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MEROE, SUDAN

Fieldwork at the Royal Cemeteries of Meroe – A Progress report of the Qatari Mission for the Pyramids of Sudan



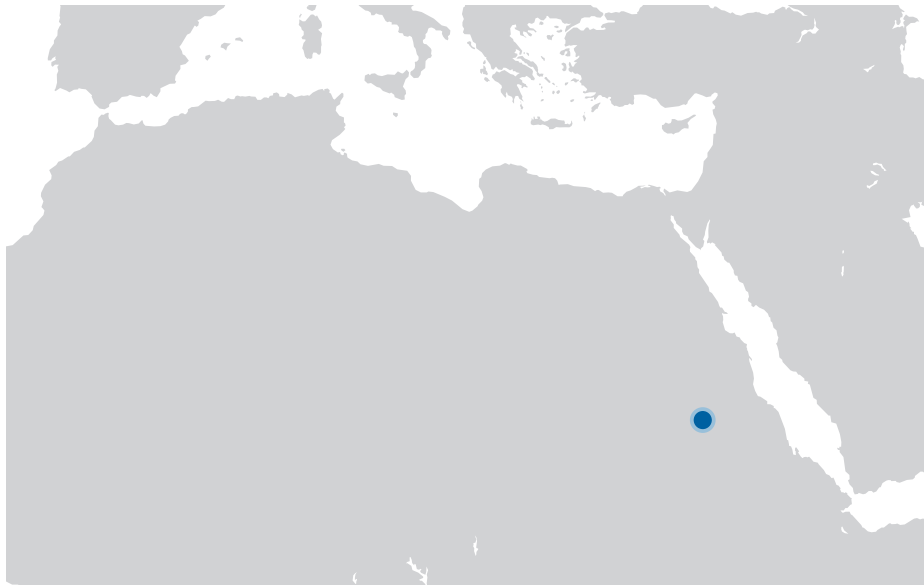
The years 2017 and 2018

Head office Berlin – Friedrich W. Hinkel Research Center

by Pawel Wolf and Alexandra Riedel



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Project partners: Qatar-Sudan Archaeological Project, Qatar Museums, National Corporation for Antiquities and Museums Sudan, German Archaeological Institute.

Financial support: Qatar-Sudan Archaeological Project, German Archaeological Institute.

Coordination of project: Mahmoud Suliman Bashir (QMPS-NCAM project division, National Corporation for Antiquities and Museums/Khartoum) and A. Riedel (QMPS-DAI project division, DAI/Berlin).

Team: S. Büchner, Murtada Bushara, I. Fabiszak, J. Hallof, K. Hülk, L. Jansen, C. Kleinitz, I. Klose, F. Lehmann, E. Lindinger, B. Pilarski, A.L. Rodenwaldt, Mohammed Saad, N. Salamanek, D. Serova, M. Sip, O. Unhammer, P. Wolf, J.W. Yellin, NCAM construction team.

Survey grid and airborne ortho-photographic images: Stremke Archaeology, F. Stremke, Bremen/Germany; **3D-Documentation of pyramids and reliefs:** TrigonArt, T. Bauer and M. Praus, Berlin/Germany and 'Stremke Archaeology', F. Stremke, Bremen/Germany; **Conservation:** RaO (Restaurierung am Oberbaum), Berlin/Germany, J. Hamann and team; Schulz&Rütt Restaurierung, Berlin/Germany, A. Schulz and team, Omima Hasbelsoul Ahmed (NCAM), NCAM construction team; **Construction supervision:** Klessing Architects, T. Bunk, Berlin/Germany; **Construction team:** NCAM construction team/Sudan; **Structural engineering consultant:** J. Steiner and Ingenieurgruppe Bauen, Berlin/Germany; **Tourism Planning:** Cultural Site Research and Management (CSRM), D. Comer and team, Baltimore/USA; **Installation of vegetation-belt:** N. Munro and his team, Institute of Climate & Society, Mekelle University, Ethiopia.

In 2017 and 2018 significant milestones in several key aspects of the mission's program have been reached. After the successful completion of the archaeological documentation at Queen Khennuwa's tomb Beg. S. 503 and the iconographic and epigraphic studies of its burial chamber decoration, the post-excavation analysis of this important royal tomb started. The architectural and iconographic documentation of the Begrawiya North and South cemetery pyramids and their offering chapels has been completed in the field, and the collection, inventory, and preliminary documentation of more than 1000 ornamented blocks that were found out of their original context have been achieved. An important step was reached by the preparation of a general conservation and preservation strategy for the pyramids and their chapels. Its implementation meanwhile started at both cemeteries. Furthermore, the development of a sustainable tourism plan for Meroe and the 'Island of Meroe' was finalised and the opening of necessary infrastructure commenced by the implementation of an improved site entrance, a visitor centre and fencing of site boundaries at various places.

- 1 The concrete ring supporting the staircase of Beg. N. 9 to prevent a collapse of the stairway walls under the weight of pyramid Beg. N. 18, shown during construction in January 2017. (Photo: © QMPS, P. Wolf, 2017)



- 2 Excavations at pyramid Beg. S. 503 in December 2016. (Photo: © QMPS, P. Wolf, 2016)



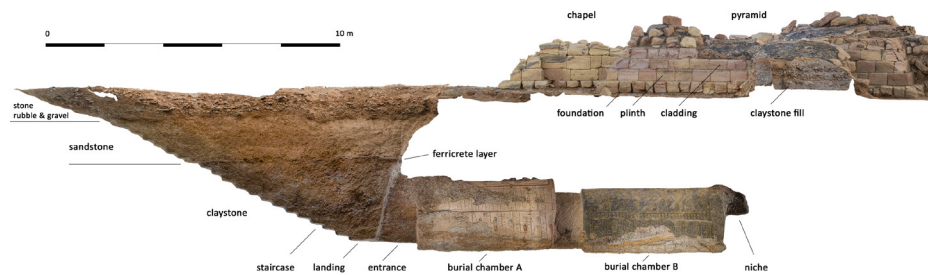
Re-excavation and documentation of selected pyramid tombs

Between 1921 and 1923, the *Harvard University and Boston Museum of Fine Arts Egyptian Expedition* under the direction of G.A. Reisner excavated all presently known royal tombs and commoners' graves at the three royal cemeteries of Meroe. Amongst them there were three tombs, Beg. N. 9, Beg. S. 10 and Beg. S. 503, with well-preserved burial chamber decorations. However, since these tombs were just very insufficiently recorded, a thorough epigraphical and iconographical study of their unique paintings was hitherto impossible. This unfortunate situation led the Qatari Mission for the Pyramids of Sudan (QMPS) to consider the re-excavation and re-documentation of these three important tombs and to evaluate the possibility of permanently opening their substructures for the public.

Pyramid Beg. N. 9 is one of the best-preserved pyramids of the cemetery with the only known Meroitic royal burial chamber decorations. QMPS started the re-excavations of the tomb's staircase in fall 2015 and realised serious structural problems in the surrounding bedrock: Large holes were washed out under the south-western corner of the neighbouring pyramid Beg. N. 18. In season 2016/2017, a 2.5 m high and about 30 cm thick reinforced concrete ring beam with horizontal supports was therefore inserted into the upper part of the stairway as a first stabilisation measure to prevent a collapse of the stairway walls under the weight of this pyramid. It interlocks with the surrounding bedrock, but in order to respect the visual integrity of the World Heritage site, only a small concrete ring is visible on the surface (Fig. 1). This measure allowed the re-excavation of the tomb to continue, which meanwhile succeeded in the re-opening of its burial chambers by the QMPS-NCAM (National Corporation for Antiquities & Museums) project division lead by Murtada Bushara Mohammed and Mahmoud Suliman Bashir. However, unstable bedrock below the ring beam necessitates additional structural stabilisation efforts.

Re-investigation of Tomb Beg. S. 503

The royal tomb Beg. S. 503 of Queen Khennuwa was completely excavated by G. A. Reisner's team in 1922 and re-blocked again in 1923. Thereafter, it



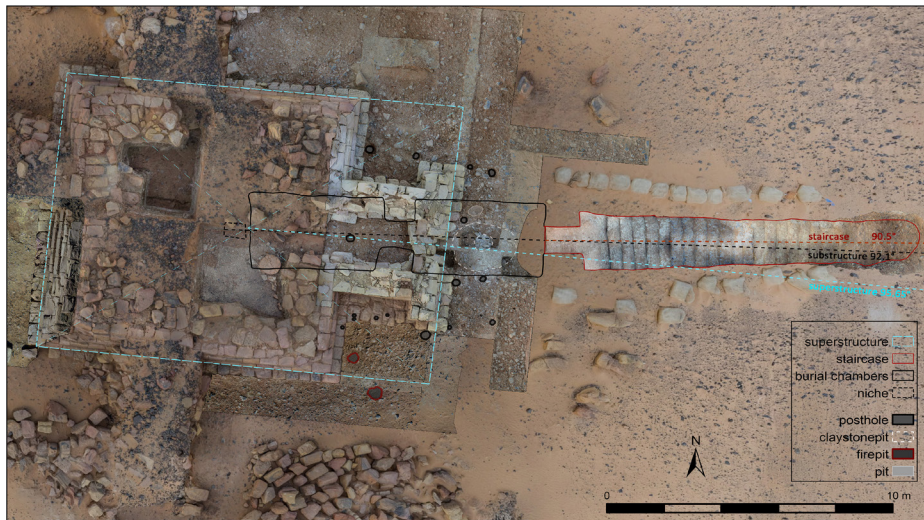
3 East-west section through tomb Beg. S. 503
(Fig.: © QMPS, P. Wolf, 2018; 3-D model by P. Wolf and A. Rodenwaldt, 2016)

remained untouched for almost a century until it was re-excavated by our mission in 2016-2017. In 2016, fieldwork involved the excavation of the tomb's staircase, the re-opening and a systematic record of the two burial chambers and their decoration including high-resolution photographs and the generation of exact 3D-models. In addition, the scattered coffin bench blocks were documented and small finds, pottery, and samples were collected. After the tomb's pyramid and the offering chapel had been cleared in season 2016/17 to prepare for a detailed record of the architecture, relief imagery, and graffiti, two trenches were dug into the pyramid's rubble fill to better understand its internal structure. The re-documentation was completed in December 2017 by excavations in the pyramid's immediate neighbourhood (Fig. 2). The new documentation yielded not only a detailed record of hitherto unknown features of the burial chambers' decoration and inscriptions, but also clear dating evidence and data instrumental for reconstructing the tomb's planning and construction process.

The Archaeology of the Tomb

Tomb Beg. S. 503 is located on the slightly elevated southern bank of the wadi between the both royal cemeteries Begrawiya North and South. The tomb's 12.5 m long stairway was originally dug into various geologic strata of basically eroded sand and ferricrete stone to finally a thick stratum of kaolinitic claystone. At 5.2 m depth was the floor level of a small landing, situated well in front of the offering chapel (Figs. 3. 4). It led into two burial chambers with vaulted roofs which were quarried into the claystone rock beneath a hard and relatively stable ferricrete layer. Each forms a rectangle of almost equal size: 4.55 × 2.8 m. The outer face of the doorway was decorated with an unfinished cavetto cornice and framed by dressed mouldings (Fig. 5).

The superstructure is a rubble-fill pyramid with stepped courses and plain corners. It has an inclination of roughly 62° and measures at the bottom of its plinth course c. 10.33 m E-W × 10.41 m N-S. The cladding is supported inside the pyramid body by a 1.3 m strong masonry of two rows of roughly hewn sandstone blocks. Its spacious joints were sealed with a fluid mud mortar. The chapel walls and the pylon were executed in double-shell



4 Ortho-photographic plan of tomb Beg. S. 503 combining various stages of its excavation.
(Fig.: © QMPS, P. Wolf, 2018; 3D-model by P. Wolf, A. Rodenwaldt and L. Jansen, 2016–2018)

- 5 Entrance to the burial chambers of Beg. S. 503. The remains of the unfinished cornice are visible to the left and right of the doorway arch.
(Photo: © QMPS, P. Wolf, 2016)



- 6 Ortho-photograph of the north wall in the antechamber.
(Photo: © QMPS, P. Wolf, 2016)



- 7 Antechamber of tomb Beg. S. 503 after its re-opening in February 2016.
(Photo: © QMPS, P. Wolf, 2016)



masonry with a fill of stone rubble and earthen mortar. The interior supporting masonry of the pyramid rests on kaolinitic claystone rubble that obviously originates from the quarrying of the burial chambers. Up to the height of 1.5 m, most of this claystone rubble fill was clearly stratified by horizontal layers, approximately corresponding to the height of the sandstone supporting and cladding block courses. The fill-material was therefore brought into the pyramid and carefully distributed layer by layer according to the setting of the pyramid masonry.

The Burial Chambers' Decoration and Funerary Texts

Both chambers are decorated with Egyptian-style funerary texts and accompanying scenes. On the white plastered walls of the antechamber, texts and figures are painted in bright colours of white, black, red, yellow and blue. Its north and south walls display vertical text columns and mummiform deities separated by text columns (Fig. 6). Its ceiling is spanned by a figure of goddess Nut and is filled with rows of five-pointed yellow ochre stars. The doorway into the main burial chamber is decorated with a pylon and a winged disc cornice flanked by Isis and Nephthys (Fig. 7). In contrast to the colourfully decorated antechamber, in the burial chamber texts and figures are executed exclusively by yellow ochre line drawings on an entirely black background (Fig. 8). The ceiling vault and the upper parts of its north and south walls are covered by an astronomical text. A rounded niche in the centre of the west wall may have held a sculpture.

In January to March 2016, we recorded all walls and their paintings with high-resolution ortho-photographs under normal and UV-light (Fig. 9). The UV-light photography substantially clarified the details of both figures and inscriptions. In combination with G.A. Reisner's and D. Dunham's records as well as personal field notes and photographs of J.W. Yellin, this new documentation was of paramount significance for the study on the burial chamber's iconography and epigraphy that has meanwhile been completed by her and J. Hallof.

- 8 Main burial chamber in tomb Beg. S. 503.
(Photo: © QMPS, P. Wolf, 2016)



- 9 The south wall's upper panel in the burial chamber. The upper ortho-photograph was taken in normal light, the lower one in UV-light.
(Photos: © QMPS, P. Wolf, 2016; 3-D model by P. Wolf and A. Rodenwaldt, 2016)



- 10 Sample axis at pyramid Beg. N. 2 before and after the conservation tests.
(Photos: © RaO, J. Hamann 2016)

Dating and History of the Tomb

Charcoal samples and tiny wooden fragments recovered during the excavations were instrumental for dating the tomb and reconstructing its history. The relevant samples cluster into three clearly distinguishable groups. The first group dates the construction of the tomb to c. 790–390 cal BC. In combination with the results of J. Yellin's and J. Hallof's studies as well as with several architectural features, we assume that the tomb dates to the turn from the 5th to the 4th century BC – more than a century earlier than originally proposed by G.A. Reisner. It therefore belongs to the late Napatan and not to the Meroitic period of the Kushite kingdom and must have been one of the first royal pyramids at Meroe. The samples of the second group were recovered from two fire pits next to the pyramid. With 90–320 cal AD they date to the later Meroitic time and raise the question as to which kind of activities might have taken place during that period next to the pyramid. The wood samples of the third group were recovered from the antechamber's floor. Based on their radiocarbon ages between the mid-17th century AD and today, they very probably originate from the Harvard-Boston Expedition's equipment.

Outlook

We may now characterise Beg. S. 503 as the most comprehensively recorded and one of the most fascinating tombs in the royal cemeteries of Meroe. First conservation analysis resulted, however, in the decision to block the burial chambers again and to backfill the stairway after documentation. Unfortunately, the burial chambers and their very fragile paintings would hardly survive visits by tourists without complex and extremely expensive conservation measures and technical safeguards. Therefore, various proposals to present the burial chambers to the public are under discussion including a new and unique approach in Sudan and in Africa: the re-production of an accurate 1:1 model of the burial chambers on the basis of the generated 3-D model to be presented in the Wadi Tarabil Museum at the site.



11 Stabilization work at top of pyramid Beg. N. 2. (Photos: © RaO, J. Hamann 2016)

A Conservation Strategy for the Pyramids of Meroe

The pyramids of Meroe and their still well-preserved relief decorations are adversely affected by various climatic and manmade threats of which, nowadays, destruction by sand abrasion and damage by visitors are the most severe. An extensive campaign to preserve and to document the pyramid cemeteries was already carried out between 1976 and 2004 under the direction of F.W. Hinkel. He and his NCAM technician team reconstructed and that way secured 27 pyramids, their offering chapels and reliefs in the North and the South cemetery. After more than ten years, QMPS revived these conservation and preservation efforts in 2015 (Riedel et al. 2016).

The basis for all conservation efforts was a systematic damage catalogue of the royal cemeteries assembled in 2015–2017 by the conservation company *Restaurierung am Oberbaum* (RaO) under the direction of J. Hamann. In addition, RaO prepared a detailed mapping of the damages at tombs Beg. N. 2 and 9 to estimate the necessary extent of conservation measures. In a second step, the conservation goal was defined. Crucial for all measures at Meroe is to protect and to save its monuments and their setting with respect to their *Outstanding Universal Value* (OUV), their integrity and authenticity. Therefore our basic strategy is to preserve the character of the site – the ruins surrounded by an untouched savannah landscape.

In a third step, tomb Beg. N. 2 was chosen as a prototype for first conservation measures. Between 2016 and 2018, RaO applied several conservation materials and methods to assess their suitability and durability (Figs. 10–11). For example, various procedures to conserve and to strengthen the pyramid's cladding masonry were tested. After securing the funerary chapel's original remains, its blocks were registered and it was carefully dismantled in winter 2017/2018. The fragile sandstone blocks were transported to the magazine of the nearby QSAP-camp to undergo consolidation and conservation under controlled laboratory conditions.

Furthermore, a strategy was discussed, as to how to deal with previous conservation and reconstruction work. F.W. Hinkel's anastylosis and reconstruction have proven to effectively preserve the archaeological remains. However, 15 years after his death as well as unfinished reconstruction work

12 Reconstruction work at the chapel of pyramid Beg. S. 10.
(Photo: © QMPS, T. Bunk, 2017)



necessitated new efforts. It was decided to continue Hinkel's work and to complete the yet unfinished chapel reconstruction at pyramids Beg. S. 6 and 10 in accordance with his methods (Figs. 12. 13). In addition, conservation work at the reliefs of these two chapels commenced by cleaning, conserving and replenishing them with artificial stone mortar to re-establish the original wall structures.

Site Management and Tourism Development at Meroe

Since 2014, QMPS analysed in close cooperation with CSRM (Cultural Site Research and Management, directed by D. Comer) visitor demographics at Meroe, assessed the current visitor situation and developed a sustainable tourism plan. On the basis of this evaluation, CSRM defined several management zones related to the major sites of the 'Island of Meroe': Meroe City and the pyramids of Meroe, Musawwarat es-Sufra and Naga. Interpretive themes were assigned to these zones together with proposed visitor itineraries. In addition, necessary visitor facilities and their locations were suggested and, finally, CSRM identified the needs for the development of a sustainable tourism. QMPS immediately started implementing these ideas and plans. The site entrance to the pyramid cemeteries of Begrawiya North and South was rehabilitated, enhanced with new facilities and inaugurated 26th January 2017 with the exhibition '*The Pyramids of Meroe*' that displays panels to welcome and inform tourists about the ancient necropolises (Fig. 14). In the same year, the *Begrawiya-Visitor-Centre* was implemented in the 'Nubian Houses' south of the Meroe site buffer zone to provide basic infrastructure and orientation for visitors and local staff (Fig. 15). It comprises a permanent office to enable the presence of a site management team. Regular site monitoring and maintenance was initiated in 2016 by Mahmoud Suliman Bashir (Resident-Manager of the Island of Meroe World Heritage Site and Regional Director of Antiquities – River Nile State, NCAM). Furthermore, the office organises educational events such as lectures in local schools and villages, guiding of school groups as well as training workshops for tourist guides.

13 Plastered chapel pylon of pyramid Beg. S. 6
(Photo: © QMPS, A. Riedel, 2017)





14 Public opening of the exhibition 'The Pyramids of Meroe' in the site entrance to the cemeteries of Begrawiya North and South. (Photo: © QMPS, U. Nowotnik, 2017)

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For more information on the QSAP and the work of the QMPS visit

<https://www.qsap.org.qa/en/> [↗] <09.01.2019>

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15 The new Begrawiya-Visitor-Centre. (Photo: © QMPS, Mohamed Tohami, 2018)