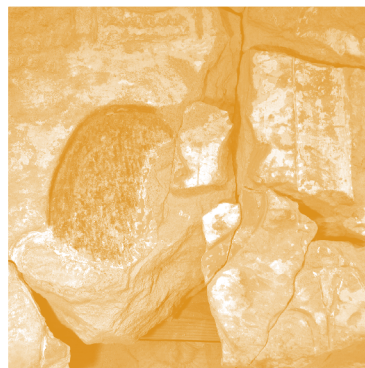


Conservation and restoration of the sandstone stele of Tia found at Deir el-Bahari: a field report



Abstract: The paper describes the process of conservation and restoration of a severely damaged polychrome stone slab decorated in sunken relief. The slab was found broken into over 30 fragments in a Third Intermediate Period tomb on the third terrace of the Temple of Hatshepsut in Deir el-Bahari during the 2005/2006 season of the Polish-Egyptian Archaeological and Conservation Expedition at the Temple of Hatshepsut at Deir el-Bahari. The sandstone relief depicts Ramesses II and the official Tia as the main figures. The stele was in a state of advanced degradation, to a point of powdering of the stone surfaces. It was first cleaned and consolidated using a silico-organic preparation. Then, the remains of polychromy were reinforced, the slab was reassembled from the fragments, and the gaps between them were filled. Lastly, the object was prepared for future display in the Temple at Deir el-Bahari. The treatments performed allowed for the restoration of the aesthetic and historical value of this artifact dating from the Nineteenth Dynasty.

Keywords: stone conservation, Temple of Hatshepsut, sandstone, restoration, Tia, Ramesses II, stele

Archaeological excavations conducted by the Polish-Egyptian Archaeological and Conservation Expedition at the Temple of Hatshepsut at Deir el-Bahari yielded a polychrome stone slab in a fragmentary state of preservation.

Kacper Prus¹

¹Academy of Fine Arts in Warsaw

Acknowledgments

The author's participation in two seasons of conservation work at Deir el-Bahari was made possible by the Academy of Fine Arts in Warsaw, Department of Conservation and Restoration of Works of Art, under the direction of Professors Krzysztof Chmielewski and Wiesław Procyk. Works on the site were conducted by Anna Duda-Maczuga and Anna Kudzia.

The pieces were recovered from a shaft of a tomb dated to the Third Intermediate Period, explored during the 2005/2006 season (Barwik 2007: 67). The find was housed in the expedition's storeroom located at the Temple of Thutmose III, adjacent to the Funerary Cult Complex of Queen Hatshepsut.

In January 2022, works aimed to conserve and reassemble the fragments were launched. The stele was in very poor condition. It survived in about 30 fragments estimated to represent approximately 85% of the surface of the stone slab, which had originally measured 130 cm × 60 cm

× 9 cm.¹ All layers of the object were degraded. Signs of weakening of the sandstone structure such as subsiding surfaces, flaking, and spalling were apparent on the individual fragments. Numerous cracks were discernible along the sedimentary layers. Lastly, the polychromy showed clear signs of weakening, i.e. flaking and powdering of the surface [Fig. 1].

The collected fragments were probably part of a larger composition, as indicated by the incompleteness of the depicted figures and hieroglyphs and the rectangular shape of the panel obtained



Fig. 1. Sandstone stele with a representation of Tia, found in a tomb shaft at the Hatshepsut Temple in Deir el-Bahari. Condition of the object before conservation at its former storage location (PCMA UW | photo K. Prus)

1 Earlier publications reported that the slab consisted of 28 elements. During a routine inspection at the site of the object's earlier deposition, two additional elements with polychrome fragments were found (Barwik 2007: 67).



Fig. 2. Condition of the stele before conservation: detail of the figure of Tia (PCMA UW | photo K. Prus)



Fig. 3. Condition of the stele before conservation: detail of the figure of Ramses II (PCMA UW | photo K. Prus)

by reassembling the fragments. Large wall decorations consisted of many close-fitting stone blocks with the relief decoration spread across the entire surface of the wall disregarding the spaces between them. This stele must have come from the central part of such a wall (Barwik 2007: 69).

The decorated surface of the stele bore traces of alterations post-dating the stele's original decoration. Chisel marks on the faces of the figures and in places where some hieroglyphs had been carved indicate deliberate removal of imagery and text. The back side of the slab was evenly covered with a black coating identifiable as soot. Previous archaeological publications mentioning the slab attributed these accretions to the activities of a Coptic monastic community at the Temple site,² which removed the pagan imagery and reused the decorated

stone blocks from the temples at Deir el-Bahari for their purposes (Barwik 2007: 67). The stone slab may have been used in a monastic kitchen, which would explain why traces of soot were found on almost the entire surface of the stele's back side (Barwik 2007: 67).

The treatment of the stone, the type of relief, and the method of decoration indicate that the panel was executed using the traditional technique of low relief. In this technique, the drawing was typically made in charcoal, transferring it from a previously prepared design to cover the entire wall of the room, and then the decoration was carved with chisels and polished with stones. The resulting image was painted, as indicated by the still visible remains of color layers. The polychromy was made using natural pigments and an organic binder.³



Fig. 4. Structural strengthening process at elevated humidity performed over a period of three weeks (PCMA UW | photo K. Prus)

- 2 During the Christian period, the Coptic monastery of St. Phoibammon was founded among the ruins of the Temple of Hatshepsut (Godlewski 1986: 13–20; Arnold 2005: 290–293).
- 3 Most pigments in ancient Egypt were inorganic. Mostly ground minerals were used to produce basic colors such as white, red, blue, green, or yellow. Binders, on the other hand, were of organic origin, the most commonly used being beeswax, gum Arabic, and chicken egg white (Nicholson and Shaw 2000: 104–120, 430–474).

The correct reassembly of the imagery and text required consulting the research published to date on this object, as well as collaboration with archaeologists and Egyptologists alike in order to bring the task to completion (Barwik 2007: 68–69; van Dijk 2021: 62–63).

Although the lower part of the stele is not preserved, the extant fragment suffices for its identification as an example of a classical representation showing a group of two figures of unequal stature: the first is a large figure of a pharaoh in stride, holding symbols of royal power and wearing a *khepresh* headdress used during battles and ceremonies (Collier 1993: 139–146). The second figure is smaller and holds a fan.

The fan bearer is an official named Tia [Fig. 2], as indicated by an inscription above his head (Barwik 2007: 70). The royal figure wearing the blue *khepresh* crown is Ramses II, shown holding the *aba* scepter⁴ in his right hand and an incense stick in his left⁵ [Fig. 3]. Tia held the office of overseer of the treasury at the Ramesseum and was a brother-in-law to the pharaoh himself. Tia's career as an official probably started with an appointment by Seti I. He married the king's daughter, who was also named Tia (van Dijk 2021: 64–66). A fragment of an illegible inscription above the figure of Tia probably contained a royal title as well as a royal name (Barwik 2007: 68). The depicted official was described in ancient Egyptian texts, for example in



Fig. 5. Sealing of joints using an acrylic resin solution (PCMA UW | photo M. Kalicka)



Fig. 6. Vertical bonding of larger pieces of the sandstone slab (PCMA UW | photo A. Kudzia)

4 The scepter in the shape of an oar was a symbol of command (van Sittert 2020: 82–83).

5 A symbol of royal power and divine anointing. Access to the resins and herbs used for religious rituals was to confirm the direct affinity of the pharaoh to the gods (Tatomir 2017).

a stele from his tomb at Saqqara, as a fan bearer at the right hand of the king (Bosticco 1965: 61–62).

Based on the size of the figures and similar examples from Western Thebes it is possible to estimate the height of the decoration the stele had been part of. The complete scene could have been four times its height, with two panels below and one above, or about 2.5 m high (Barwik 2007: 69). The content of the stele and its cultural context suggest that it had come from the Ramesseum, a temple complex erected by Ramses II in Western Thebes. Both the office held by the person depicted next to the king and the temple's close proximity to the find-spot of the stele support this provenance.⁶ Therefore, the stele can be dated to the

Early Ramesside period (Nineteenth Dynasty) (Barwik 2007: 67).

The work launched in January 2022 aimed to halt the deterioration of the stone, but the main concern after the initial visual inspection at the site was the generally poor state of preservation of both the stone and the polychromy. Severe degradation of the stone material, together with numerous separations, chipping, and stratification of the sedimentary layers, necessitated structural consolidation. The structural strengthening treatment was carried out using KSE 300, a silico-organic preparation based on tetraethoxysilane, at an elevated humidity over a period of three weeks [Fig. 4]. The monitoring of the fragments after siliciclastic consolidation lasted



Fig. 7. Vertical bonding of other pieces of the sandstone slab (PCMA UW | photo A. Kudzia)



Fig. 8. Sandstone slab assembled from vertically bonded fragments (PCMA UW | photo K. Prus)

6 Fragments of columns from the Ramesseum were also reused in the Coptic monastery at the Temple of Hatshepsut at Deir el-Bahari (Barwik 1990–1991).

for another three weeks. After the stabilization and seasoning of the object was complete, the pieces were stowed in a shaded space pending continuation of the work (Prus 2022: 2–4). During the next season of the expedition, further conservation work was undertaken in order to not only halt the object's degradation, but also to restore its historical and aesthetic value and to give it educational value as a museum exhibit.

Prior to the start of restoration work it was necessary to consolidate and protect the individual polychrome remains. Once this stage was completed, the individual fragments could be joined together. The pieces were protected at the junction points with a 5% solution of ethyl methacrylate copolymer resin, Paraloid B-72, in acetone and then glued together using a two-component epoxy resin, Akepox



Fig. 9. Filling small cavities with a white cement-based mineral mortar (PCMA UW | photo K. Prus)

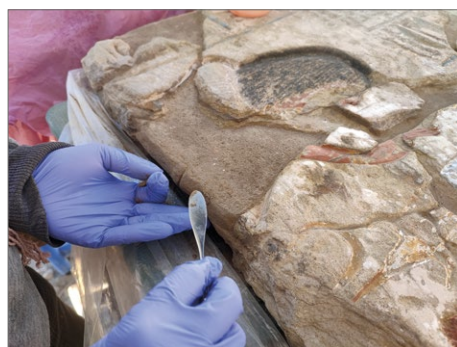


Fig. 10. Filling larger cavities with a mineral mortar (PCMA UW | photo K. Prus)



Fig. 11. Condition of the object during conservation work. The front side with cavities filled (PCMA UW | photo K. Prus)

5010, with additional fiberglass dowels to strengthen the joints [Fig. 5]. The bonding of the larger pieces was done with the fragments placed in a vertical position because the irregular surfaces of the front and back sides prevented their reassembly on a level horizontal surface (Duda-Maczuga and Kudzia 2023: 2–5) [Figs 6–8].

At an early stage of the process, due to the considerable size and weight of the stele, it was imperative to devise a structural support for the stone slab to allow for safe movement of the object and its subsequent display. To this end, a frame was constructed to reinforce the back of the slab without adding weight to the object and to facilitate its future mounting. The frame was point-bonded to the individual elements, additionally providing the necessary rigidity for the object, which consisted of elements of different sizes, weights, and contact points. Once all the elements were glued together, cavities left between fragments were filled in with a white cement-based mineral mortar. After several trials with different fillers, including quartz sand, lime meal, and mineral pigments, a suitable mortar mix was found that matched

the texture and color of the sandstone. The mixture used consisted in equal proportions of white cement, quartz sand, rock flour made from ochre-colored weathered rock (called *heba*), and Esna shale flour. To strengthen the mortar, a mortar improver based on an aqueous polymer dispersion, ZM HF, was added to each batch at a volume of 20 ml. The restorations were distinguished from the original by lowering the reconstructed surfaces in relation to the preserved elements (Duda-Maczuga and Kudzia 2023: 2–5) [Figs 9–11].

The performed treatments saved the slab from advanced degradation and restored the object, enabling its display as a museum exhibit. The conservation and restoration work not only improved the physical condition of the slab, restoring it to the form of a single decorative element, but also restituted its historical and aesthetic value. In addition, the stele with the representation of Tia has the potential to gain educational value thanks to its prospective exhibition. It will be available for viewing to future visitors to the temples and the museum and thus help to better understand the art and culture of ancient Egypt.

Kacper Prus

Academy of Fine Arts in Warsaw
kacper.prus@asp.waw.pl

How to cite this article: Prus, K. (2024).

Conservation and restoration of a sandstone stele of Tia found at Deir el-Bahari: a field report. *Polish Archaeology in the Mediterranean*, 33, 271–280.
<https://doi.org/10.37343/uw.2083-537X.pam33.14>

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
- Barwik, M. (1990–1991). Fragments of columns from the Ramesseum found at Deir el-Bahari. *Memnonia*, 1, 19–24
- Barwik, M. (2007). Overseer of the Treasury Tia at Deir el-Bahari. *Memnonia*, 18, 67–70
- Bosticco, S. (1965). *Museo archeologico di Firenze: le stele egiziane II. Nuovo Regno*. Rome: Libreria dello Stato
- Collier, S. (1993). The khepresh crown of pharaoh. *Ufahamu: A Journal of African Studies*, 21(1–2), 137–155
- Duda-Maczuga, A. and Kudzia, A. (2023). Karta obiektu. Piaskowcowa płyta urzędnika o imieniu Tia (Object card. Sandstone stele of Tia). Unpubl. report in the PCMA Archive. DBAH.2023.1.004
- Godlewski, W. (1986). *Le monastère de St Phoibammon (=Deir el-Bahari 5)*. Warsaw: PWN – Éditions Scientifiques de Pologne
- Nicholson, P.T. and Shaw, I. (2000). *Ancient Egyptian materials and technology*. Cambridge: Cambridge University Press
- Prus, K. (2022). Karta obiektu. Piaskowcowa płyta urzędnika o imieniu Tia (Object card. Sandstone stele of Tia). Unpubl. report in the PCMA Archive. DBAH.2022.1.033
- Tatomir, R.G. (2017). Incense. In *The encyclopedia of ancient history* (pp. 1–3). John Wiley & Sons. <https://doi.org/10.1002/9781444338386.wbeah30047>
- van Dijk, J. (2021). Four notes on Tia and Iurudef. In B. van den Bercken (ed.), *Egyptian delta archaeology: Short studies in honour of Willem van Haarlem* (pp. 61–70). Leiden: Sidestone Press
- van Sittert, B. (2020). “Maintaining order over chaos”: A study of the ba and baw concepts in the Predynastic Period, Early Dynastic Period, and Old Kingdom (MA thesis). American University in Cairo