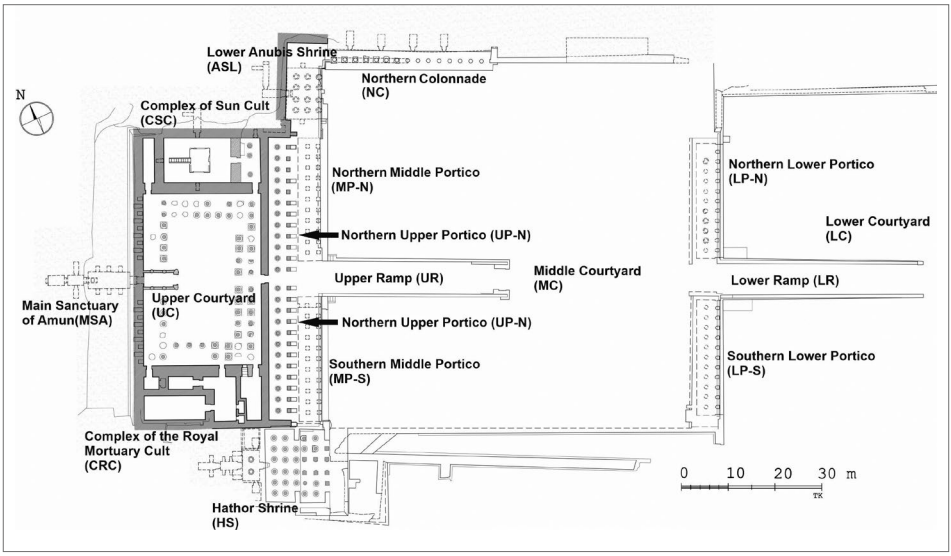


Fig. 1. Plan of the Temple of Hatshepsut (Drawing T. Dziedzic)

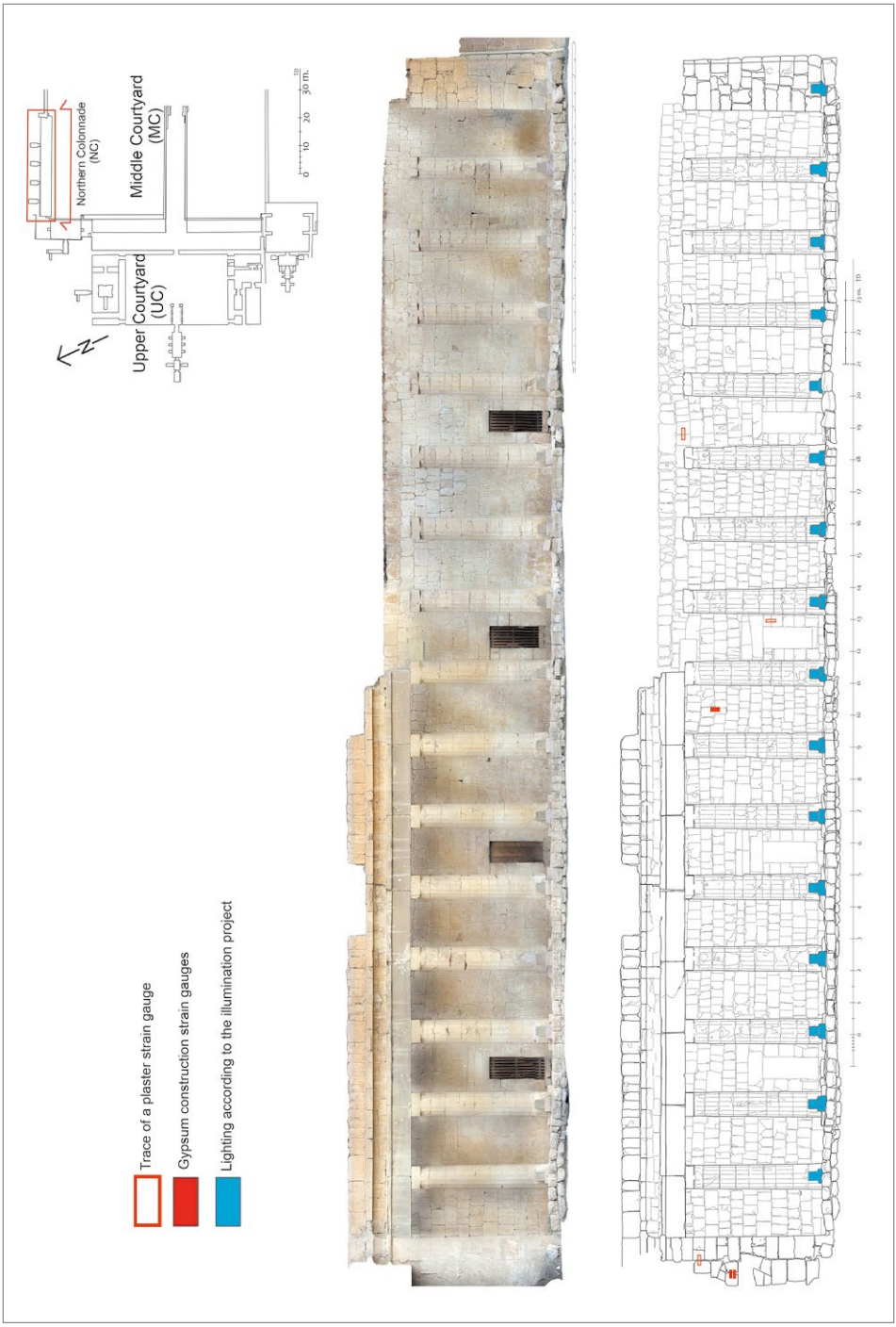


Fig. 2. Northern Colonnade, current state (PCMA UW | orthophoto M. Caban, drawing T. Dziedzic and A. Filipek-Wyskiel)

Terrace is also flanked by pillar porticoes on two sides, adorned with Osirian statues. The main entrance, located on the Temple's axis, leads through a portal into a central courtyard, also called the Festival Courtyard. Beyond it lies the Amun Sanctuary, partly carved into the rock with two additional chapels in the northwest and southwest corners of the courtyard. To the north of the courtyard lies a smaller open courtyard with an altar of the solar cult, while to the south is the Royal Cult Complex, which includes an offering hall dedicated to Hatshepsut and Thutmose I.

The Northern Colonnade is situated on the Middle Terrace, adjacent to the northern rock slope, with the Lower Anubis Chapel to the west and the northern retaining wall to the east. The Colonnade comprises a row of free-standing columns and four unadorned chapels carved into the rock. Its architraves are made of sandstone, while all other components are of local limestone.

The stretch of the north wall [*Fig. 2*] along which the Colonnade is located is 35.65 m long, and its height measured from the floor level is 5.3 m. The depth of the portico, excluding the chapels, varies from 2.42 m to 3.78 m. It originally aligned with the cut rock slope. The Colonnade comprises 15 columns, eight of which still support the architraves, a cornice (*cavetto*), and remains of balustrade blocks. The 16-sided columns stand on bases cut from floor blocks and are crowned with abacuses. They measure approximately 4.45 m in height, with the abacus accounting for approximately 0.3 m and the base for 0.15 m. Like other columns in the Temple, they are 0.8 m wide at the base and gradually taper toward the top, reaching a width of 0.72 m at the abacus. The architraves, with moldings (*torus*) in their upper parts, range in height from 0.75 m to 0.78 m and are 0.72 m deep. The torus itself measures 0.18 m in height, while the cornice located above it is approximately 0.6 m high. The preserved balustrade fragments measure about 0.6 m in height.

The four rock-cut chapels are spaced approximately 6.1 m apart. The first one is located at a distance of 4.93 m from the western corner, whereas the last chapel is positioned approximately 9.45 m away from the eastern corner of the Colonnade. The chapels have similar dimensions, measuring about 1.60 m in width, except for the easternmost, which is 1.52 m in the front, about 2.4 m in the rear. They are 2.62 m deep, except the westernmost, which reaches 3.15 m in depth. All the chapels are covered with pseudo-vaults made of pairs of irregular-sized blocks. The chapel entrances are fairly uniform, measuring 0.68 m in width and varying in height from 1.68 m to 1.77 m. The entrance to the easternmost chapel constitutes an exception, as its threshold was raised by adding a limestone block, resulting in a reduced entrance height of 1.57 m. The easternmost chapel features a secondary loose sill block. The floor of the Northern Colonnade is made of uneven and unworked stone blocks, suggesting that this part of the building was never finished.

HISTORY OF RESEARCH AND CONSERVATION AT THE TEMPLE OF HATSHEPSUT

Despite intensive activity —clearing, documentation, and excavation works— conducted by numerous travelers, early researchers, and collectors at the Temple site since the early 18th century, the Northern Colonnade remained unknown.

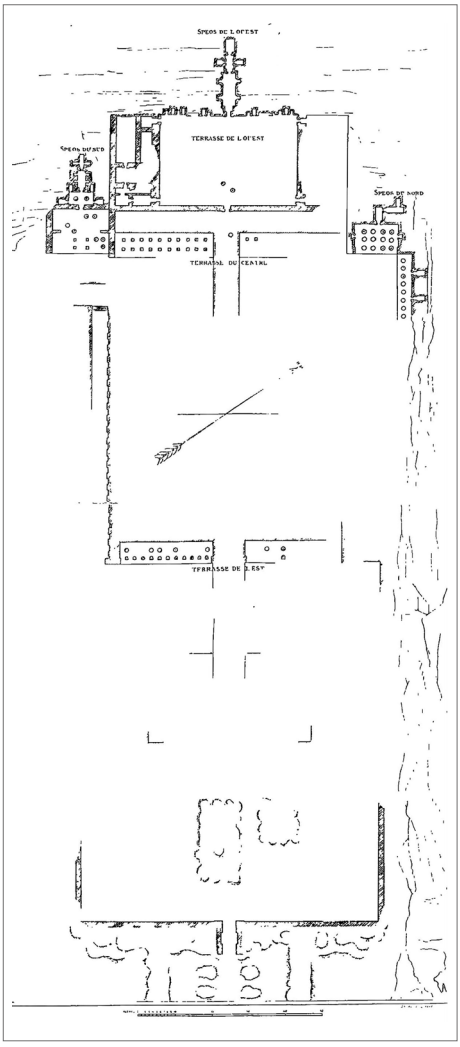


Fig. 3. Plan of the Temple of Hatshepsut compiled by Auguste Mariette during archaeological expeditions in 1858, 1862, and 1866 (After Mariette 1877: Pl. 1)

French archaeologist Auguste Mariette, the founder of the Egyptian Antiquities Service, launched the first organized excavations at the Temple of Hatshepsut in 1855. Subsequently, in 1858, 1862, and 1866, he excavated the Upper Courtyard, exposing its southern and central parts but leaving the Coptic buildings intact. He also uncovered the famed decorations showing the expedition to the land of Punt, as well as the northern part of the Middle Terrace with the Northern Colonnade [*Fig. 3*].

Based on the plan established at the time, Emmanuel Brune, an architect who collaborated with Mariette, prepared the first theoretical reconstruction of the Temple [*Fig. 4*] (Mariette 1877: 4–6, Pl. 2a). In his reconstruction, Brune suggested that the Northern Colonnade had flanked the entire Middle Terrace. According to his hypothesis, it had 12 rock-cut chapels modeled on the two discovered during Mariette's excavations. According to the Swiss professor of Egyptology Édouard Naville (1895: 1–2), it was Mariette who discovered evidence that the Temple of Hatshepsut had been used by Coptic monks in early Christian times. He recalled a chapel furnished with dried-brick structures: an altar located in an alcove and a feature resembling a bed or seats. Naville also reported finding tombs of mummified monks clad in leather aprons and belts but lacking other decoration.

A significant phase in the era of the Temple's discovery was the tenure of Naville, who led the British mission under the auspices of the Egypt Exploration Fund (EEF). In 1891, Naville decided to commence work at Thebes and, in collaboration with an architect, John Ernest Newberry, cleared most of the buried courtyards, chapels, and colonnades in the Temple's northern part. Alongside the archaeological efforts, preservation and reconstruction began. Walls of the main Amun Sanctuary were reinforced, and measures were taken to secure structures in the upper courtyard, the chapels of the Royal Cult Complex, the Hathor Chapel, and the lower northern portico (Szafrański 2001: 60). Naville described the fully cleared Northern Colonnade in his volume II (Naville 1986: 4–7) and provided documentation drawings of it, with exact dimensions of various components, on Plates XXX–XXXII. He recorded a room made of dried brick, measuring 6 feet (1.83 m) in height, located in the corner of the Colonnade [*Figs 5, 6*]. According to his findings, the room served as a commercial space during the Twenty-Second Dynasty. The bricks used in its construction measured 14 inches × 7 inches × 4.5 inches (approximately 36 cm × 18 cm × 11 cm). Among the finds from the site were pottery sherds, beads, and scarabs (Naville 1896: 8). Somers Clarke, who collaborated with Naville, produced architectural documentation of the Temple presented in volume VI of a publication edited by Naville between 1895 and 1908. In it, Clarke offers a detailed description of the northern part of the Middle Terrace with its colonnades, frequently referring to Naville's volumes II and III (Clarke 1908: 21–22).

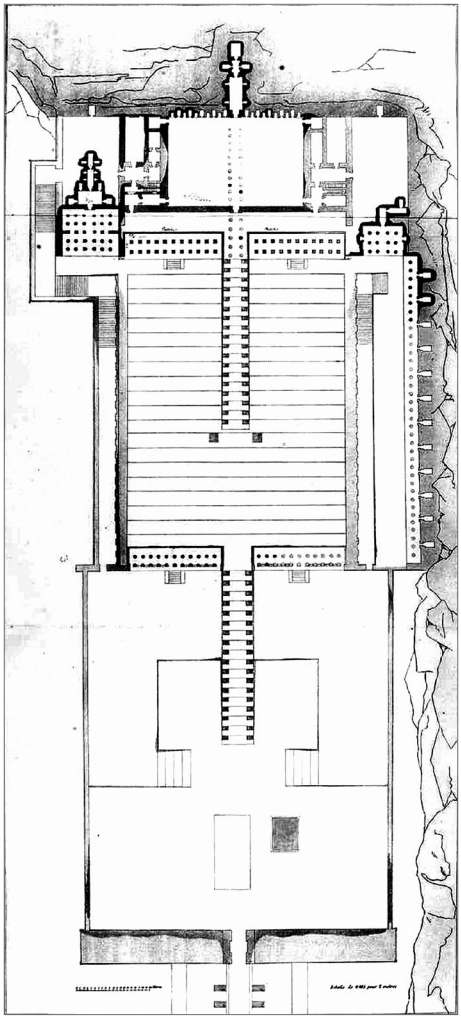


Fig. 4. Reconstruction plan of the Temple according to Emmanuel Brune (After Mariette 1877: Pl. II)

In 1911, Herbert E. Winlock began work at the Temple of Hatshepsut as head of the American mission of the Metropolitan Museum of Art in New York. During this two-decade-long endeavor, the team unearthed several significant archaeological findings pub-

lished in comprehensive reports, one for each season. In collaboration with the French architect Émile Baraize, technical director of the Antiquities Service for Upper Egypt, Winlock initiated restoration efforts at the Temple. Baraize, who conducted his excavations between 1925 and 1952 (Arnold 2005: 293), carried out reconstructions mostly based on Naville's drawings using natural stone, reinforced concrete, cement, plaster, and oil paint, while incorporating original elements (Wysocki 1983: 71). However, he left no record of his work.

In subsequent years, archaeological and conservation work at the Temple did not focus on the area of the Northern Colonnade of the Middle Terrace. It was only in the 1960s and 1970s, when the Polish Centre of Mediterranean Archaeology of the University of Warsaw in Cairo and State Workshops for the Conservation of Cultural Heritage (Przedsiębiorstwo Państwowe Pracownie Konserwacji Zabytków) began working on the Temple of Hatshepsut, that a renewed interest in the northern part of the Temple emerged. Architectural research started in 1972, with initial restoration efforts focusing on the courtyard and the Coronation Portico. The work of predecessors was continued in this area and on the Middle Terrace, in the Northern Colonnade (Wysocki 1984: 1–2).

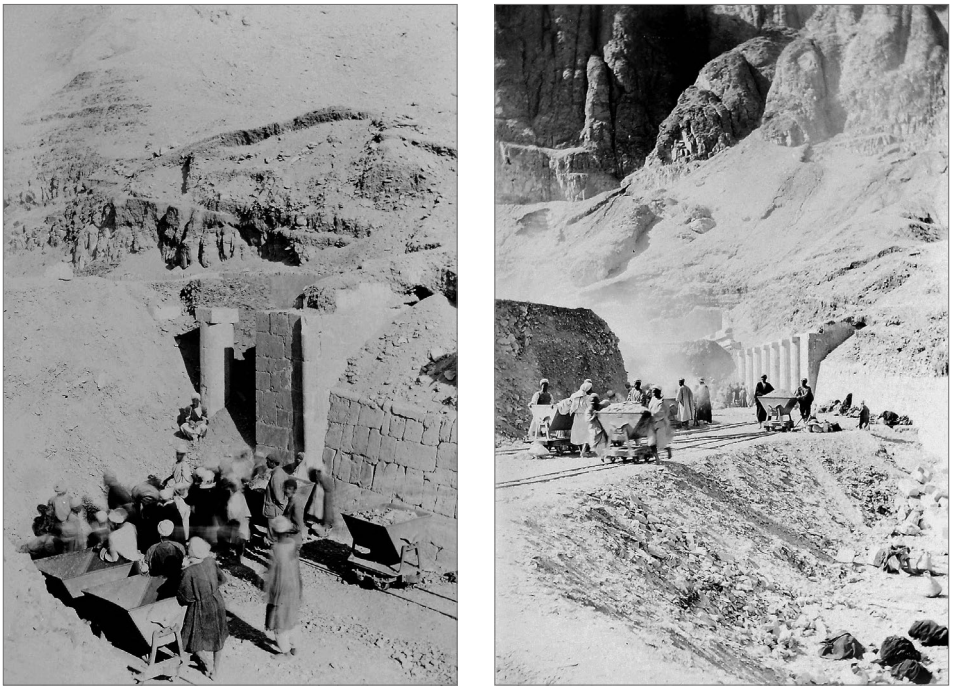


Fig. 5. Archaeological work within the Northern Colonnade carried out by Édouard Naville (Egypt Exploration Society DB-HAT.NEG.C.22, DB-HAT.NEG.C.17b https://www.flickr.com/photos/egyptexplorationsociety/albums/72157661494672977/with/38099658095) (Accessed: 20.01.2025)

RESEARCH AND CONSERVATION WORK ON THE NORTHERN COLONNADE

Construction activities undertaken in 1974/1975 and 1976/1977 revealed a notable inclination of the wall behind the Northern Colonnade on the Middle Terrace. Previous teams of specialists had placed gypsum control seals (strain sensors) there, allowing monitoring of any displacement. No significant alterations occurred over the following years until, two seasons later, the wall shifted and the integrity of the seals was compromised, necessitating the implementation of safety measures. In response to the cracking and damage of the seals, Dąbrowski decided to install new meters. Additionally, the wall was supported by a wooden scaffolding at the point of the largest bulge [*Fig. 7*]. Analyses conducted to determine the causes of the displacement and devise protective measures revealed that the bulging of the wall resulted from the weathering of the surrounding Esna slate (clay rock). Centuries of exposure led to weathering and expansion of the rock slope, causing the stone wall structure to shift. The blocks of the wall were bonded with a small amount of weak lime-gypsum mortar. Considering the historical authenticity of the leaning wall and the exceptionally good state of preservation

Fig. 6. Middle Terrace, view of the Anubis Chapel Vestibule and a section of the Northern Colonnade with visible remains of brick structures (Egypt Exploration Society DB-HAT.NEG.C.27 https://www.flickr.com/photos/egyptexplorationsociety/albums/72157661494672977/with/38099658095) (Accessed 20.01.2025)

of the Northern Colonnade, the Anubis Chapel, and the Vestibule, any restoration of the leaning wall would risk compromising the integrity of the Temple's original structure. A decision was made to preserve the historical wall, preventing further deformation. Initial stabilization efforts involved removing compacted rubble from behind the wall and carving out weathered and cracked sections of the rock to form steps. These steps were designed to support the future infill behind the wall. The task was carried out in sections 4–5 m long to prevent the curtain wall from collapsing during the process. The space between the curtain wall and the cleared clay rock was gradually filled with layers of limestone rubble, reinforced with cement-lime mortar. Crushed stone for the project was sourced from a local quarry (Wysocki 1977: 8–10).

During the following season, excavation and survey work focused on the eastern elevation of the Northern Colonnade and the adjoining northern wall of the Temple enclosure. The excavation reached a depth of approximately 4 m, the width varying between 0.9 m and 2 m, and the length ranging from 1 m to 3 m. This work uncovered a thin layer of white plaster on the eastern façade. Archaeological artifacts were recovered as the backfill —comprising a mixture of sand, clay rock rubble, and fragments of limestone and sandstone blocks— was removed.

The composition and thoroughly mixed character of the backfill strongly suggest that the area had been previously excavated and used as a dump for refuse from archaeological and conservation activities conducted on the Middle Ter-

Fig. 7. Northern Colonnade, *ad hoc* timber scaffolding supporting the leaning wall (After Wysocki 1987: Fig. 9)

race during the early 20th century. This conclusion is supported by the discovery of newspaper scraps from that era. Furthermore, it was determined that approximately a third of the Eastern Colonnade's façade, near the rock face, featured an untreated surface that had remained invisible due to its concealment by the rock slope. Measurements were also taken of the fence wall dimensions, including its thickness and height. After completing the measurements, photographic documentation, and transfer of the collected archaeological material, the excavation site was backfilled (Stefanowicz 1983: 1–2). In 1986/1987, as research continued in the northern part of the Middle Terrace near the North Colonnade, the mission led by Wysocki established that the wall, which had been secured a decade earlier, had already tilted before 1911, predating Winlock's activities in the area and likely still in Antiquity. The tilt had been stabilized for centuries by the rubble backfill, which concealed the structure until its decompaction by Naville. Once exposed, the wall became subject to displacement forces. Given the renewed tilting and new geological insights into how clay rock responds to moisture, further work at the back of the wall was deemed necessary. The wooden buttress was reattached at the most deflected point to temporarily stabilize the structure, and several control seals were attached in areas where cracked blocks and unsealed joints were present (Wysocki 1987: 21–22).

Bernard Hoffmann developed a structural design to stabilize and safeguard the Northern Colonnade wall based on geological studies conducted by Andrzej

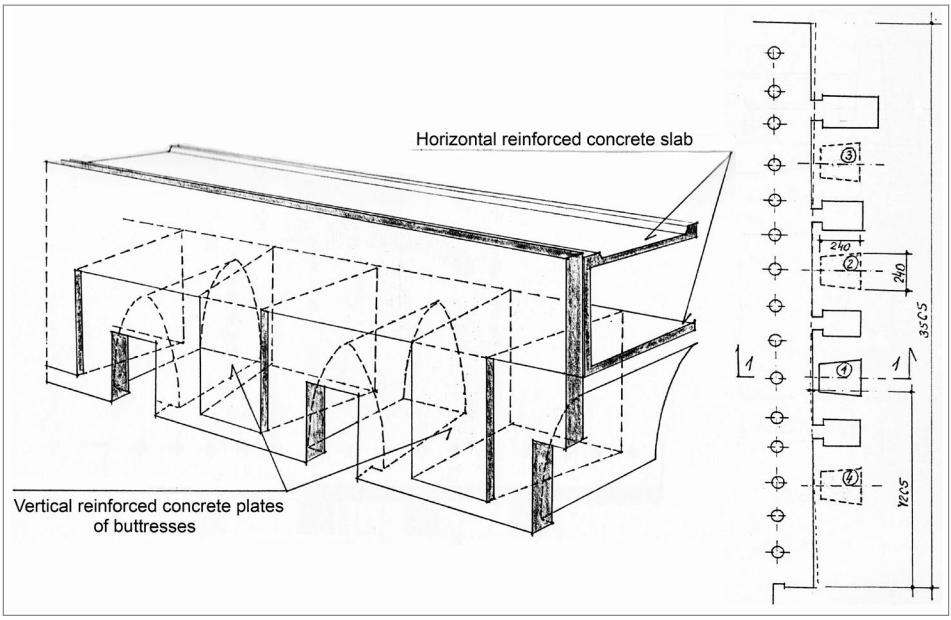


Fig. 8. Selected sections of the Northern Colonnade wall protection project (T. Dziedzic based on Połoczanin 1988 and Macur 1989)

Drągowski [*Fig. 8*]. The design concept involved anchoring the portico wall to the rocky slope by creating trapezoidal buttresses in the Esna slate between the existing chapels. The design also included a reinforced concrete slab located at the rear of the wall and bonded to the stone structure, as well as a horizontal reinforced concrete slab spanning the chapels' vaults and a horizontal capping on top of the wall. The two horizontal plates were bonded to a front plate to form a rigid structure.

Construction commenced in December 1987, beginning with re-clearing the back of the wall and chiseling out another section of weathered clay rock.[1] To avoid shocks that could damage the portico's original structure and trigger rockslides, heavy tools such as hammers and pickaxes were replaced with crowbars, small hammers, chisels, and pitchfork drills. These tools allowed careful removal of the rock at its contact points with old protective structures. The clearance work revealed that the gap between the rock and the

Fig. 9. Construction work behind the Northern Colonnade wall, installation of the reinforced concrete faceplate (Bielenia 1988: Fig. 5)

Fig. 10. Construction work installing the horizontal reinforced concrete slab at the back of the north wall of the Middle Terrace portico (Połoczanin 1988: Fig. 8)

1 The construction work was carried out under the direction of site foreman Wincenty Surzyn, with electrician Kazimierz Bielenia directly supervising the workers (Gzowski 1988: 2).

ancient wall varied in width from 0.15 m to 0.4 m and had been filled with weathered rock rubble.

As the rear side of the wall was fully uncovered, inconsistencies in the original brick bond became apparent, with some bricks protruding from or sunk into the wall face.[2] Additionally, manual application of lime mortar and smoothing marks were observed, providing evidence of the work of ancient masons. Complementary evidence was found in Trench 1, where a ceramic vessel found at a depth of 2.3 m, likely used to carry mortar, bore the workers' fingerprints on its surface. A similar mortar vessel was found in Trench 2. In addition to these finds, another ceramic pot, lacking traces of mortar and probably used for carrying liquids, was excavated in Trench 1.

Remarkably, a well-preserved wooden beater used for stone-working was found in Trench 1 at a depth of 2.7 m, and a similar tool, albeit significantly worn, was uncovered in Trench 2. Trench 1, which reached a depth of 5.5 m, acquired a trapezoidal shape with the wider side facing the rock. In the upper part of the trench, the trapezoid's sides measured 3.5 m in length on the rock side, 2 m on the shorter (wall) side, and approximately 3 m on the remaining two sides. Due to the irregularities of the rock, achieving a uniform trench shape throughout its height was unattainable, leading to a slight narrowing of the trench in its bottom part.

Trench 2 was excavated using the same method as Trench 1 and reached a depth of 5.4 m and was also trapezoidal in shape, with comparable dimensions in the upper part. During the excavation process, a test pit dug beneath the ancient wall to a depth of 0.2 m confirmed its foundation directly on solid rock.

Work on Trench 3 followed similar methods to those used in the earlier trenches excavated during the same season. The trench was excavated to a depth of 5.6 m, and a test pit beneath the original wall revealed its shallow foundation at a depth of 0.25 m. After cleaning the excavated surface, the exposed rock was waterproofed using liquid bitumen applied in three successive layers. Once the waterproofing had dried, the faceplate-reinforced concrete structure was installed at the back of the ancient wall [*Fig. 9*].

To prevent water infiltration into the shale rock, which could cause expansion and lead to the collapse of the entire structure, plastic sheeting was placed at the bottom of the trenches before the bricklaying. Crushed limestone mixed with cement mortar was used for the masonry work. The trenches were bricked up to a depth of 1.8 m from the crown of the ancient wall, reaching the level of the chapels' vaults. Subsequently, a horizontal reinforced concrete slab was constructed 0.05 m above the vaults, which had been leveled using mortar and secured with polystyrene foam to protect them from any strain caused by the slab.[3] Next, the space

2 The results of tests conducted on a series of mortar samples from the Temple of Hatshepsut indicate that both the masonry and plastering mortars consisted of gypsum with calcium carbonate (Dziedzic, Bartz, and Gąsior 2015: 97–99).

3 According to the architect Jacek Gzowski (1988: 3), "(…) because of the dislodged stones of the vault, it was secured from above with crushed limestone, "in a flat arrangement", and laid with lean cement screed (…)".

above the slab was filled with stone chips in cement mortar, and another reinforced concrete slab was installed as capping [*Fig. 10*]. It extended 0.4 m below the top of the ancient wall and was shaped like a trough.

Trenches 1, 2, and 3 were excavated in the initial phase of the project, while work in Trench 4 was postponed until the subsequent season (Bielenia 1988: 1–8). In a 1989 report, engineer Andrzej Macur provided additional details on the measures taken to secure the chapels in the Northern Colonnade. The report describes the installation of a special structure to protect the vaults of the chapels. A Ø10 steel rod mesh with a spacing of 15 cm × 15 cm was placed 10 cm above the cleaned and refilled vault blocks, with PVC sheeting attached to the mesh. Then, a layer of broken limestone blocks was dry-laid on top of this structure and sealed with cement-lime mortar poured over it from above. According to Macur, the reinforcement of the ancient wall and chapels was a critical component of preservation work in this part of the Temple. Among the benefits of the design was the dead weight of the new structure, which was slightly greater than that of the original masonry, yet significantly lower than the weight of the slates. Thus, the materials introduced did not exert additional pressure on the floor. Another benefit of this protective measure was the use of conventional and validated materials that did not exert horizontal force, as concrete contracts during the binding and solidification process. Additionally, water introduced into the concrete was chemically integrated with the structure during curing, with any excess evaporating during construction (Macur 1989: 8).

CONCLUSIONS

The preservation, restoration, and adaptation of historic ruins require diverse measures that vary in scope and extent. These interventions include wall consolidation, cubic reconstruction, and additions to fragmentary structures. The primary goal of securing or consolidating a masonry structure is to halt deterioration and prevent potential structural failures. While such interventions do not necessarily assign a new utilitarian function to a monument, they are often essential to ensure the safety of visitors. A critical factor in these efforts is the correct selection of materials used for reinforcement. Their technical properties, color compatibility, and overall impact on the original structure must be carefully considered. The approach to the principle of material compatibility between authentic elements and additions varies, and it is often interpreted literally. Construction materials are commonly sourced from damaged parts of the same building or from the original source (e.g. a quarry), and it is vital to ensure that the supplement is distinguishable from the original fabric. The reinforcement and protection of vaults or walls must adhere to the principles of conservation and construction. This can be achieved by concealing modern materials behind original elements to maintain visual authenticity. All conservation and construction work should be preceded by thorough structural assessments, material analyses, and geological investigations when necessary. The interventions carried out within

the Northern Colonnade reflected these principles to varying degrees but ultimately achieved their intended objectives. Due to the failure of the protective measures introduced in the 1970s, it was imperative to change the approach in the 1980s. The effectiveness of these efforts can only be assessed through long-term monitoring of the effects of preservation work on the north wall of the Temple's Middle Terrace. Notably, despite multiple attempts and analyses, the method employed to safeguard this specific part of the Temple proved successful, as it maintained the structure's stability. Moving forward, continued monitoring of the Northern Colonnade and proactive measures to preserve its original elements in optimal condition should remain a priority.

Dr. Teresa Dziedzic
https://orcid.org/0000-0003-2855-0074
Wrocław University of Science and Technology
Faculty of Architecture
teresa.dziedzic@pwr.edu.pl

Aleksandra Filipek-Wyskiel
https://orcid.org/0009-0006-5919-9706
Wrocław University of Science and Technology
Faculty of Architecture
aleksandra.filipek-wyskiel@pwr.edu.pl

How to cite this article: Dziedzic, T. and Filipek-Wyskiel, A. (2025). Research and conservation work on the Northern Colonnade at the Temple of Hatshepsut at Deir el-Bahari. *Polish Archaeology in the Mediterranean,* 34.1, 563–580. https://doi.org/10.37343/uw.2083-537X.pam34.1.02

References

Arnold, D. (2005). A chronology: The later history and excavations of the temple of Hatshepsut at Deir el-Bahari. In C.H. Roehrig, R. Dreyfus, and C.A. Keller (eds), *Hatshepsut: From queen to pharaoh* (pp. 290–293). New York: The Metropolitan Museum of Art

Bielenia, K. (1988). *Świątynia Hatszepsut w Deir el-Bahari. Prace zabezpieczające prowadzone w sezonie 1987/88 w Północnym Portyku środkowego dziedzińca* (The Temple of Hatshepsut in Deir el-Bahari. Preservation work carried out in the 1987/88 season in the Northern Colonnade of the Middle Terrace). Unpublished report in the PCMA UW Documentation Archiving Department, Inv. No. DBAH.1987-1988.005

Clarke, S. (1908). Architectural description. In É. Naville, *The temple of Deir el Bahari* VI. *The Lower Terrace* (=*Egypt Exploration Fund Memoir* 29) (pp. 17–31). London: Egypt Exploration Fund

Dziedzic, T., Bartz, W., and Gąsior, M. (2015). Mineralogical characteristic of mortars from the Temple of Hatshepsut at Deir el-Bahari: Preliminary report. In Z.E. Szafrański (ed.), *Deir el-Bahari studies* (=*Polish Archaeology in the Mediterranean* 24/2) (pp. 93–111). Warsaw: Warsaw University Press

Gzowski, J. (1988). *Świątynia królowej Hatszepsut w Deir el-Bahari. Dokumentacja powykonawcza prac prowadzonych w sezonie 1987/88 przy wzmacnianiu tylnej ściany północnej kolumnady środkowego dziedzińca* (The Temple of Queen Hatshepsut in Deir el-Bahari. As-built documentation of the works carried out in the 1987/88 season to reinforce the back wall of the Northern Colonnade of the Middle Terrace). Unpublished report in the PCMA UW Documentation Archiving Department, Inv. No. DBAH.1987-1988.011

Macur, A. (1989). *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologiczno-Konserwatorskiej Deir el-Bahari w sezonie 1988/89* (Report on the activities of the Polish-Egyptian Archaeological and Conservation Mission at Deir el-Bahari in the 1988/89 season). Unpublished report in the PCMA UW Documentation Archiving Department, Inv. No. DBAH.1988-1989.002

Mariette, A. (1877). *Deir-el-Bahari: documents topographiques, historiques et ethnographiques recueillis dans ce temple pendant les fouilles*. Leipzig: J.C. Hinrichs

Naville, É. (1895). *The temple of Deir el Bahari* I. *The north-western end of the upper platform* (=*Egypt Exploration Fund Memoir* 13). London: Egypt Exploration Fund

Naville, É. (1896). *The temple of Deir el Bahari* II. *The ebony shrine. Northern half of the middle platform* (=*Egypt Exploration Fund Memoir* 14). London: Egypt Exploration Fund

Połoczanin, W. (1988). *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologiczno-Konserwatorskiej Deir el-Bahari, sezon 1987/88* (Report on the activities of the Polish-Egyptian Archaeological and Conservation Mission at Deir el-Bahari in the 1987/88 season). Unpublished report in the PCMA UW Documentation Archiving Department, Inv. No. DBAH.1987-1988.002

Stefanowicz, A. (1983). *Prace badawcze prowadzone przy kolumnadzie północnej środkowego tarasu świątyni Królowej Hatszepsut, sezon 1982/83* (Research work carried out in the Northern Colonnade of the Middle Terrace of the Temple of Queen Hatshepsut in the 1982/83 season). Unpublished report in the PCMA UW Documentation Archiving Department, Inv. No. DBAH.1982-1983.001

Szafrański, Z.E. (1995). On the foundations of the Hatshepsut Temple at Deir el-Bahari. In D. Kessler and R. Schulz (eds), *Gedenkschrift für Winfried Barta: ḥtp dj n ḥzj* (=*Münchener ägyptologische Untersuchungen* 4) (pp. 371–374). Frankfurt am Main: Peter Lang

Szafrański, Z.E. (2001). Exceptional Queen, Unique Temple: Polish Activity in the Temple of Hatshepsut. In Z.E. Szafrański (ed.), *Queen Hatshepsut and her temple 3500 years later* (Królowa Hatszepsut i jej świątynia 3500 lat później) (pp. 57–79). Warsaw: Agencja Reklamowo-Wydawnicza A. Grzegorczyk

Wysocki, Z. (1977). *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologicznej Deir el-Bahari w sezonie 1976/1977* (Report on the activities of the Polish-Egyptian Archaeological Mission at Deir el-Bahari in the 1976/1977 season). Unpublished report in the PCMA UW Documentation Archiving Department, Inv. No. DBAH.1976-1977.002

Wysocki, Z. (1983). *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologiczno-Konserwatorskiej Deir el-Bahari w sezonie 1982–83* (Report on the activities of the Polish-Egyptian Archaeological and Conservation Mission at Deir el-Bahari in the 1982–83 season). Unpublished report in the PCMA UW Documentation Archiving Department

Wysocki, Z. (1984). *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologiczno-Konserwatorskiej Deir el-Bahari w sezonie 1983–84* (Report on the activities of the Polish-Egyptian Archaeological and Conservation Mission at Deir el-Bahari in the 1983–84 season). Unpublished report in the PCMA UW Documentation Archiving Department

Wysocki, Z. (1987). *Sprawozdanie z działalności Polsko-Egipskiej Misji Archeologiczno Konserwatorskiej Deir el-Bahari, w sezonie 1986/1987* (Report on the activities of the Polish-Egyptian Archaeological and Conservation Mission at Deir el-Bahari in the 1986/1987 season). Unpublished report in the PCMA UW Documentation Archiving Department, Inv. No. DBAH.1986-1987.001