

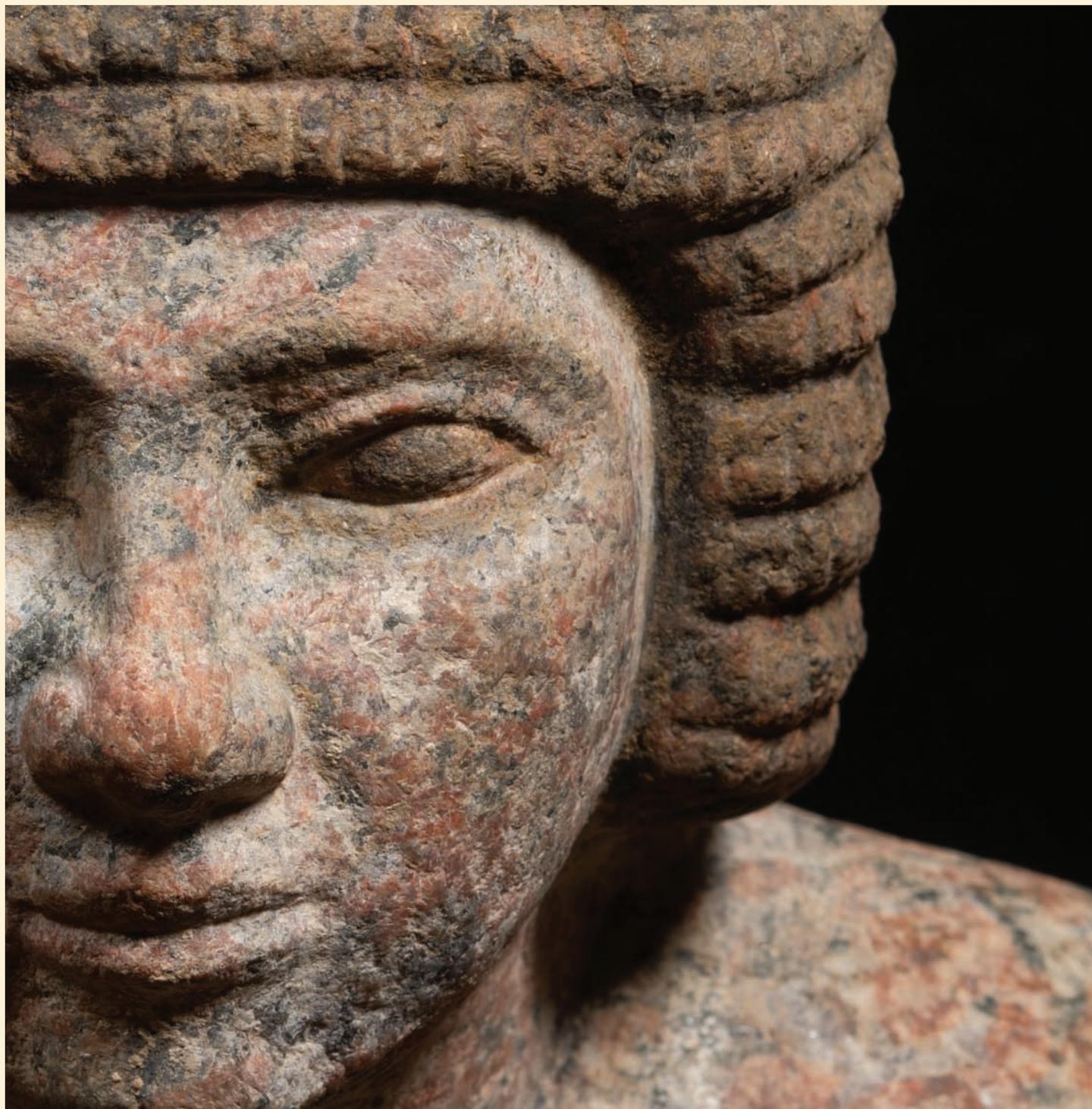
Charles University, Faculty of Arts

**P E S**



PRAGUE EGYPTOLOGICAL STUDIES

XXV/2020



**Tomb of Kairsu.  
Archaeology and  
pottery**

**The fishing and  
fowling scene of Ibi**

**The men  
of the *hnr***



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Detail of the statue of Kairsu (79/AC33/2018) (photo P. Košárek)

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# P E S



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# Tomb of Kairsu discovered in Abusir (AC 33)

Miroslav Bárta – Lucie Jirásková – Jaromír Krejčí – Martin Odler –  
Vladimír Brůna – Petra Brukner Havelková – Zdeňka Šůvová

## ABSTRACT

The tomb of Kairsu is located north of the pyramid of Neferirkare and is part of a so far unexplored cemetery dating to the reign of Neferirkare – Nyuserre. The mastaba features several highly unusual characteristics. Basalt blocks had been used for the pavement in front of the façade and in the chapel. To date, it is the only attestation of such a practice in a non-royal tomb in the Old Kingdom. Some of the titles of Kairsu show that he was a high ranking official. Kairsu was overseer of all royal works of the king and foremost of the House of Life. There was a very close link established between this institution, which was in fact a centre of knowledge and wisdom in the Old Kingdom, and the god of creation Khnum. It is also important that the House of Life appears from the reign of Nyuserre when Osiris is attested for the first time. Another important feature of the tomb is the fact that the statue of the tomb owner was placed in front of the sarcophagus. This only confirms the previous assumption that ancient Egyptians were placing statues not only in different areas of tombs' superstructures but also in the burial chambers. There is a strong possibility that the owner of the tomb may be identical to the famous sage of Egyptian history, who, according to a much later tradition, was author of the *Loyalist teaching*, *Teaching for Kagemni* and *Teaching of Kairsu* and also father of the early Sixth Dynasty vizier Kagemni.

## KEYWORDS

Abusir – Fifth Dynasty – Neferirkare – Kairsu – overseer of all royal works of the king – House of Life – Khnum – sage

## مقبرة كإيرسو المكتشفة في أبوصير (AC 33)

ميروسلاف بارتا – لوتسيا يراسكوفوفا – يارومير كرتشى – مارتن أودلر – فلاديمير برونا – بيترا هافيلكوفوفا – زدينكا سوفيوكوفا

## ملخص

تقع مقبرة كإيرسو إلى الشمال من هرم الملك نفرإيركارع، وهي تعتبر جزء من جبانة غير مكتشفة حتى الآن تؤرخ بفترة حكم الملوك نفرإيركارع ونيوسرع. تتميز المصطبة بالعديد من الخصائص المعمارية غير العادية. حيث تم استخدام كتل من أحجار البازلت لرصف الأرضية أمام الواجهتها وكذلك مقصورة القرايين. وحتى الآن تعتبر ظاهرة استخدام أحجار البازلت في أرضيات مقابر الأفراد هي الدليل الوحيد من مقبرة غير ملكية خلال عصر الدولة القديمة. تُظهر بعض ألقاب كإيرسو أنه كان مسؤولاً رفيع المستوى. حيث حمل لقب المشرف على جميع الأعمال الملكية للملك، وكذلك لقب في مقدمة (أمام) بيت الحياة. حيث كان هناك ارتباطاً وثيقاً جداً بين هذه المؤسسة (بيت الحياة)، والتي كانت تعتبر في الواقع مركزاً للمعرفة والحكمة في الدولة القديمة، وبين الإله الخالق خنوم. من المعروف أيضاً أن بيت الحياة ظهر خلال عصر الملك نيوسرع، وهي نفس الفترة التي بدأت تشهد ظهور الإله أوزير لأول مرة. ميزة أخرى مهمة توجد بمقبرة كإيرسو وهي حقيقة أن تمثال صاحب المقبرة قد وضع أمام التابوت بحجرة الدفن. وهو الأمر الذي يؤكد الافتراض السابق بأن المصريين القدماء كانوا يضعون التماثيل ليس فقط في المناطق المختلفة من البناء العلوي للمقابر، ولكن أيضاً في حجرات الدفن. وهناك احتمال كبير بأن يكون صاحب المقبرة هو نفسه الحكيم الشهير في التاريخ المصري، والذي كان وفقاً لتقاليد لاحقة، مؤلفاً لتعاليم الولاء، تعاليم كاجمني، وتعليم كإيرسو، وأيضاً والد الوزير كاجمني من بداية الأسرة السادسة.

## الكلمات الدالة

أبوصير – الأسرة الخامسة – نفرإيركارع – كإيرسو – المشرف على جميع الأعمال الملكية للملك – بيت الحياة – خنوم –

حكيم



Fig. 1 View of the tomb from the top of the pyramid of Neferirkare (photo P. Košárek)

The tomb designated as AC 33 in Central Abusir belongs to an official, Kairsu, and was fully excavated during the fall–winter season of 2018.<sup>1</sup> This season continued the preliminary survey carried out in 2015 during which the basic outlines of the structure were documented. However, an unpublished photograph kept in the archive of the Swiss Institute for Architectural and Archaeological Research on Ancient Egypt, Cairo (see fig. 7a) indicates that it was already Ludwig Borchardt at the beginning of the twentieth century who carried out some limited excavation in the area.<sup>2</sup>

## ARCHITECTURE

The tomb is located in the heart of the royal necropolis, north of the pyramid of Neferirkare (fig. 1 and p. 15). Therefore, the high status of its owner could be anticipated from the very beginning. The masonry of the mastaba and its decoration were largely destroyed already during antiquity and so were individual burial installations. The tomb is oriented in a north-south direction, with an entrance from the east. Its ground plan measures approximately  $29.20 \times 16.10$  m and does not include the missing casing of white limestone blocks which is preserved intact in a few places (figs.

2 and 3). Given the (mostly) missing casing, it may be estimated that the original size of the ground plan could have been about  $31.00 \times 17.50$  m. The tomb's superstructure consists of an outer perimeter wall built of local limestone about 0.75–0.80 m in thickness. Inside there is mud brick core masonry, 0.90–1.40 m wide. The space in between them is 1.00 m wide and is filled with sand and rubble. The majority part of the western superstructure of the mastaba comprised sand and rubble that were covered with a dense layer of limestone chips.

The superstructure of the mastaba is dominated by the main cult chapel (Chapel 1), occupying, unusually, the very central position within the structure, accompanied by a serdab and a smaller cult chapel (Chapel 2), whose mud brick walls were apparently built into the masonry of the tomb secondarily – in connection with the construction of the second burial installation (see further). In the substructure, three burial installations were found.

One of the most extraordinary features of the mastaba is that both the pavement of Chapel 1, as well as the pavement of its entrance recess and the passageway to it, consisted of basalt blocks. The blocks have been preserved within the entrance area, while inside the chapel itself they are largely missing.

<sup>1</sup> The authors are indebted for critical comments and several references to two anonymous reviewers.

<sup>2</sup> We tender our thanks to Cornelius von Pilgrim, director of the Swiss Institute for Architectural and Archaeological Research on Ancient Egypt, for his kind permission to publish the photograph. The work on this scientific output was enabled by the Progres Q11 grant *Complexity and resilience. Ancient Egyptian civilization in a multi-disciplinary and multi-cultural perspective at Charles University* and VEG 2020 subsidy, Ref. No. MSMT-40214/2019-1.

## FAÇADE

The casing of the eastern façade of the tomb made of carefully worked fine white limestone blocks was found largely destroyed or missing (figs. 4a–b). In its centre, there was an entrance portico which was 3.00 m wide (each wing being about 2.12 m long) and 2.05 m deep. The entrance leading into the main chapel (Chapel 1) was 1.70 m long and 0.75 m wide. The maximum preserved height of the eastern wall of the tomb reaches 2.40 m. It was in this area that quite a large portion of the fragments of relief or painted decoration of the chapel and portico were found (see below).

Two cult niches were built into the eastern façade (see figs. 2 and 3). Again, similarly to the central location of the chapel within the superstructure of the tomb, the fact that two niches feature in the façade of the mastaba is also rather unusual. The southern niche, largely destroyed, was 1.40 m wide with a central recess 30 cm wide and 15 cm deep. The northern niche

still preserved its ground plan and was even wider – 2.03 m with a single recess (32 cm wide and 5 cm deep) and 2.33 m deep. Its floor is 0.50 m above the floor of the corridor running along the eastern façade. In the limestone masonry remaining *in situ*, construction lines for the positioning of the false doors were found. Their existence was also documented by several fragments found in the area to the east of both niches. Starting on the floor and running parallel to the eastern wall of the tomb, there was a small step in front of the northern niche which was 1.30 m long, 0.40 m wide and 0.30 m high – however, its northern end is missing. It was built of mud bricks, small limestone chips and pottery sherds.

## CHAPELS

During the construction of the mastaba, two cult chapels were built in its masonry. An internal part of

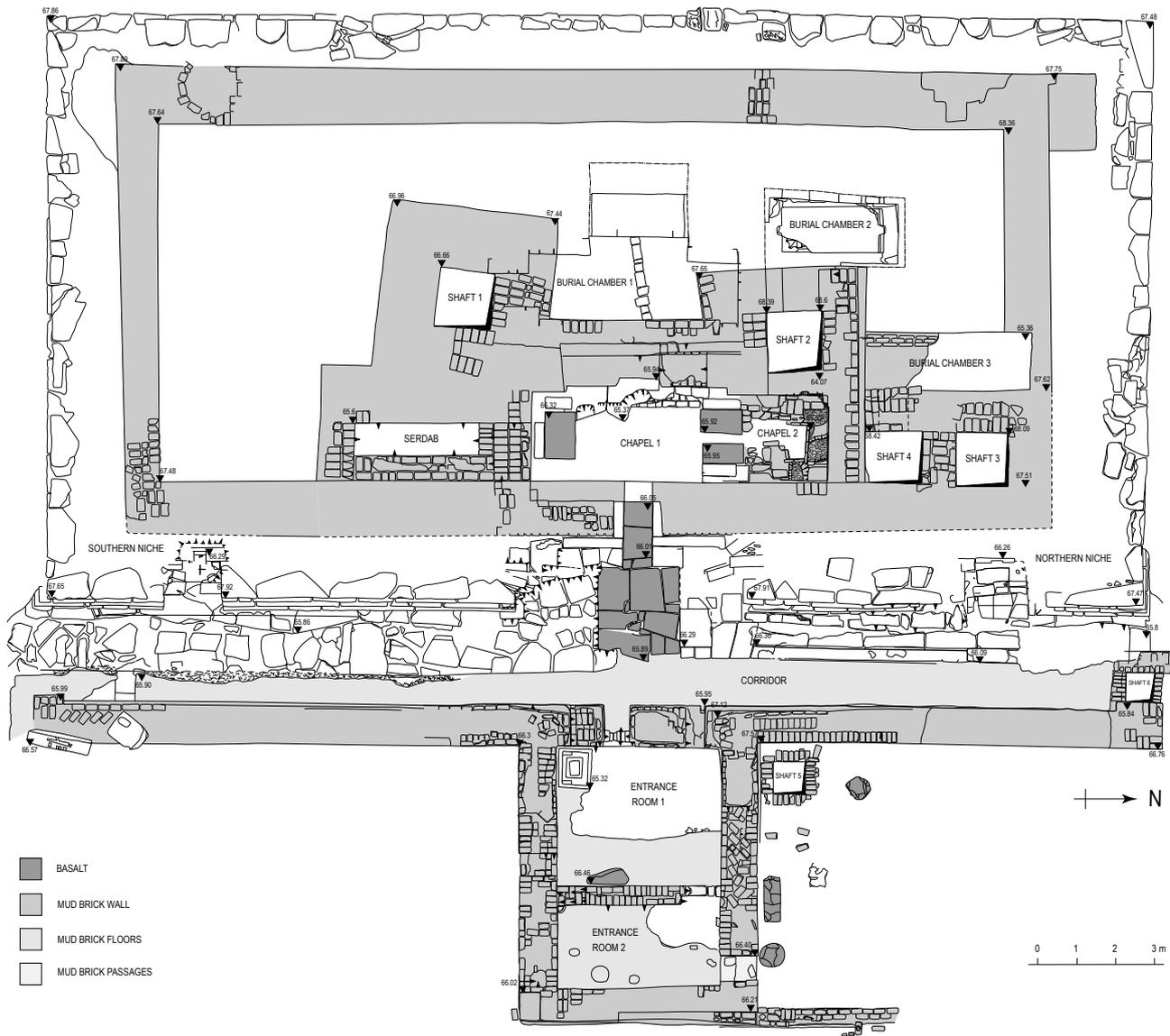


Fig. 2 Ground plan of Tomb AC 33 (drawing M. Odler, M. Bárta, J. Krejčí, K. Arias Kytarová, L. Jirásková, L. Vařeková)

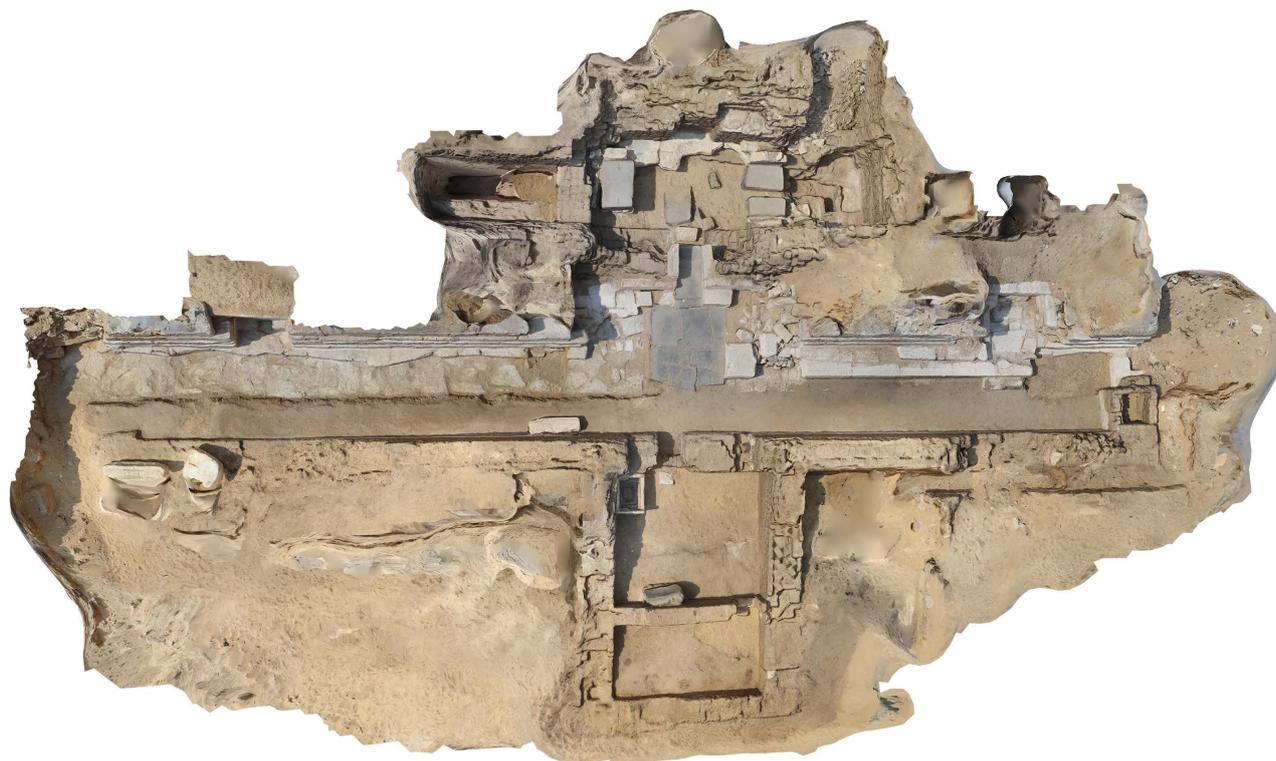


Fig. 3 Three-dimensional visualisation of the eastern part of the tomb and of entrance rooms, view from the east (author V. Brůna)



Fig. 4 Eastern façade of the tomb from south-east (a) and north-east (b) (photos P. Košárek)

the original plan was the construction of Chapel 1, the ground plan of which measures  $4.15 \times 1.97$  m and its longer axis is oriented in a north-south direction. The walls of the chapel were cased with white limestone blocks measuring 0.30 m in thickness. Most of the southern part of the chapel is taken by a monolithic, well-dressed basalt block which measures  $1.27 \times 0.80$  m, being 0.35–0.53 m high. It probably served as an altar for a serdab, located to the south of the chapel. The western wall was taken up by a recess for a large false door, probably made of red granite. The width of the recess was 3.10 m and it was 0.42 m deep in its maximum (fig. 5, pl. I: 1).

To the north of Chapel 1, there was a 1.40 m wide entrance into smaller Chapel 2 built of mud bricks, which was related to the burial in Shaft 2 (see below),

situated directly to the west of it. In its western wall, there was a simple niche and the chapel's ground plan can be estimated at  $1.20 \times 2.28$  m, being oriented east-west. Unfortunately, the architecture of this chapel was badly damaged. Despite this, it may be said that this chapel was added later into the masonry of the tomb.

#### SERDAB

This structure is located to the south of Chapel 1 and separated from it by a 0.95 m wide wall. It measures in ground plan  $3.50 \times 0.92$  m. Its walls were covered with a 3 cm thick layer of black Nile mud plaster with a strong organic admixture. The plastered walls were coated with a thick whitish paint. The floor is largely missing,



Fig. 5 Western wall in Chapel 1 (photo P. Košárek)

originally probably only coated with mud plaster. There is a step, probably secondary, in the eastern wall, some 0.40 m above the original floor and extending to the east for 0.80 m.

#### ENCLOSURE WALL AND OPEN CORRIDOR

A mud brick retaining wall 1.00 m wide was built along the eastern face of the mastaba. This wall created an open corridor 1.52 m wide, running along the eastern façade of the mastaba. The faces of the wall were covered with a thick layer of plaster and whitewashed. The floor of the corridor was repeatedly coated with thin Nile-mud layers and also white-washed. This corridor could be entered, in the first stage of the development of the tomb, from the north by an entrance 1.28 m wide, which was at a later stage blocked and converted into Shaft 6 (see below). Aligned with the entrance into Chapel 1, the enclosure wall was originally interrupted by a 3.14 m wide opening. This opening was later blocked up by a mud brick wall of the same width and a new, much narrower entrance (0.70 m) – slightly off the axis – was created, giving access to the major chapel.

#### ENTRANCE ROOMS

Together with the construction of the enclosure wall, a mud brick appendix was also constructed to the east of it, in front of the opening in the eastern wing of the wall. This construction consisted of two rooms

used during the lifetime of the mastaba, which were labelled as entrance rooms. Entrance Room 2, the easternmost part of the tomb, was found completely empty, measuring  $4.18 \times 2.12$  m, with walls preserved to a height of 0.65 m (fig. 6). It was entered from the outside of the compound by a narrow doorway in the northern wall, at its eastern end. It was 0.70 m wide and it was found walled up by a mud brick wall and masonry (see below for discussion on the dating of this blockage). A small passage in the western wall of the room, at its northern end, gave way to Entrance Room 1 measuring  $4.20 \times 3.60$  m. Both rooms had a floor made of thick mud coating, which was better preserved in Entrance Room 2 contrary to Entrance Room 1. In the southwest corner of Entrance Room 1 stood a limestone purification basin measuring  $0.82 \times 1.10$  m in ground plan, 0.65–0.74 m high (figs. 7a–c). Slightly off the center of the room's western wall, there is the above-mentioned passage giving access to the corridor and the cult chapel. In the area to the north and south of the entrance rooms, numerous fragments of relief and painted decoration were found. In Entrance Room 1 and in the area to the north of the entrance rooms, several large fragments of basalt were found.

#### SHAFT 1

Opening:  $1.25 \times 1.35$  m, lined with mud bricks  
Depth: 6.25 m

This shaft is located to the southwest of Chapel 1 and provides access to the principal burial belonging to



Fig. 6 Entrance Room 2 from the south (photo J. Krejčí)

Kairsu and the relieving chamber above it. In the northern wall of the shaft there are two entrances, one above the other, separated by several limestone roofing blocks about 70 cm in thickness. The floor of the shaft was originally paved with limestone chips. Both rooms were built in an open pit and are separated by several large white limestone blocks creating at the same time the floor for relieving chamber and ceiling for Burial Chamber 1 (figs. 8–9). Building burial chambers in open pits was a particular technique of the period used in some other places in Abusir as well. For instance, the burial chamber of the princess Khekeretnebtj and other owners of tombs in the cemetery were built in the same fashion (Verner – Callender 2002), and so were some of the tombs in the cemetery east of the mortuary temple of Nyuserre, excavated by Ludwig Borchardt at the beginning of the twentieth century (Borchardt 1907: 109–134).

Relieving chamber is entered by a narrow passage 0.60 m wide, 0.80 m long and 1.40 m high, which was originally bricked up; however, this mud brick partition was broken by tomb robbers. The chamber consists of two parts (pl. I: 2). The eastern one is 5.50 m long and 1.70 m wide while the western one, which has its floor 0.20 m lower, measures 2.00 × 2.50 m. The whole room was built of mud bricks and has an intact mud brick vault. The height of the room is 1.20 m. Lying loosely in the fill, the upper part of the statue of Kairsu (79/AC33/2018\_a) was found, left here by tomb robbers. The room functioned as a relieving chamber for Burial Chamber 1, supporting

thus the weight of the mud brick masonry and the fill of the mastaba core above its vaulted ceiling. This technological solution can be seen in the already mentioned Mastaba of Princesses or in the Khekeretnebtj's mastaba.

Burial Chamber 1 starts about 0.45 m above the shaft's floor. It was accessible by means of a narrow entrance 0.80 m wide, 1.05 m long and 1.00 m high. Its floor is 0.50 m lower than the entrance passage. Immediately behind the entrance there is a ramp descending to the north, which is 1.20 m long, 1.00 m wide with a max. height of 0.40 m. The room consisted of an eastern part that was 5.12 m long and 1.60 m wide, with a fluctuating height of about 1.88 m (fig. 10). Its floor was paved with small, irregular limestone blocks plastered white. The side walls of the room were built of nicely polished local limestone blocks plastered white as well. The western sarcophagus recess was 2.50 m deep and 2.48 m long. The western part of the sarcophagus recess was taken by a ledge 0.85 m wide, which was used to accommodate the lid before the burial. The greater part of the recess was occupied by the limestone sarcophagus. The chest is 2.40 m long, 0.80 m high and 1.10 m wide. The lid is 2.40 m long, 1.20 m wide and up to 0.32 m high, slightly rounded (fig. 11).

In front of it, standing in the original position the lower part of the seated statue of Kairsu was found (79/AC33/2018\_b; see pl. II.1), featuring some other titles of the official which are listed below. The statue – when put together – is 0.73 m tall, with a base 0.41 × 0.23 m, 0.28 m high (pl. IV).



Fig. 7a Entrance Room 1, purification basin as discovered by Ludwig Borchardt (Courtesy of the Swiss Institute for Architectural and Archaeological Research on Ancient Egypt, Cairo, photo no. A2034)



Fig. 7b Entrance Room 1, purification basin after cleaning in 2018 (photo J. Krejčí)

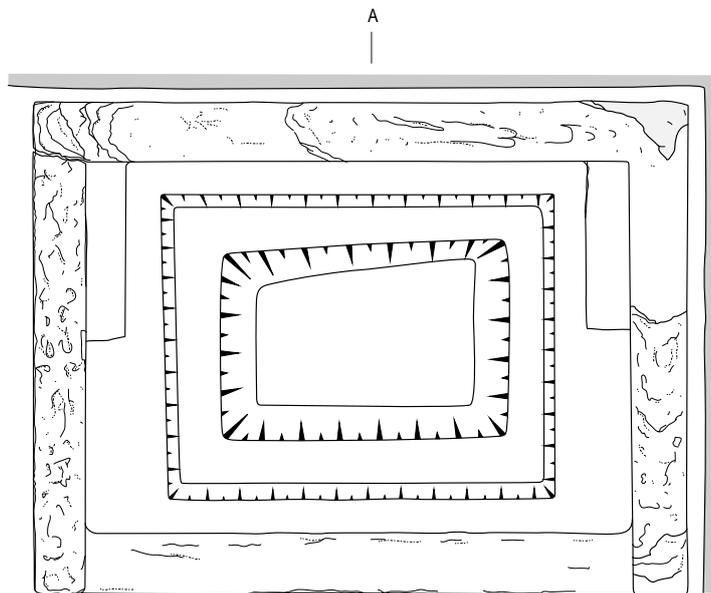
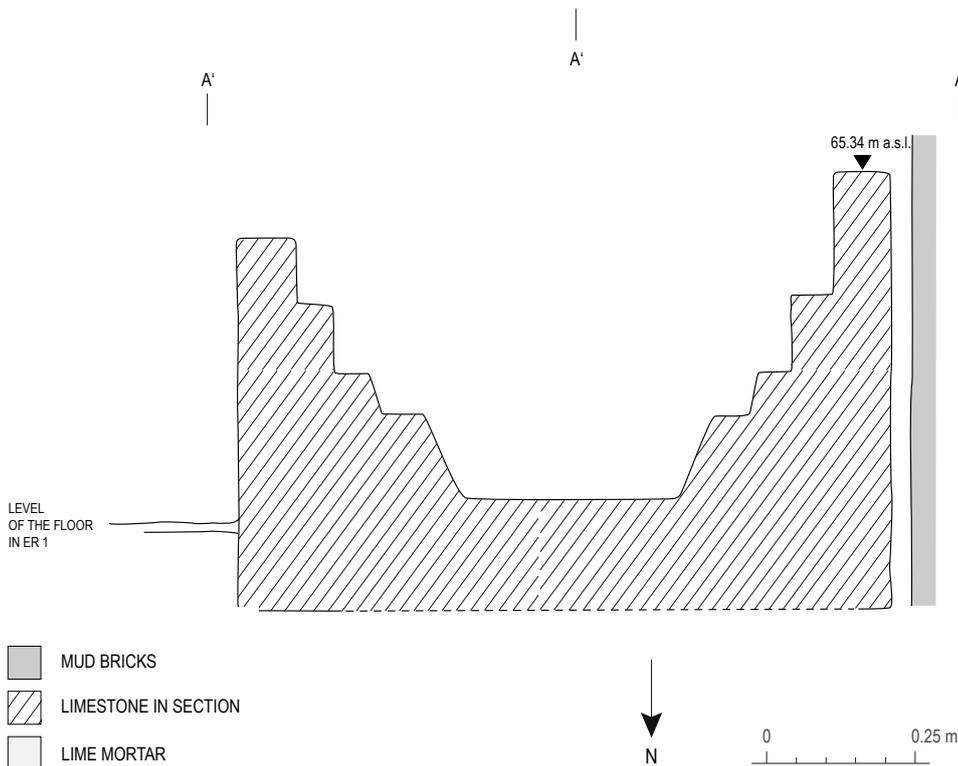


Fig. 7c Entrance Room 1, purification basin (drawing J. Krejčí, L. Vařeková)



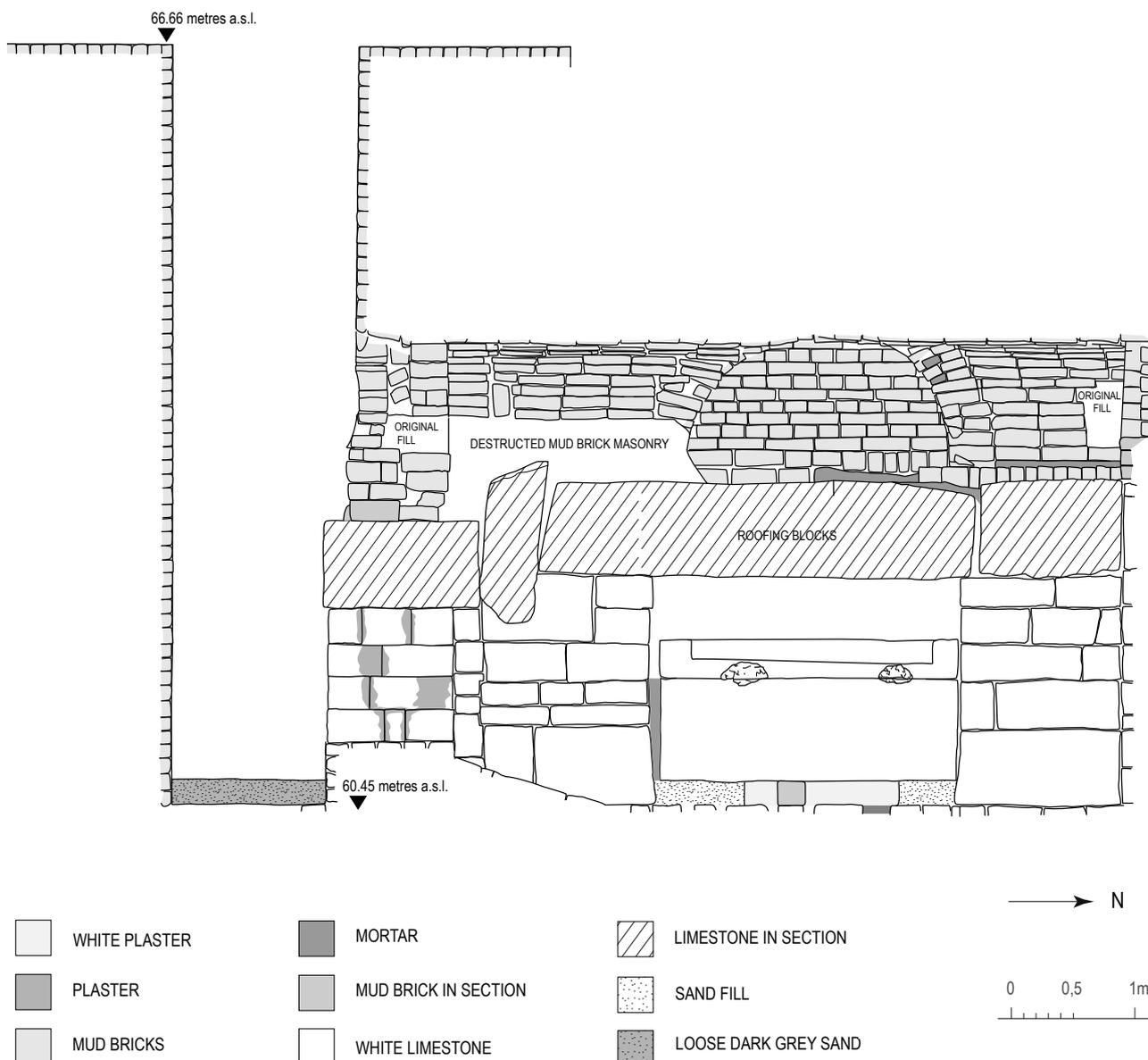


Fig. 8 Shaft 1, relieving chamber and Burial Chamber 1, north-south cross-section (drawing M. Bárta, J. Krejčí, L. Vařeková)

Besides the statue some parts of the burial equipment were also found – fragments of limestone canopic jars, fragments of travertine model vessels, pottery, *etc.* (see below and Arias in this volume).

#### SHAFT 2

Opening: 1.63 × 1.53 m, lined with mud bricks  
Depth: 3.94 m

This shaft is located to the west of Chapel 2. The shaft opening measures 1.63 × 1.53 m. There is a narrow entrance in its western wall, cased with a mud brick wall, 0.85 m wide and 1.10 m long with a height of 0.85 m, which leads to a vaulted burial chamber (fig. 12). Both the shaft and the chamber were constructed in an open pit. The entrance into the burial chamber was originally blocked by a mud brick wall, now destroyed. Most of the chamber's space is occupied

by a large limestone sarcophagus. The chest measures 2.48 × 1.12 m and is at least 0.80 m high (its lower part is under the level of the Nile mud floor of the burial chamber, so its total height could not be measured). The lid is 2.48 m long, 1.12 m wide and max 0.40 m high, slightly vaulted (fig. 13). Both on the southern and northern side of the lid there is a handle in the centre. The room measures 3.28 × 1.82 m, oriented in a north-south direction and was originally cased with small limestone blocks of 0.10 m in thickness except for the western wall where they were of double thickness. These limestone blocks made in this way a plinth running along the walls of the chamber. The plinths reached to a height of 0.85–1.00 m. It is from here that the mud brick vault started (fig. 14). The total height of the chamber is 2.10 m.

During the excavation of the burial chamber, parts of the burial equipment were also found – limestone canopic jars, travertine model vessels, pottery, *etc.*

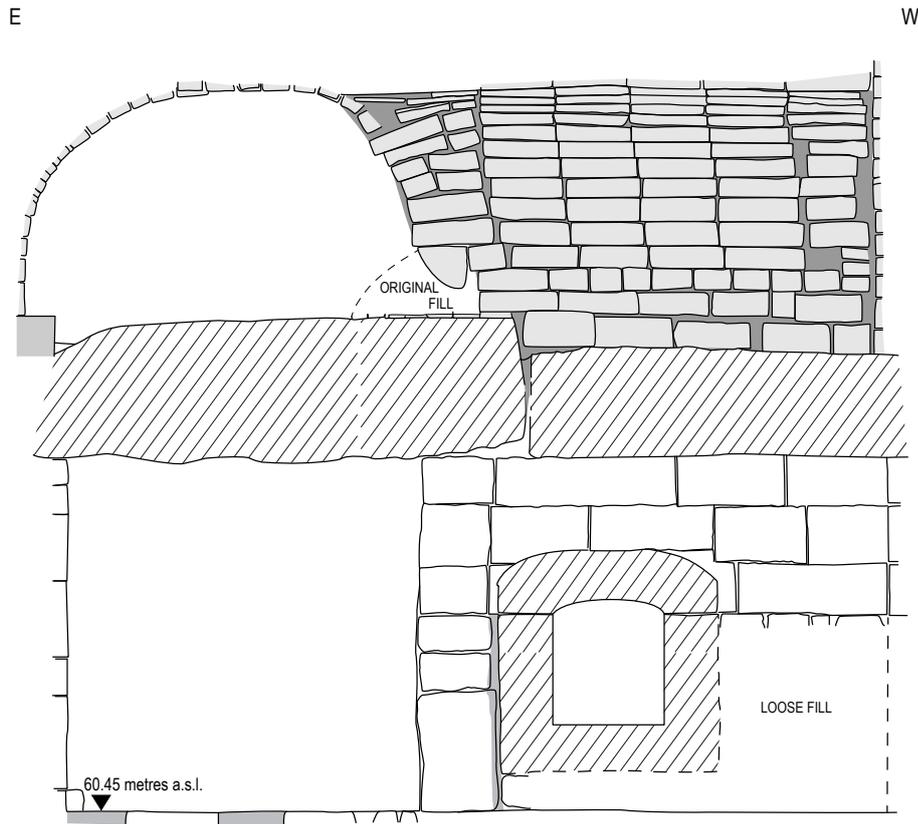


Fig. 9 Shaft 1, relieving chamber and Burial Chamber 1, east-west cross-section (drawing M. Bárta, J. Krejčí, L. Vařeková)

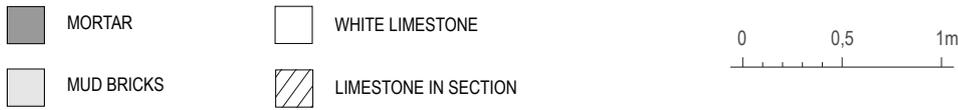


Fig. 10 Shaft 1, Burial Chamber 1, looking to the south (photo P. Košárek)

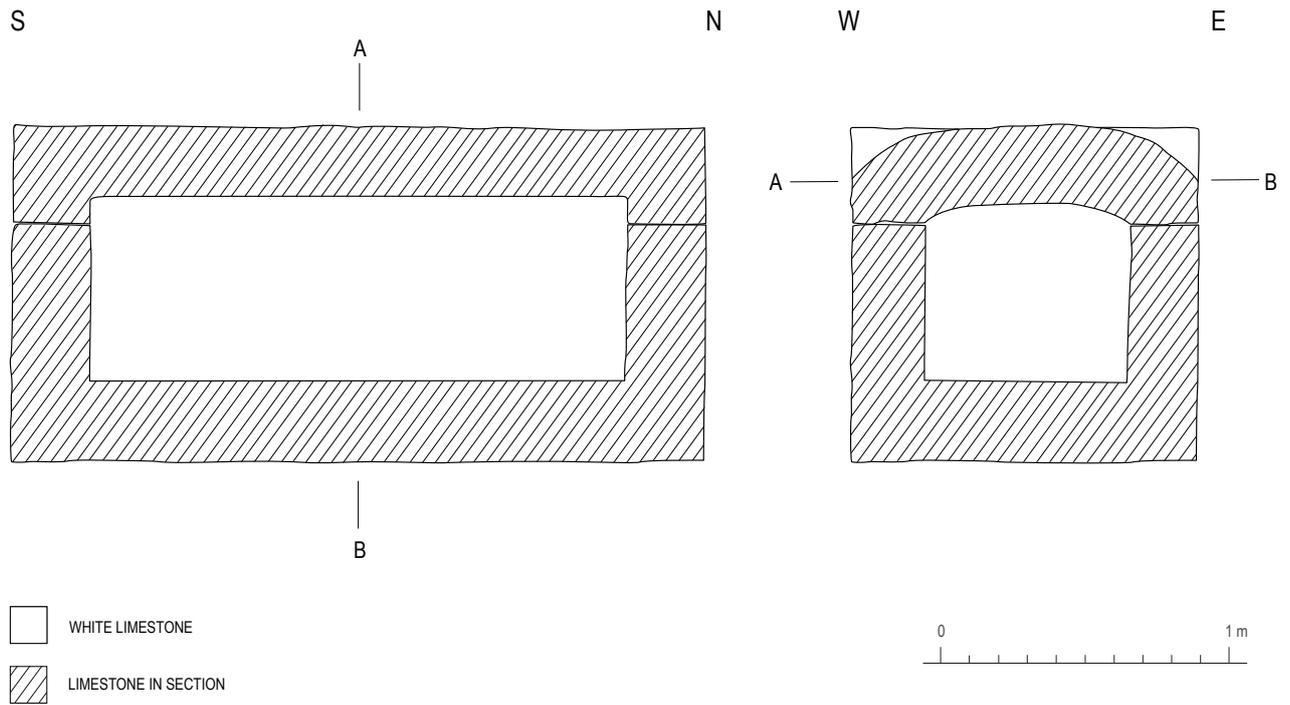


Fig. 11 Shaft 1, Burial Chamber 1, sarcophagus, cross-sections (drawing M. Bárta, L. Vařeková)



Fig. 12 Shaft 2, Burial Chamber 2 (photo P. Košárek)

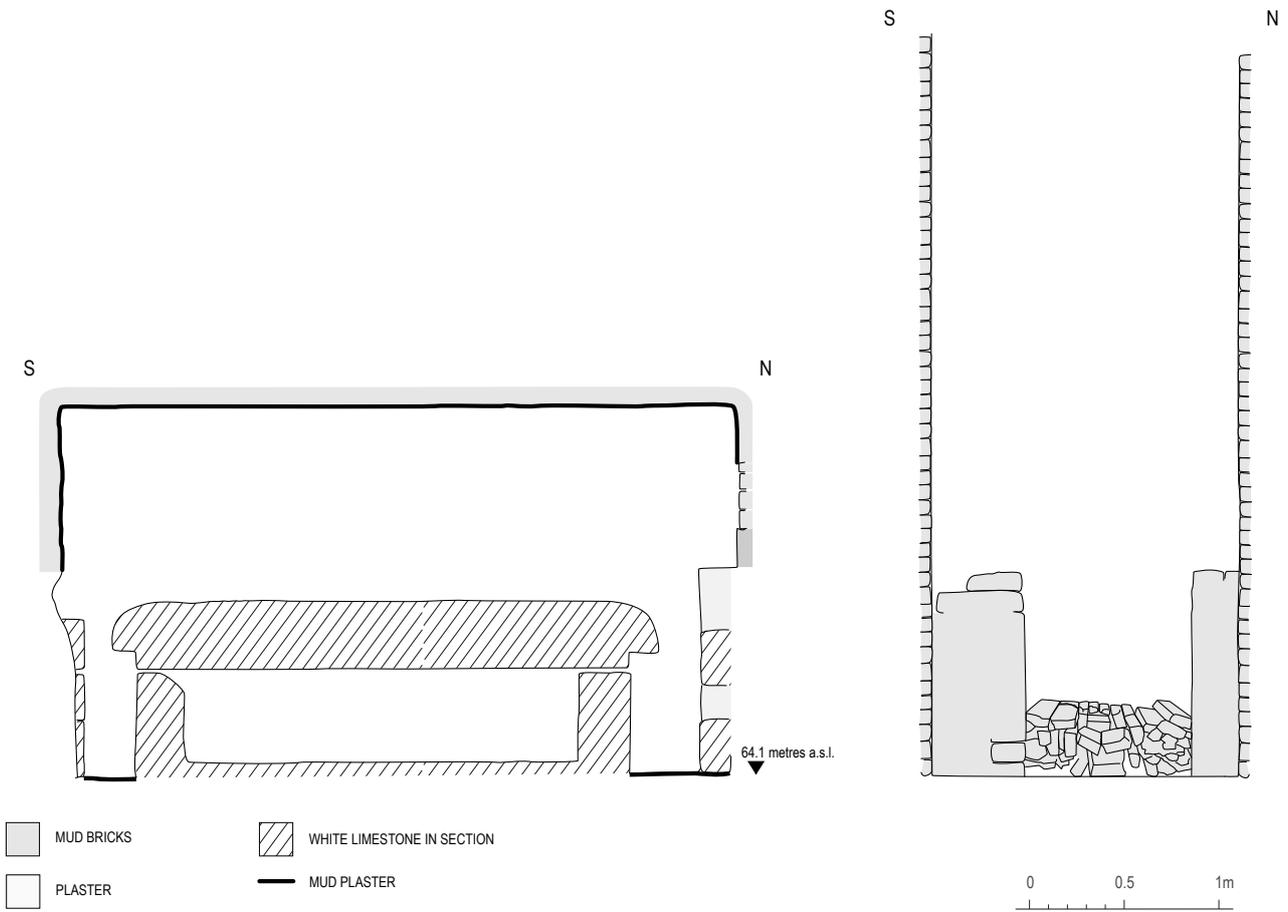


Fig. 13 Shaft 2, Burial Chamber 2, north-south cross-section and entrance to the burial chamber, view to the east (drawing M. Odler, L. Vařeková)

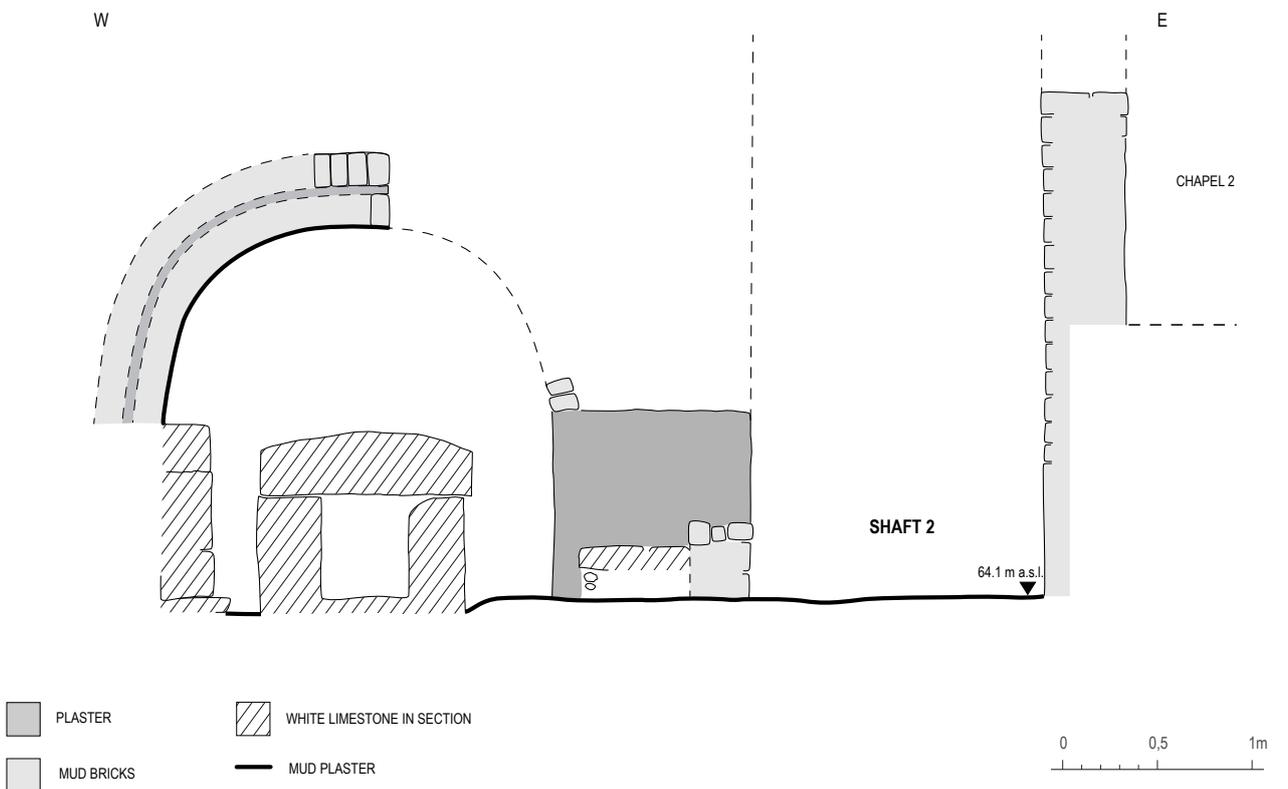


Fig. 14 Shaft 2, Burial Chamber 2, east-west cross-section (drawing M. Odler, L. Vařeková)

**SHAFT 3**

Shaft opening: 1.30 × 1.30 m, lined with mud bricks  
 Depth: 2.90 m

This shaft is located east of Burial Chamber 3. From the bottom of the shaft there is a narrow passageway 0.80 m wide, 1.00 m long and 1.05 m high, giving access to Burial Chamber 3, measuring 4.33 × 1.76 m in ground plan and 2.95 m high. The burial chamber was built from mud bricks. The side walls are 1.40 m high. The rest of the height is taken by a mud brick vault (fig. 15).

To the south of Shaft 3, there is an opening to Shaft 4. Its dimensions are the same as in the case of Shaft 3 (1.30 × 1.30 m). This shaft, with its side walls built from mud bricks, was 3.20 m deep. In its western side wall, there was made another vaulted passageway leading to Burial Chamber 3. This entranceway (1.60 m high and

1.06 m wide) was, however, walled up again shortly after completion of the shaft and never used (probably because of problems with the stability of the masonry). During the excavation of the much destroyed burial chamber, parts of the burial equipment were also found – fragments of canopic jars, pottery and model copper implements, *etc.* (see below and Arias in this volume).

**SPACE TO THE NORTH OF THE MUD BRICK ENTRANCE ROOMS**

Beside the mud brick entrance rooms built to the east of the mastaba, the area (7.15 m long and 3.75 m wide) adjacent to them from the north was also excavated. The space was closed by a mud brick wall from the east and partially obscured by a later limestone mastaba built on

**Fig. 15** Shaft 3, Burial Chamber 3 (photo P. Košárek)





Fig. 16 Area to the north of the entrance rooms, view from the east (photo J. Krejčí)

the north (see p. 39). The fill of the area was created during the cult services in the mastaba of Kairsu and the analysis of the pottery found in this space shall help with its dating (see Arias in this issue). As the area to the east of this space was not excavated, it was not possible to answer the question when the mud brick wall running to the east of this space was built. It is thus not clear how the space was accessible at the time it was finished. However, it is clear that the space was accessible via the above-mentioned doorway in Entrance Room 2 during its use. In the south-western corner of this space, small mud brick Shaft 5 was unearthed. Its opening was  $0.85 \times 0.86$  m large and its depth was 1.78 m. Judging by the character of the finds (pottery, wooden fragments, parts of bandages), it was used as an embalming deposit. Katarína Arias (see Arias in this volume) dates the pottery found in the fill of this shaft to the first half of the Sixth Dynasty, tentatively.

#### THE NAME AND THE TITLES OF KAIRSU

The evidence for the name Kairsu – “the *ka* is one who created him” (Ranke 1935: 338, no. 22; Ranke 1952: 321, no. 1; Scheele-Schweitzer 2014: 694 [3428]) is for the Old Kingdom very sporadic.

One of the attestations is known from a Giza mastaba “H” (Hassan 1941: 166, 170, 171, fig. 143). Kairsu is depicted here as a major person of the household of the

tomb owner with the following titles: “overseer of the pyramid city of Khafre”, “inspector of the *wab*-priests” and “*ka*-priest”. Kairsu with the title of a scribe is also attested in one of the tombs in the Upper Egyptian nome 10 cemetery in Hammamiyeh as son of the official Kaikhenet and dated to the early Fifth Dynasty (Khouli –Kanawati 1990: 28, 30). It is unlikely that one of these persons is identical to the owner of the Abusir mastaba.

Several attestations of an official Kairsu come from the Abusir archives of Neferirkare where Kairsu holds the title *hrj hbt* and *shd jrjw sn pr-ꜥ* (Posener-Kriéger – de Cenival 1968: pls. 8G, 19A,1, 19A,5, 9B, 31A, 62A,8, 63A,1; Posener-Kriéger 1976: 655–656).

There is also evidence for an official Kairsu in the archive of Raneferef, where Kairsu features in Document 14 Ac with the title *shd hmw ntr* (Posener-Kriéger – Verner – Vymazalová 2006: 53, 227) receiving an amount of cloth, in Document 66 B as a receiver of rations of bread, beer, vegetables and fruit (Posener-Kriéger – Verner – Vymazalová 2006: 157, 290), in Document 65 A,2 (Posener-Kriéger – Verner – Vymazalová 2006: 155, 288) and finally in Document 81 B (Posener-Kriéger – Verner – Vymazalová 2006: 187, 306).

Finally, an official Kairsu is also attested in the decoration of the pyramid temple of Nyuserre (Borchardt 1907: 73, nos. 21, 23).

Some of the titles of Kairsu were preserved on a limestone fragment (11/AC33/2018; pl. II: 2) and on the

statue of Kairsu (79/AC33/2018\_a–b; pl. IV), which were found in the course of the excavation and which feature the following titles:

1. *im3-ꜥ*  
gracious of arm, carrier of the *ima* (Jones 2000: 10, no. 39)
2. *ꜥ-hk3t*  
arm of the (sceptre/god?) *Heqat* (Jones 2000: 348, no. 1298)
3. *(j)m(j)-r3 k3t nbt nt nzwt*  
overseer of all works of the king (Jones 2000: 262, no. 950)
4. *mrjj n nb.f*  
beloved of his lord (Jones 2000: 438, no. 1623)
5. *hm-ntr Hwt-Hr nb(t) nht, nb(t) Kjs*  
... *hem-netjer*-priest of Hathor, Mistress of the Sycamore, Mistress of Qusiya (capital of U.E. 14) (unattested)
6. *[hm-ntr Hnmw] hnty pr-ꜥnh [m swt.f nb.f]*  
[priest of Khnum], foremost of the Mansion of Life [in all his places] (Jones 2000, 570, no. 2100)
7. *hm-ntr Hnmw*  
*hem-netjer*-priest of Khnum (attested also on fragment 265/AC33/2018; Jones 2000: 569, no. 2098)
8. *hr(j)-s3t3 n pr-dw3t*  
keeper of secrets of the Morning House (Jones 2000: 620, 2275)
9. *hrp ꜥh*  
inspector of the palace (Jones 2000: 707, no. 2579)
10. *hrp n3tj*  
inspector of two thrones (Jones 2000: 724, no. 2638)
11. *smr wꜥtj*  
sole friend (Jones 2000: 892, no. 3268)
12. *shd [n hm(w)-ntr?] B3-Nfr-ir-k3-rꜥ*  
inspector [of *hem-netjer*-priests] of the pyramid “The-Ba-of-Neferirkare” (Jones 2000: 932, no. 3440)
13. *shd n wꜥb(w) Hꜥ-bꜥw-33hw-rꜥ*  
inspector of *wab*-priests “The soul of Sahure appears in splendour” (Jones 2000: 921, no. 3385).

#### MAJOR FRAGMENTS OF RELIEF DECORATION

Most of the tomb’s decoration had been destroyed and only a few dozen fragments have survived, and their analysis is pending. For the purpose of this report, the following fragments have been selected for publication. However, in comparison with other non-royal tombs located in Abusir Centre, a relatively high number of fragments of relief and polychrome decoration were found. They were concentrated in three areas: in the area of the southern niche, around the northern niche and in the area of the entrance to Chapel 1 and in the chapel itself. Among these fragments, those of a limestone false door in the northern niche are the most important source of our knowledge of the tomb owner’s titles and his social position within the Egyptian society.

In the fill of the area to the east of the southern niche in the eastern façade of the tomb, numerous fragments

of red granite were found. Most of the fragments were rather small, and on their surfaces only parts of the lines or of hieroglyphic signs were discernible. However, among them, there are fragments that provide more information about the size and quality of this false door. The largest fragment of a red granite false door is represented by 26/AC33/2018 (24.0 × 11.5 × 22.0 cm) – it was found to the east of the northern niche, lying on the broken mud brick enclosure wall. On the fragment’s surface, beside a vertical line, part of a vertical inscription has been preserved with two hieroglyphic signs – ...*rꜥ m...* – executed in sunken relief (pl. V: 3). Two other fragments 17/AC33/2018\_a–b (23.0 × 10.7 cm and 23.5 × 14.5 cm, pl. V: 2) were from the lower part of the right door jamb. On a rather well polished surface there is, in sunken relief, a standing man depicted, turned to the left (toward the centre of the false door), with a short beard and wearing a short kilt. Together with these fragments, 17/AC33/2018\_p,q,s,t,u (3.0–14.0 × 4.7–12.0 × 1.5–8.5 cm) and 268/AC33/2018\_a–c (with dimensions 21.0–24.5 × 14.5–16.0 × 4.0–7.0 cm) were also found. Both of these groups of fragments originate from a false door drum.

More than 90 fragments of original limestone relief decoration (including fragments of the already mentioned northern false door) and 7 limestone fragments with polychrome painted decoration (mostly with a palace façade pattern) were found. The fragments feature hieroglyphic inscriptions and/or scenes depicting mostly human figures and in a few cases animals and offerings. In general, the fragments are characterized by a very high quality of craftsmanship and can be compared with relief decoration documented in the nearby mastaba of the Vizier Ptahshepses (Verner 1977; Vachala 2004), which can be dated to the same or slightly later period, or the mastaba of Ty in Saqqara (Steindorff 1913; Épron – Dumas – Goyon 1939; Wild 1953 and 1966). Among the fragments, 265/AC33/2018 should be mentioned, which was found in the entrance to Chapel 1 (pl. III: 1). This piece, which is 43.0 × 48.0 × 9.3 cm large and made of fine limestone, was apparently a part of the casing of the northern corner of the deep façade recess (as is the case of some other fragments found in this area). Both sides of the fragment bear relief decoration. On larger side, there is a man depicted (his skin has red-brown colour), with a short beard and black wig. There is a necklace on his chest and a white cloth band on his shoulder. A slightly leaning stick is depicted in front of him. The man is oriented to the left. In this direction, there is a vertical inscription giving the title *hm-ntr Hnmw*. The scene is framed by a vertical band with horizontal strips (blue and green colour can be detected in this border band). The other side of this block is less well preserved, and beside the vertical band in the corner, there is only a small part of a vertical inscription preserved with two signs, reading *wꜥhm(w)*.

The name or titles of the tomb owner are also attested on fragments of decoration originating from other parts of the tomb. Fragment 83/AC33/2018 (31.5 × 31.0 × 13.2 cm) found 2.7 m to the north of the entrance rooms



Pl. I: 1 Three-dimensional visualisation of the central part of the tomb, view from the north (author V. Brůna)

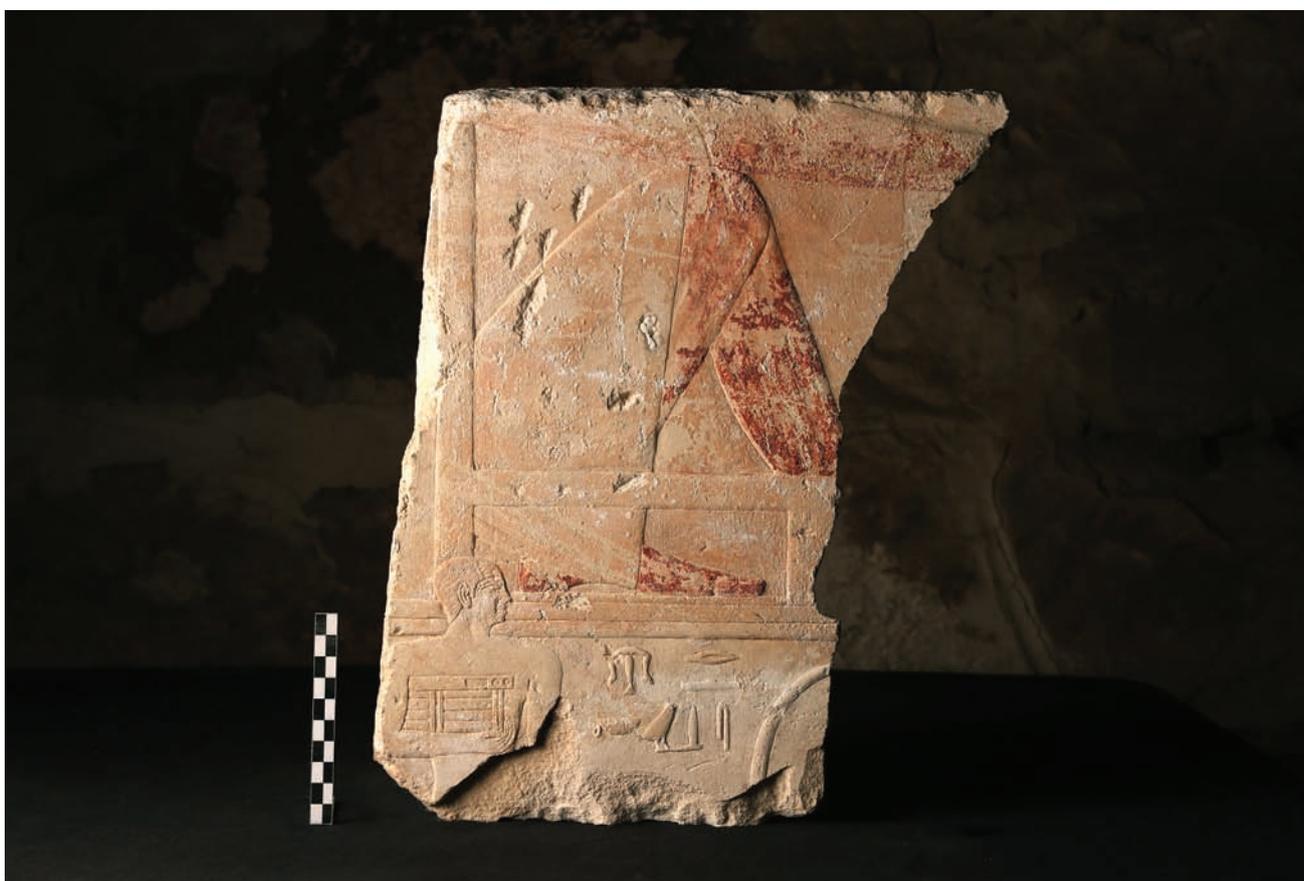
Pl. I: 2 Shaft 1, relieving chamber, view to the north (photo P. Košárek)



Pl. II: 1 Shaft 1, Burial Chamber 1,  
view with the statue *in situ*  
(photo P. Košárek)

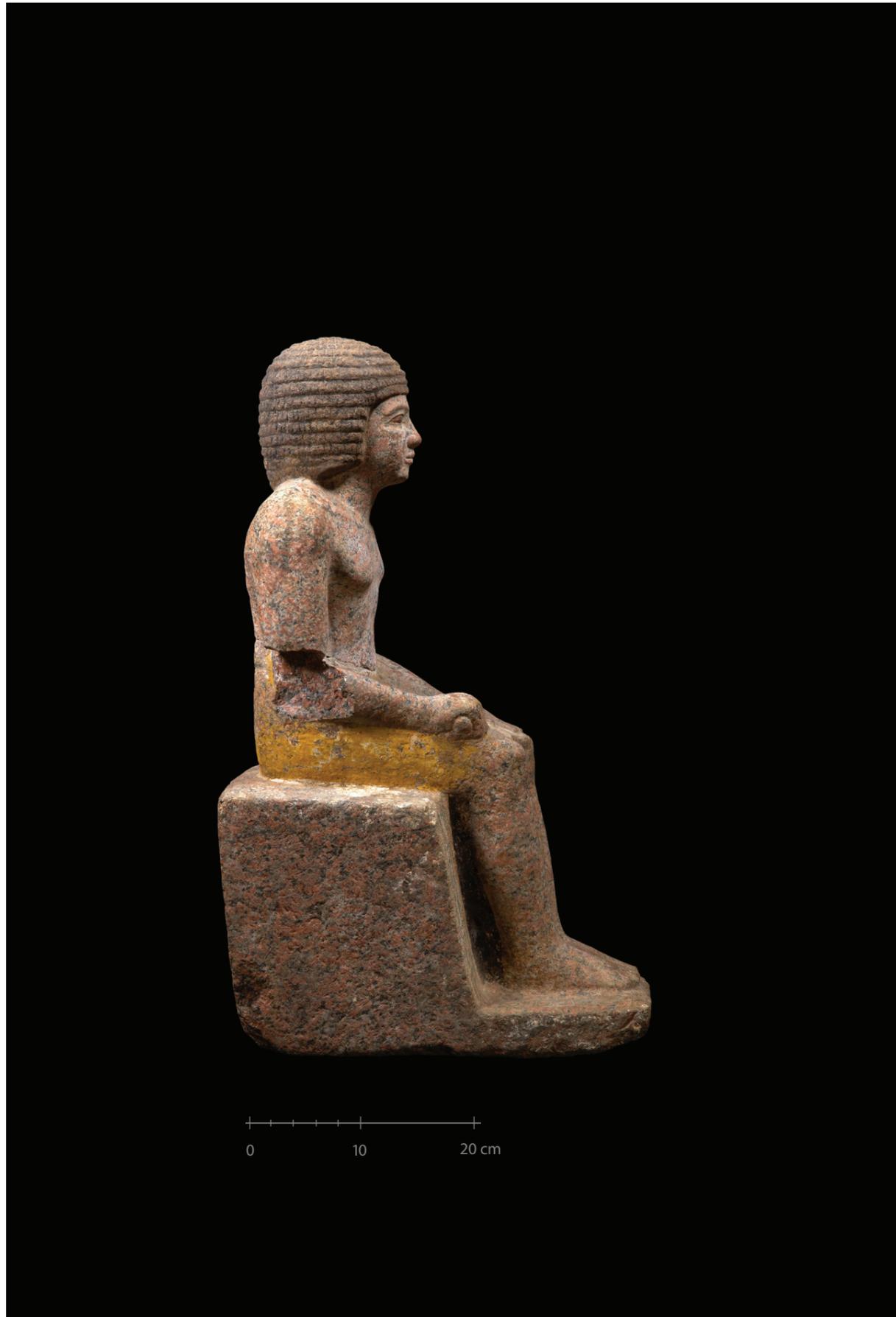
Pl. II: 2 Fragment of a limestone false door  
(11/AC33/2018) (photo P. Košárek)

Pl. II: 3 Fragment of relief decoration mentioning  
Sahure's pyramid complex (98/AC33/2018)  
(photo P. Košárek)



Pl. III: 1 Fragment of relief decoration (265/AC33/2018) (photo P. Košárek)

Pl. III: 2 Fragment of relief decoration with a palanquin scene (99/AC33/2018) (photo P. Košárek)



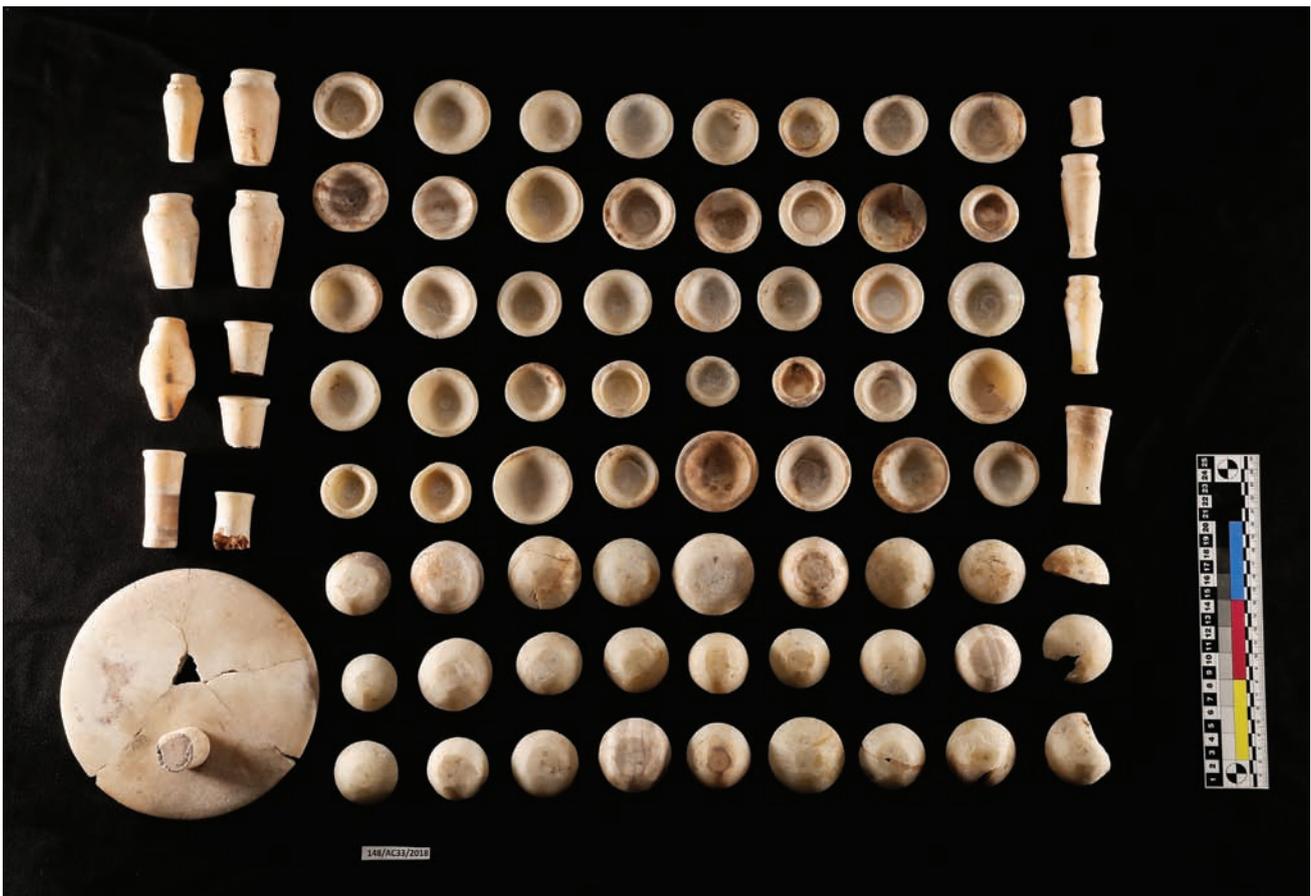
Pl. IV Granite statue of Kairsu (79/AC33/2018\_a-b) (photo P. Košárek)



Pl. V: 1 Shaft 2, Burial Chamber 2,  
canopic jars (146/AC33/2018)  
(photo P. Košárek)

Pl. V: 2 Fragments of a granite false door  
(17/AC33/2018\_a-b)  
(photo P. Košárek)

Pl. V: 3 Fragment of granite false door with  
signs *r<sup>c</sup>* and *m* (26/AC33/2018)  
(photo P. Košárek)



Pl. VI: 1 Shaft 1, Burial Chamber 1, fragments of travertine model vessels (109/AC33/2018) (photo P. Košárek)

Pl. VI: 2 Shaft 2, Burial Chamber 2, almost complete set of travertine model vessels (148/AC33/2018) (photo P. Košárek)



Pl. VII: 1 Shaft 3, copper model implements (209/AC33/2018, 211/AC33/2018, 213/AC33/2018, 216/AC33/2018 and 217/AC33/2018) (photo P. Košárek)

Pl. VII: 2 The so-called Daressy's block with the figure of the sage Kairsu (photo P. Košárek)

bears part of a horizontal hieroglyphic text reading from the right to the left: ...*nb.f nb K3-i[r.s(w)]*. The size of the hieroglyphic signs is rather large in comparison with most of the remaining relief fragments.

Fragment 98/AC33/2018 (36.5 × 26.0 × 12.0 cm), found to the north of the entrance rooms, features three lines of horizontal text: ...*snwt...*, ...*w zš nfr...*, ...*H<sup>c</sup> b3w [Š3hw-R<sup>c</sup>]*... 267/AC33/2018 (22.1 × 13.5 × 4.7 cm) (pl. II: 3). It was found during the cleaning of the entrance recess leading to Chapel 1, below the level of the damaged floor. The relief bears a fragment of the *htp-di-nšwt* formula – ...*jmj sh...* As their decoration was executed in sunken relief, these fragments were used in the façade of the mastaba, probably the part above the recess of the doorway to Chapel 1.

In the area to the east of the southern niche, a large block (166/AC33/2018, 1.54 × 0.26 × 0.50 m) of white limestone casing was found (see its position on the plan of the mastaba, fig. 2). It is another example of a hieroglyphic inscription executed in sunken relief, but in this case, its form was monumental; the width of the vertical inscription was 0.52 m. The fragment bears part of one of the titles that belonged to the tomb owner – *šmr-w<sup>c</sup>ty*. Due to its position close to the southern niche, it is possible that it once decorated the eastern façade in this area. The size of the apparently vertical inscription shows that there were at least two formats of sunken inscriptions – one in the area of the recess for the entrance to Chapel 1 and another used in other parts of the mastaba's eastern façade.

A fragment, 99/AC33/2018 (34.0 × 25.5 × 23.5 cm), which was found to the north of the entrance rooms, features figural decoration. This fragment is also made with a high degree of craftsmanship and depicts the lower part of a palanquin scene with an oversized tomb owner (pl. III: 2). Of his figure, only a bent leg and outstretched arm have been preserved. The man beside the palanquin is depicted in a much smaller scale, carries a scribe's board and a palette in his right hand. He bears the following titles: (*j*)*r(j)-mḏ3t, ḥm-k3*. His name is *Šḏw-k(3.j)*.

#### LOOSE BLOCKS WITH THE NAME OF KAIRSU AS A TOMB OWNER DATED TO THE OLD KINGDOM

To date, two more blocks are known from a relatively close distance to Abusir, both of them being reused during New Kingdom building activities.<sup>3</sup> The first block was discovered by the Japanese mission working on the “Lion's Hill” in southwest Abusir and published in 2001. There the limestone block decorated in low relief was found reused in the masonry and covered with mortar (Yoshimura 2001: 292–293, pl. 13,2).<sup>4</sup> The preserved inscription reads from the right to the left and is arranged in three partially preserved columns:

1. *ḥry-ḥb* – lector priest;
2. *ḥr(j) sšt3 n Ḥr* – keeper of secrets of Horus;
3. (*j*)*m(j)-r k3t nbt nt nzwt* – overseer of all royal works of the king;
4. *im3ḥ(w) n nb.f K3-ir.s(w)* – well provided by his lord, Kairsu.

While the first two titles and the epithet are unattested from the tomb of Kairsu in Abusir, the title of the overseer of all royal works features on fragment 11/AC33/2018. The high rank of the title and the same name of its holder indicate that its holders could be the same person.

The second location is the New Kingdom Temple “A” of Ptah in Memphis. The fragment(s) originate from a doorway leading to a temple court. Its sidewalls and the lintel were, according to the British excavation report, carved from a massive red granite false door of a certain Kairsu. According to Jaromír Málek, its original dimensions were quite impressive – the false door was about 3.06 m wide and 2.15 m tall (Smith – Jeffreys – Málek 1983: 38; for the line-drawing of the part with the inscription see Malek 1992: 61, 64, fig. 1). In this case, the two fragments of columns bear the following inscription reading from the right to the left:

1. ...*nb ... [jm<sup>c</sup>]ḥw ḥr ntr-<sup>c</sup>3, šmr-w<sup>c</sup>tj, K3-ir.s(w)*  
Lord...[well-pro]vided before the Great God, sole friend, Kairsu
2. ... *n pr-[<sup>c</sup>nh<sup>?</sup>] ... mrwt, K3-ir.s(w)*  
... of the House of [Life?] ... beloved, Kairsu.

Both columns end with a striding figure of the tomb owner. Despite their few details, it can be said that the figures are proceeding to the right, with arms along the body, dressed in short kilts with frontal pieces and tight wigs. The false door, if Málek's calculations are correct, could easily fit into the western wall of the chapel which is some 15 cm wider. The existence of a red granite false door in the Abusir mastaba is supported by a concentration of red granite fragments found in front of the southern niche. These could be the result of smashing the originally monolithic block into smaller pieces.

#### STONE FINDS

Most of the stone artefacts were discovered in individual burial shafts where they were part of the burial equipment.

#### BURIAL CHAMBER 1

All the canopic jars originally coming from Burial Chamber 1 were made of limestone and were collected in fragments. Most of them were found in the burial chamber (76/AC33/2018, 103/AC33/2018 and 108/AC33/2018), some in the shaft (56/AC33/2018 and 65/

<sup>3</sup> We tender our thanks to Andrés Diego Espinel who drew our attention to these two fragments.

<sup>4</sup> We are indebted to our colleague Ayano Yamada for her kind translation of the Japanese text of the monograph.

AC33/2018). The most weathered one, 29/AC33/2018, comes from the north part of Entrance Room 1. Only the rim parts 65/AC33/2018 and 76/AC33/2018 were possible to glue together. Although their state of preservation was not good, the dimensions that were possible to measure point to large pieces in comparison to the average size of canopic jars. The rim diameter of 65+76/AC33/2018 is 18 cm, and the base diameters of 29/AC33/2018, 103/AC33/2018 and 108a/AC33/2018 range between 13.0 to 14.0 cm. Unfortunately, no complete profile survived, and their heights remain unknown. However, judging from the above presented dimensions and surviving heights of fragments, these must have far exceeded 30.0 cm.

Although they were found broken and empty and no stains were detected on their bodies, there is evidence that they originally had contents. From the debris that filled the burial chamber of Shaft 1, quite hard pieces of linen mixed with a brown substance were collected. A similar material was later recognized still preserved in the interior of the canopic jars from Burial Chamber 2. No analysis has been performed on this material yet, and therefore it is not possible to say if it contains any human tissue.

Since the burial chamber of Shaft 1 was severely looted in antiquity, only remains of the original assemblage of model stone vessels were collected. All were made of travertine. Two halves of two bowls were found first in the shaft (64/AC33/2018 and 123/AC33/2018). The latter one was later glued with another half from a larger group discovered in the burial chamber itself (109/AC33/2018, pl. VI: 1). Only one jar belonged to this group (109\_4/AC33/2018) and 11 bowls. All of the vessels were of average shape and dimensions, as well as craftsmanship.

Burial Chamber 1 was originally equipped not only with canopic jars and model stone vessels. Also, numerous fragments of a large travertine offering table were brought to light (113/AC33/2018\_a-j). Its original size was reconstructed to be 38.0 cm in diameter. A travertine headrest (117/AC33/2018) was once supporting the head of Kairsu, but only a 1/3 of its base survived.

#### **BURIAL CHAMBER 2**

Shaft 2 was almost destroyed by looters in its upper part and the entrance to Burial Chamber 2 was found broken. However, the robbers were apparently interested only in the jewellery of the deceased and copper objects. As usual, they broke into the sarcophagus and pulled out the body. Although the body had completely disappeared in this case, some remains of the ornaments survived in the southern part of the chamber (157/AC33/2018). To the north of the sarcophagus, most of the original burial equipment was still lying in several layers. Also, in this part, it was evident that the robbers went through all of the objects, partly mixed them and collected copper tool blades (just their wooden hafts survived). A set of travertine model vessels (some pieces broken), pottery and canopic jars were found *in situ*. One of the jars was unearthed in a different place. It was discovered to the

east of the sarcophagus. Only this piece was found empty (146\_1/AC33/2018, pl. V: 1). The others (146\_2,3,4/AC33/2018), standing to the north of the sarcophagus, still contained a mixture of linen and brown substance. They were completely filled with this material of so far unknown origin. All of the canopic jars were of regular size, measuring between 25.0 and 27.0 cm in height. Also, all of them were at one time restored, having large patches of plaster on their bodies. Moreover, 146\_4/AC33/2018 had part of the body at the base completely broken off and glued back together with fine white plaster (for a further discussion on these features, see Jirásková 2015).

The assemblage of travertine model vessels (148/AC33/2018, pl. VI: 2) contained altogether 80 pieces. There were 60 complete bowls, 6 more broken into pieces, 1 beaker/basin, 1 stand and a table top (originally glued together), 3 shouldered jars, 4 cylindrical jars, 3 beer jars (with wavy rim parts) and 1 wine jar (with a band around the body). Although there was a large number of these vessels, the assemblage does not seem to be complete. One would miss particularly a one handled jug. It usually created a set with 6 cylindrical jars for seven sacred oils. Shouldered jars are usually found in numbers of 4, beer jars in numbers of 5 and wine jars in numbers of 2 in the sets of the latter part of the Fifth Dynasty. If there is a beaker/basin present, an ewer should be expected to make a pair with it.

As there are traces of restoration in the case of the canopic jars coming from the same context, it is possible to also find such traces on some of the model vessels. Three cylindrical jars had once been broken in two pieces and later glued together with a brown substance, probably a kind of resin (148\_9,10,11/AC33/2018). This must have happened in antiquity, before they were buried in the chamber with the deceased. Two of them were found broken again, one was still in one piece (146\_9/AC33/2018).

#### **BURIAL CHAMBER 3**

The situation in Burial Chamber 3 was complicated due to its unstable roofing. Some fragments of canopic jars were collected there (207/AC33/2018\_a-m); however, they were largely destroyed, and only three incomplete jars were possible to restore from the fragments (jars 1, 2, 3). All of them were of regular shape and size. Their heights ranged between 27.0 and 28.0 cm. As the canopic jars from Burial Chamber 2, these were also largely restored, still having patches of plaster on their bodies. These had no contents at all, and nothing similar to the linen pieces from Shaft 1 was found in Burial Chamber 3.

#### **COPPER MODEL TOOLS AND THEIR WOODEN HAFTS**

Tomb AC 33 provided several important finds in the burial equipment from the category of copper model tools. An axe blade was found at the upper edge of the entrance to the burial chamber of Shaft 1, in the ceramic

context 22.AC33.2018. It has find no. 66/AC33/2018 and rather small dimensions 36 × 22 mm. It is of a variant common in Fifth Dynasty contexts (Odler 2016: 150–154, Fig. 143, type A).

In Shaft 2, the copper model blades found were of regular Fifth Dynasty size: an adze blade 150/AC33/2018\_a (55 × 9 mm), and a saw blade 150/AC33/2018\_b (79 × 10 mm). Together with these, an unusual find of four model adze hafts was found (149/AC33/2018\_a–d) on the floor level in compact dark sand by the northern side of the limestone sarcophagus. These hafts of most probably *msh.tjw*-adze blades (Odler 2016: 129–132) were made of yet undetermined wood and covered with white plaster. Complete specimen 149/AC33/2018\_a had a length of 145 mm, height of 46 mm and thickness of 14 mm, and complete specimen 149/AC33/2018\_b was even bigger (175 × 45 mm). In addition, two hafts of axe blades were found, also unusually large (149/AC33/2018\_f, length 118 mm, max. diameter 8 mm, 149/AC33/2018\_g, length 121 mm, max. diameter 8 mm), as well as presumably a handle of a chisel (149/AC33/2018\_e, length 65 mm, width 10 mm). Thus, it can be concluded that these artefacts are remains of a copper model tool kit of unique size among the known Fifth Dynasty contexts (*cf.* Odler 2016: fig. 30). The adze hafts are unusually large, although comparative material was found east of the pyramid of Nyuserre, in the tomb of Weserkafankh (AC 5) and its main burial chamber, where 29 handles and hafts of model tools were found, including a *msh.tjw*-adze haft (Borchardt 1907: 114–115, Abb. 94). The largest number of such finds from the Old Kingdom was discovered in Saqqara, in the pyramid of the so-called western queen, from the reign of Pepy I, with 86 specimens. However, this deposit has not yet been sufficiently published (Leclant – Clerc 1997: 364–365, Fig. 37).

The largest deposit in Tomb AC 33 was found in Shaft 3 of an anonymous owner. The model tools with their handles and hafts were dispersed in the northern half of the burial chamber, above the floor level, apparently disturbed by tomb robbers. Except for adzes, all three other classes of the artisan tool kit were found: chisels (25 specimens of flat and cross-cut chisels, the longest having 101 mm, a maximal diameter of handle 10 mm), axes (10 specimens, the longest having 100 mm and width 17 mm) and saws (5 specimens, all detached from the miniature wooden handles, the largest blade having 71 × 6 mm). The model tools were divided into several find numbers, hoping that the excavation would uncover some patterns to the concentration, but none were discovered. The conspicuous absence of adzes might refer to their removal from the burial equipment by tomb robbers. None of the adze hafts were found, although they might still be among the unprocessed wooden fragments from the burial chamber. Thus, the assemblage includes finds 209/AC33/2018, 211/AC33/2018, 213/AC33/2018, 216/AC33/2018, and 217/AC33/2018 (pl. VII: 1). The closest parallel to this assemblage in time and space is the assemblage of copper model tools with blades from the burial chamber of

Kahotep, son of vizier Ptahshepses, in the Mastaba of Princesses (AC 10) (Borchardt 1907: 129–130, Abb. 109). The models from the burial chamber of Kahotep were, however, bigger.

In addition to the traditional documentation, five specimens of the models were sampled in spring 2019, and they were analysed at the laboratory of the French Institute of Oriental Archaeology (Institute français d'archéologie orientale, IFAO) in Cairo, within the framework of the IFAO action spécifique no. 19463 “Restarting Archeometallurgy in Modern Egypt”. Sections were prepared from the samples by Jiří Kmošek, and the samples were then measured with a portable X-ray fluorescence machine Bruker Tracer III-SD and were examined with a metallographic microscope present at IFAO. The samples 12711–12715 were from this deposit. Three of them were made of copper with admixtures of arsenic, two of copper without admixtures. Since a larger comparative corpus is missing, the interpretation of this observation lies in the future. Further processing of the samples is planned as well.

## ANTHROPOLOGY

In Tomb AC33, human skeletal remains of only three individuals were unearthed. All of them were analysed using contemporary, well established anthropological methods (see Havelková 2014).

A well preserved robust skeleton of a young male (8/AC33/2018) was found in a sand layer in front of the southern part of the supposed entrance to the tomb. These human remains were of pinkish colour with remains of soft tissues. The body was oriented with the head to the south, left arm alongside the body, right arm above the head. The atypical position of the body is not compatible with burial practices and rather points to some kind of *ad hoc* burial, probably an accident. It is very likely that the skeleton was “buried” in a much more recent period than the Old Kingdom. The male probably died at a very young age (25–35 years), and despite his robusticity, his living stature estimation is only around 166–167 cm based on the length of the femur (Raxter *et al.* 2008; Trotter – Gleser 1952 and 1977). Several anomalies were recorded on the skeleton. One of them was the occurrence of acromial bones on both scapulas (Case *et al.* 2006; Miles 1994). Acromial bone is the accessory bone occurring when the fusion of the acromial epiphysis does not follow its normal ossification pattern, resulting in the retention of a separate epiphyseal end to the acromial process (Hunt – Bullen 2007). Two main aetiological hypotheses are presumed (Yammine 2014) – the bone represents a genetic defect (Angel *et al.* 1987; Sammarco 2000) or it resulted from mechanical stress on the developing acromion (Stirland 1987). A third hypotheses combining genetic predisposition with mechanical stress was suggested by Case *et al.* (2006). This feature is very uncommon among ancient Egyptians living and dying during the Old Kingdom – it has been recorded in only two cases on the left side

(from 78 preserved scapulas) and in no case on the right side (from 73 evaluated scapulas). Both cases occurred among low status individuals. The presence of both-side acromial bone supports a hypothesis that the male skeleton very probably cannot be dated to the Old Kingdom period. Among other interesting anomalies, it is worth mentioning a complete inter-articular spondylolysis of the L3 and L4 vertebrae and a fracture of the right first metacarpal bone with post-traumatic changes.

The most important burial was unearthed in the burial chamber of Shaft 1, which belonged to the owner of the tomb – Kairsu (80/AC33/2018). Scattered bones of one individual were found in five different archaeological contexts – in the fill of Shaft 1, in the burial chamber (both in the fill of the chamber and sarcophagus) and in the relieving chamber. The robust infracranial skeleton was almost complete, unfortunately the skull and vertebrae (except for Th1-2) were lost. The human remains belonged to a male (Brůžek *et al.* 2017) who probably died between 35 and 45 years of age. Despite Kairsu's high social status, he probably was not of high stature (163 cm). His body was found partially mummified and included a lot of textile and remnants of soft tissues at the joints. The presence of resin residues cannot be excluded. Based on the preserved bones, Kairsu probably enjoyed good health. The most serious injury was a fracture of the left distal fibula showing a post-traumatic deformation of the lateral ankle (fig. 17) and associated antero-posterior infraction of the inferior articular surface of the left tibia (fig. 18). Fusion of the medial and distal phalanges of the left foot could also be connected to this traumatic process. On the right hip bone, there occurred a slight partially healed fissure inside the dorsal part of the acetabulum (3 cm long). A fracture in this area is unlikely; unfortunately, a precise diagnosis is impossible without x-ray examination. To complete this list of interesting changes, fusion of the 5<sup>th</sup> sacral vertebra with the 1<sup>st</sup> coccygeal should be mentioned.



Fig. 17. Fracture of the left distal fibula with post-traumatic changes to the lateral ankle (photo Š. Bejdová)

In Burial Chamber 3 of Shaft 3, human remains of one or two individuals were excavated. Fragments of thoracic vertebrae are listed under excavation number 191/AC33/2018. Two complete thoracic vertebrae, two fragments of bodies and two fragments of arches were found scattered in Burial Chamber 3. The vertebrae are very long in the antero-posterior direction with slight degenerative changes (spondylosis and osteochondrosis). As it is not possible to prove or exclude, it is very probable that these bones belonged to a human bone concentration unearthed at the north wall of Burial Chamber 3 (206/AC33/2018). The bone assemblage contained fragments of a skull (occipital bone), fragments of long bones (mainly lower extremities) and bones of hands and feet. Given that all bones suitable for sex diagnosis especially hip bones were missing, a sex estimation was not possible to carry out. The age-at-death estimation was based only on the spongy structure of the proximal femur (Szilvássy – Kritscher 1990) and the degree of degenerative changes. It could be concluded that the individual died in adult age between 30 and 50 years. The length of the femur was used for calculation of the presumed living stature. Based on Torstein Sjøvold's (1990) independent analysis of sex equations, the individual was approximately 177 cm tall. If a female sex were supposed, the body height would be around 170 cm; in the case of a male, 174 cm. Concerning the estimated living stature of the Abusir population during the Old Kingdom period, which is 155 cm for females and 169 cm for males (unpublished), it is much more probable that the individual buried in Burial Chamber 3 (Shaft 3) was a male. This is also supported by the length of the left femur, which was 485 mm. Average length in females is only 414 mm (range 340–487 mm), while male femurs measured on average 463 mm (range 412–536 mm). Only insignificant changes were registered on the preserved bones, concentrated mainly on the feet – degenerative changes (exostosis) on the plantar surface of the right and left calcaneus, a compressed fracture of the proximal articular surface of the 1<sup>st</sup> metatarsal bone



Fig. 18. Antero-posterior infraction of the inferior articular surface of the left tibia (photo Š. Bejdová)

(however no changes on the medial cuneiform bone) and deformation of the 5<sup>th</sup> metatarsal head occurred.

## ANIMAL BONES

Altogether, 1,426 finds of animal bones were analysed in this mastaba. Their total weight was 36,612.2 g and the average weight was 25.7 g per find. Moreover, several hundreds of bones of small vertebrates, probably belonging to an intrusion originating in owl's pellets, were recorded in some structures.

The archaeozoological assemblage was analysed using standard methods (see *e.g.* Reitz – Wing 2008) as was possible in the field conditions. For animal bones related to funeral and cultic activities, three quantitative methods were used: number of identified fragments (NISP), weight of fragments, and minimum number of individuals (MNI). In the case of microfauna, only MNI was applied. Wherever possible, the undetermined mammalian finds were categorized according to their size as large ungulates, medium-sized mammals or small-sized mammals.

Animal bones from individual tomb structures were analysed separately. All structures mentioned contained the bones of megafauna, while the remains of microfauna were recorded only in Entrance Room 2 and Shaft 3. The majority of the megafauna assemblages were dominated by cattle finds; except for the fill located in the southern part of Entrance Room 2, where pig remains were the most abundant ones. Additionally, the bones of dog, sheep/goat, donkey, cat, hedgehog, geese and ducks, quail, crane and elephant-fish were determined.

### ENTRANCE ROOM 1

This assemblage contained 17 finds of animal bones with a total weight of 561.0 g and an average weight of 33.0 g. The majority of fragments came from cattle (*Bos taurus*) – 13 finds belonged to at least three individuals of different ages with one adult, one subadult and one juvenile. Concerning the anatomy of the finds, except for the distal elements of limbs, sporadic remains of femur, scapula and cervical vertebra were found. Other remains included one find of a small-sized adult dog (*Canis familiaris*), two finds of Anseriformes (possibly from one adult individual in the size of a barnacle goose) and one find of a large ungulate. Butchery marks, burning or gnawing were not detected in the fills of this structure.

### ENTRANCE ROOM 2

The fill of this area contained both animal bones of megafauna as well as an intrusion of microfauna. About 30 finds of small mammalian bones were recorded, belonging minimally to one individual of house mouse (*Mus musculus*) and one individual of Olivier's white-toothed shrew (*Crocidura olivieri*). The assemblage of megafauna included 26 finds that weighed 329.3 g (12.7 g per find). Seven finds of cattle (*Bos taurus*) coming from at least three individuals (one adult, one subadult, and

one juvenile), eight finds of large ungulates, and 11 finds of undetermined mammals were recorded in the assemblage. One fragment of large ungulate rib bore fine transverse incisions on both sides of the bone, while traces of burning were missing in the assemblage. Marks of rodent teeth were found on one cattle bone.

### FILL IN THE SOUTH PART OF ENTRANCE ROOM 2

This assemblage is represented by extremely decalcified and fragmented animal bones – 109 finds, which weighed 4,587.7 g in total and 42.1 g on average. The bones of pigs (*Sus domesticus*) were the most abundant with 55 finds. The majority of the remains came from skulls. At least four individuals were identified: three of them adult and one subadult. Only females of a small-sized breed were recorded.

The remains of a donkey (*Equus asinus*) were also found – 19 (+ 1 cf.) finds, esp. long and short limb bones, belonging minimally to three individuals (two adults and one subadult). In the case of cattle (*Bos taurus*), 16 (+ 1 cf.) postcranial finds belonged to at least three individuals of different ages (one adult, one subadult, and one juvenile). The remains of small ruminants included two finds of sheep (*Ovis aries*, one adult male) and three (+ 3 cf.) finds of sheep/goat (*Ovis/Capra*, one subadult individual). Moreover, one fragment probably from an adult dog (*Canis familiaris*), seven finds of large ungulates, and bone grit were recorded. No traces of cutting, burning or gnawing were found in this assemblage.

### DEBRIS TO THE SOUTH OF THE ENTRANCE ROOMS

In this assemblage, 14 finds of animal bones were analysed – with one find of adult cattle (*Bos taurus*), one find of adult Anseriformes (in the size of a mallard), one (+ 1 cf.) find of sheep/goat (*Ovis/Capra*) from one juvenile and one subadult individual, and also ten finds of goat (*Capra hircus*). The goat bones came from distal parts of limbs and probably belonged to one adult individual. Its shoulder height was estimated to 68 cm. A sheep/goat skull fragment bore two transverse incisions, while no traces of gnawing nor burning were recorded.

### DEBRIS TO THE NORTH OF THE ENTRANCE ROOMS

This assemblage was the most abundant one with 896 finds that weighed 13,296.9 g in total and 14.8 g on average. In the case of cattle (*Bos taurus*), 212 finds came from at least four individuals: two adults, one subadult and one juvenile. Various parts of skeletons were detected in this assemblage, including distal limb elements. Remains of other species were rather sporadic: one (+ 1 cf.) find of dog (*Canis familiaris*) from one adult and one juvenile individual, two finds of donkey (*Equus asinus*) belonging to one adult individual, two finds of sheep/goat (*Ovis/Capra*) probably from one adult individual, one find of adult quail (*Coturnix coturnix*) and three finds of Anseriformes. These bones belonged to at least two adult individuals, with one in the size of a teal and one in the size of a mallard. Undetermined

remains included 277 finds of large ungulates, three finds of medium-sized mammals and 394 finds of undetermined mammals.

Intentional cut marks were found in 23 cases: on one cattle femur, two examples of cattle humerus, one cattle ilium, one cattle mandible, one cattle pelvis, two cattle scapulae, two cattle thoracic vertebrae, 12 large ungulate ribs, and one large ungulate long bone. In one case, a tool made from a cattle scapula was recorded. The artefact was severely damaged, as only a small (cranial) part of it was found. The distal, proximal, and caudal sides of the fragment, and the *spina scapularis* were broken off. The caudal edge was partially worn smooth too. The find was heavily decalcified, with both incisions and cracks. The tool might have been used for digging in sand. The maximum measurements of the fragment were 97.45 × 30.36 × 26.67 mm, and the weight was 36.3 g. Marks of burning were found on two bones – a find of cattle was burnt black to white, while a find of sheep/goat was burnt white. No traces of gnawing were recorded.

#### SHAFT 1 AND BURIAL CHAMBER 1

Altogether, 93 finds of animal bones were recorded, with a total weight of 8,245.6 g and an average weight of 88.7 g. The most abundant were the remains of cattle (*Bos taurus*) – 31 finds belonged minimally to four individuals of different ages: one adult, two subadults, and one juvenile. Different parts of skeletons were detected, including distal limb elements. The presence of a longhorn breed was recorded. Other domestic mammals were determined too: four finds of dog (*Canis familiaris*) that may belong to the only adult individual of a smaller breed, one (+ 1 cf.) find of sheep/goat (*Ovis/Capra*) and one find of pig (*Sus domesticus*) also came from adult individuals. Other mammalian remains remained undetermined: 36 finds of large ungulates, two finds of medium-sized mammals, and ten finds of undetermined mammals. Moreover, seven finds of birds were recorded – all of them were determined as Anseriformes. The bones belonged to at least three individuals: one in the size of a mallard, one in the size of a barnacle and one in the size of a goose.

Concerning butchering marks, cutting was recorded in 27 cases – on 13 large ungulate ribs, two large ungulate long bones, one medium-sized mammal rib, one lumbar vertebra of sheep/goat, one lumbar vertebra of dog, one humerus of Anseriformes, one cattle rib, two cattle femur, one cattle humerus, one cattle scapula, and three cattle thoracic vertebrae. A part of a tool made from a cattle scapula was found in Burial Chamber 1. The proximal end of the artefact was damaged, while the other sides (distal, cranial, and caudal) were grinded and smoothed. Although the cranial edge was original, the distal and caudal edges were made by breaking off the bone. The tool might have been used for digging in sand. The maximum measurements of the fragment were 172.33 × 93.06 × 20.05 mm, and the weight was 142.2 g. In two cases, traces of rodent teeth were recorded, while no burning marks were found.

#### SHAFT 2 AND BURIAL CHAMBER 2

The assemblage of Shaft 2 and Burial Chamber 2 included 70 finds of animal bones with a total weight of 5,342.9 g and an average weight of 76.3 g. In the case of cattle (*Bos taurus*), 39 finds were determined, belonging minimally to four individuals of different ages (one adult, two subadults, and one juvenile – fig. 19). The shoulder-height of the adult female was estimated to 137 cm. Other fragments of mammalian bones were undetermined: seven finds of large ungulates, two finds of medium-sized mammals and seven finds of undetermined mammals. Remains of birds and fish were detected too: 13 finds of adult Anseriformes (at least three individuals in the size of a teal – fig. 20), one find of adult crane (*Grus grus*) and one find of elephant-fish (*Mormyrus* sp.). No traces of burning or gnawing were found, although cutting marks were recorded in five cases: on a rib of a medium-sized mammal, and on the femur, humerus, metacarpus and pelvis of cattle.

#### SHAFT 3 AND BURIAL CHAMBER 3

This structure contained both remains of megafauna and microfauna. Big bones were represented by 16 finds, which weighed 1,280.2 g in total and 80.0 g on average. Only four finds of large ungulates and 12 finds of cattle (*Bos taurus*) were recorded. The cattle bones belonged minimally to two non-adult individuals (one juvenile, one subadult). The shoulder-height of the subadult animal was estimated to 125 cm. Various postcranial elements of cattle skeletons were found in the assemblage. Cutting marks were recorded in three cases – on two ribs and one humerus of cattle. Another find of cattle was partially burnt brown. No traces of gnawing were identified.

The remains of small vertebrates originated in the pellets of barn owls (*Tyto alba*). Altogether, the bones belonged to at least 121 individuals. The dominant part of this assemblage were the remains of black rat (*Rattus rattus*) with 69 individuals. Other taxa included frogs and toads (Anura, 1 MNI), small species of singing birds (Sylviidae, 1 MNI), kestrel (*Falco* sp., 1 MNI), quail (*Coturnix coturnix*, 6 MNI), small white-toothed shrews (*Crocidura religiosa/floweri*, 2 MNI), Olivier's white-toothed shrew (*Crocidura olivieri*, 19 MNI), house mouse (*Mus musculus*, 11 MNI), jerboa (*Jaculus* sp., 1 MNI), short-tailed bandicoot rat (*Nesokia indica*, 4 MNI), fat sand rat (*Psammomys obesus*, 1 MNI), and desert long-eared bat (*Otonycteris hemprichii*, 5 MNI). The species composition of the assemblage reflected the former environment which the owl was hunting in – desert, grassland and vegetated banks of water bodies, strongly influenced by human presence.

#### SHAFT 4

This assemblage included only three finds of cattle (*Bos taurus*) with a total weight of 42.8 g and an average weight of 14.3 g. The remains of cattle belonged to at least two individuals, one of them juvenile and the other



Fig. 19 Both mandibles of young cattle excavated at the bottom of Shaft 2 (photo Z. Sůvová)

subadult. No traces of cutting, burning or gnawing were identified.

#### SHAFT 5

This assemblage contained 154 finds of animal bones that weighed 1,856.3 g in total and 12.1 g on average. The remains of cattle (*Bos taurus*) were represented by 26 finds that belonged to at least four individuals (one adult, one subadult, and two juveniles). Other remains were undetermined: 51 finds of large ungulates and

77 finds of undetermined mammals. Concerning cutting marks, they were detected in six cases – on a carpal bone of cattle, on a mandible of cattle, on a radius of cattle, on a scapula of cattle, on a rib of a large ungulate and on a long bone of a large ungulate. One find of large ungulate had been gnawed by a dog and one find of undetermined mammal was burnt black to white.

#### SERDAB

Altogether, 12 finds of animal bones were found in the fill of this structure, with a total weight of 76.0 g and an average weight of 6.3 g, all of them most likely being intrusive. The remains of a desert hedgehog (*Parechinus aethiopicus*) were recorded – nine finds belonged minimally to three individuals, with two subadults and one adult. Domestic cat (*Felis catus*) was represented by two finds that probably came from one adult individual. Both the remains of hedgehog and cat may come from recent specimens. The last find probably belonged to a subadult sheep/goat (*Ovis/Capra*). No traces of cutting, burning or gnawing were found in this assemblage.



Fig. 20 Some of the teal bones, originating probably from food offerings, lying near the sarcophagus in Burial Chamber 2 (photo Z. Sůvová)

#### CONCLUSIONS

The tomb of Kairsu was situated in the very centre of the Fifth Dynasty royal necropolis in Abusir. Its

exclusive location north of the pyramid of Neferirkare indicates that it was built by an elite official. From the accomplished surface survey, it appears that the tomb in this location is not isolated and it was part of a larger cemetery, which consisted of several tombs still awaiting excavation.

Despite its relatively small dimensions, the mastaba features several important characteristics. The superstructure of the mastaba has a simple chapel with a serdab to the south and a small, most likely secondary, chapel to the north of it. The main chapel displayed a monumental false door that occupied most of the west wall, and it was probably made of red granite. The chapel is situated in the centre of the mastaba. Moreover, the eastern façade is decorated with highly unusual southern and northern cult niches and also by monumental hieroglyphic inscriptions. Another highly unusual feature is its basalt pavement. The use of basalt blocks for the pavement in the entrance recess, the passageway to Chapel 1 and in the cult chapel itself is the only attestation of such a practice in a non-royal tomb in the Old Kingdom.

The official Kairsu is the only attested owner of this tomb from the Old Kingdom. Officials of the same name are known from the same period from Giza, Dahshur and Hammamiyeh but never as tomb owners. There are also several attestations of official(s) Kairsu in Abusir archives.

The fact that canopic jars were found in Shafts 1, 2 and 3 indicates that there were actual burials belonging to Kairsu and (probably) some other members of his family. Unfortunately, except for the burial of Kairsu himself, the remaining burials were badly damaged.

The distribution of the pottery within the tomb indicates that the tomb was frequented from the mid-Fifth Dynasty down to the mid-Sixth Dynasty, which means for at least a century. While Shaft 1, its relieving chamber and Burial Chamber 1 feature pottery assemblages dating to the mid-Fifth Dynasty, Shafts 2–4 contained pottery from the second half of the Fifth Dynasty. Shafts 5 and 6, which were constructed at a later stage of the tomb's use, display pottery dated to the late Fifth – early Sixth Dynasty. The entrance rooms contained pottery context from the Sixth Dynasty down to Merenre (for the pottery in detail, see Arias in this issue).

Some of the titles of Kairsu such as overseer of all royal works and priest of Khnum demonstrate that he was a high ranking official. In fact, title no. 3 “overseer of all works of the king” puts Kairsu on a par with the highest contemporary officials in the state administration (Strudwick 1985: 217; Krejčí 2000: 74–75). Two of his titles appear to be unattested: no 5 “priest of Hathor, Mistress of the Sycamore, Mistress of Qusiya” and no. 6 “[priest of Khnum], foremost of the Mansion of Life [in all his places]”. They are indicative of his engagement both in the province(s) and in Memphis where the House of Life represented one of the critical institutions relating to the archiving of texts covering various topics from science to religion. Simply put, it was the centre of wisdom in ancient Egypt. There was a very close link established between this institution and

the god of creation Khnum. It is also significant that the House of Life starts to appear in our evidence from the reign of Nyuserre when Osiris is attested for the first time. In Abusir cemeteries, two very important officials held titles connected with Khnum and the House of Life – Shepseskafankh (AS 39) and the anonymous owner of the rock-cut mastaba AS 31 (Bárta 2015: esp. 25).

Despite several dozens of relief fragments, there is only one that allows us to discuss the decoration programme of Kairsu's chapel. It is the palanquin scene fragment, probably one of the earliest attested from non-royal tombs, which again indicates the elevated status of the tomb owner. On a general level, the palanquin scene seems to make its appearance in the decoration of the non-royal tombs in the reign of Nyuserre. It is in the reign of this ruler that many new motifs in the tomb decoration come to light (Bárta 2005; Roth 2006; Bárta – Dulíková 2015). In this tomb, it is clearly a social marker, which together with the used building material (black basalt) and the titles of Kairsu leaves no doubt to his exclusive social status.

Another important feature of the tomb is the fact that the statue of the tomb owner was placed in front of the sarcophagus, facing east as the lower part of the statue still preserved *in situ* testifies. This is yet another important piece of evidence to maintain that ancient Egyptians were placing statues not only in different areas of tombs' superstructures but, and this is very new evidence, in the burial chambers themselves. This has been confirmed by several different contexts in Abusir South tombs (Bárta – Vymazalová 2018).

Given all the evidence above, there is a serious possibility that the owner of the tomb may be identical to the famous sage of Egyptian history, who, according to a much later tradition, was author of the *Loyalist teaching*, *Teaching for Kagemni* and *Teaching of Kairsu* and also father of the early Sixth Dynasty Vizier Kagemni (for Kairsu in later tradition, see Vernus 2019: 84–85). Kairsu features among the famous sages depicted on the so-called Daressy's block dated to the Ramesside period and originating from a tomb in the Abusir-Saqqara area (Mathieu 2012: 826; pl. VII: 2). Explicit proof, of this identity however, is missing.

#### BIBLIOGRAPHY:

- Angel, J. Lawrence – Kelley, Jennifer Olsen – Parrington, Michael – Pinter Stephanie  
1987 “Life stresses of the free black community as represented by the First African Baptist Church, Philadelphia, 1823–1841”, *American Journal of Physical Anthropology* 74/2, pp. 213–229.
- Bárta, Miroslav  
2005 “Architectural Innovations in the development of the non-royal tomb during the reign of Nyuserre”, in: Jánosi, Peter (ed.). *Structure and significance: thoughts on ancient Egyptian architecture*, Viena: Verlag der Österreichischen Akademie der Wissenschaften, pp. 105–130.
- 2015 “Tomb of the chief physician Shepseskafankh”, *Prague Egyptological Studies* XV, pp. 15–27.

- Bárta, Miroslav – Dulíková, Veronika  
2015 “Divine and Terrestrial: power rhetorics in Ancient Egypt (case of Nyusera)”, in: Coppens, Filip – Janák, Jiří – Vymazalová, Hana (eds.). *7. Symposium zur Königsideologie / 7th Symposium on Egyptian Royal Ideology: Royal versus Divine Authority. Acquisition, Legitimization and Renewal of Power*, Wiesbaden: Harrassowitz, pp. 31–48.
- Bárta, Miroslav – Vymazalová, Hana  
2018 “Created for eternity: statues and serdabs in the late Fifth Dynasty tombs at Abusir South”, in: Kuraszkiewicz, Kamil O. – Kopp, Edyta – Takács, Dániel (eds.). *The Perfection that Endures... Studies on the Old Kingdom Art and Archaeology*, Warsaw: Department of Egyptology, Faculty of Oriental Studies, University of Warsaw, pp. 59–74.
- Borchardt, Ludwig  
1907 *Das Grabdenkmal des Königs Ne-user-re<sup>c</sup>*, Leipzig: Hinrichs'sche Buchhandlung [Ausgrabungen der Deutschen Orient-Gesellschaft in Abusir 1902–1908. Bd. 1].
- Bružek, Jaroslav – Santos, Frédéric – Dutailly, Bruno – Murail, Pascal – Cunha, Eugenia  
2017 “Validation and reliability of the sex estimation of the human os coxae using freely available DSP2 software for bioarchaeology and forensic anthropology”, *American Journal of Physical Anthropology* 164/2, pp. 440–449.
- Case, D. Troy – Burnett, Scott E. – Nielsen, Thomas  
2006 “Os acromiale: Population differences and their etiological significance”, *HOMO – Journal of Comparative Human Biology* 57/1, pp. 1–18.
- Épron, Lucienne – Daumas, François – Goyon, Georges  
1939 *Le tombeau de Ti, Fasc. I: Les approches de la chapelle*, Le Caire: Institut français d'archéologie orientale.
- Hassan, Selim  
1941 *Excavations at Giza. Vol. III. 1931–1932*, Cairo: Government Press, Bulâq.
- Havelková, Petra  
2014 “Anthropology”, in: Bárta, Miroslav (ed.). *The Tomb of the Sun Priest Neferinpu (AS 37)*, Prague: Charles University in Prague, Faculty of Arts [Abusir XXIII], pp. 105–119.
- Hunt, David R. – Bullen, Lawrence C.  
2007 “The frequency of os acromiale in the Robert J. Terry collection”, *International Journal of Osteoarchaeology* 17/3, pp. 309–317.
- Jirásková, Lucie  
2015 “Damage and repair of the Old Kingdom canopic jars – the case at Abusir”, *Prague Egyptological studies* XV, pp. 76–85.
- Jones, Dilwyn  
2000 *An index of ancient Egyptian titles, epithets and phrases of the Old Kingdom*, Oxford: Archaeopress.
- Khouli, Ali – Kawanati, Naguib  
1990 *The Old Kingdom Tombs of El-Hammamiya*, Sydney: The Australian Centre for Egyptology [Australian Centre for Egyptology: Reports 2].
- Krejčí, Jaromír  
2000 “Some notes on the ‘Overseer of Works’ during the Old Kingdom”, *Ägypten und Levante* 10, pp. 67–75.
- Leclant, Jean – Clerc, Georges  
1997 “Fouilles et travaux en Égypte et au Soudan”, *Orientalia* 66, pp. 222–363.
- Malek, Jaromir  
1992 “A meeting of the Old and New, Saqqâra during the New Kingdom”, in: Lloyd, A. B. (ed.). *Studies in pharaonic religion and society in honour of J. Gwyn Griffiths*, London: Egypt Exploration Society, pp. 57–76.
- Mathieu, Bernard  
2012 “Réflexions sur le «fragment Daressy» et ses hommes illustres”, in: Zivie-Coche, Christiane – Guermeur, Ivan (eds.). *«Parcourir l'éternité». Hommages à Jean Yoyotte*, Turnhout: Brepols [Bibliothèque de l'École des Hautes Études, Sciences religieuses 156], pp. 819–853.
- Miles, Albert Edward Wiliam  
1994 “Non-union of the epiphysis of the acromion in the skeletal remains of a Scottish population of ca. 1700”, *International Journal of Osteoarchaeology* 4/2, pp. 149–163.
- Odler, Martin (with contributions by Kmošek, Jiří – Dupej, Ján – Arias Kytarová, Katarína – Jirásková, Lucie – Dulíková, Veronika – Jamborová, Tereza – Msallamová, Šárka – Šálková, Kateřina – Kmoníčková, Martina)  
2016 *Old Kingdom Copper Tools and Model Tools*, Oxford: Archaeopress [Archaeopress Egyptology 14].
- Posener-Kriéger, Paule  
1976 *Les archives du temple funéraire de Néferirkarê-Kakai (Les papyrus d'Abousir). Traduction et commentaire I–II*, Le Caire: Institut français d'archéologie orientale du Caire [Bibliothèque d'étude 65].
- Posener-Kriéger, Paule – Cenival, Jean Louis de  
1968 *Hieratic Papyri in the British Museum. Fifth Series. The Abu Sir Papyri*, London: Trustees of the British Museum.
- Posener-Kriéger, Paule – Verner, Miroslav – Vymazalová, Hana  
2006 *The pyramid complex of Raneferef. The papyrus archive*, Prague: Czech Institute of Egyptology, Charles University [Abusir X].
- Ranke, Hermann  
1935 *Die ägyptischen Personennamen. Bd. I. Verzeichnis der Namen*, Glückstadt: Verlag von J. J. Augustin.  
1952 *Die ägyptischen Personennamen. Bd. II. Verzeichnis der Namen*, Glückstadt: Verlag von J. J. Augustin.
- Raxter, Michelle H. – Ruff, Christopher B. – Azab, Ayman – Erfan, Moushira – Soliman, Muhammad – El-Sawaf, Aly  
2008 “Stature estimation in ancient Egyptians: a new technique based on anatomical reconstruction of stature”, *American Journal of Physical Anthropology* 136/2, pp. 147–155.
- Reitz, Elisabeth J. – Wing, Elisabeth S.  
2008 *Zooarchaeology*, Cambridge: Cambridge University Press.
- Roth, Ann Macy  
2006 “Multiple Meanings in Carrying Chair Scenes”, in: Fitzenreiter, Martin – Herb, Michael (eds.). *Dekorierter Grabanlagen im Alten Reich. Methodik und Interpretation*, London: Golden House Publications [Internet-Beiträge zur Ägyptologie und Sudanarchäologie VI], pp. 243–254.
- Sammarco, V. James  
2000 “Os acromiale: frequency, anatomy, and clinical implications”,

- The Journal of bone and joint surgery. American volume 82/3, pp. 394–400.
- Scheele-Schweitzer, Katrin  
2014 *Die Personennamen des Alten Reiches. Altägyptische Onomastik unter lexikographischen und sozio-kulturellen Aspekten*, Wiesbaden: Harrassowitz Verlag [Philippika. Marburger altertumskundliche Abhandlungen 28].
- Sjøvold, Torstein  
1990 “Estimation of stature from long bones utilizing the line of organic correlation”, *Human Evolution* 5/5, pp. 431–447.
- Smith, H. S. – Jeffreys, D. G. – Málek, J.  
1983 “The survey of Memphis, 1981”, *Journal of Egyptian Archaeology* 69, pp. 30–42.
- Strudwick, Nigel  
1985 *The administration of Egypt in the Old Kingdom. The highest titles and their holders*, London: Kegan Paul International.
- Steindorff, Georg  
1913 *Das Grab des Ti*, Leipzig: Hinrichs.
- Stirland, Ann  
1987 “A possible correlation between os acromiale and occupation in the burials from the Mary Rose”, in: Capecchi, V. – Rabino Massa, E. (eds.). *Proceedings of the Fifth European Meeting of the Paleopathology Association. Sienna, Italy, 3–4 September 1984*, Sienna: Tipografia Siense, pp. 327–334.
- Szilvássy, Johann – Kritscher, Herbert  
1990 “Estimation of Chronological Age in Man Based on the Spongy Structure of Long Bones”, *Anthropologischer Anzeiger* 48, pp. 289–298.
- Trotter, Mildred – Gleser, Goldine C.  
1952 “Estimation of stature from long bones of American Whites and Negroes”, *American Journal of Physical Anthropology* 10/4, pp. 463–514.
- 1977 “Corrigenda to ‘Estimation of stature from long limb bones of American Whites and Negroes’”, *American Journal of Physical Anthropology* 47/2, pp. 355–356.
- Vachala, Břetislav  
2004 *Die Relieffragmente aus der Mastaba des Ptahshepses in Abusir*, Prague: Set out [Abusir VIII].
- Verner, Miroslav  
1977 *The mastaba of Ptahshepses: Reliefs I*, Prague: Charles University [Abusir I].
- Verner, Miroslav – Callender, Vivienne G.  
2002 *Djedkare's Family Cemetery*, Prague: Set out [Abusir VI].
- Vernus, Pascal  
2019 “The Sages/Wisemen in Ancient Egypte”, in: Anthonioz, Stéphanie – Fink, Sebastian (eds.). *Representing the Wise. A Gendered Approach. Proceedings of the 1st Melammu Workshop, Lille, 4–5 April 2016*, Münster: Zaphon, pp. 71–117.
- Wild, Henri  
1953 *Le tombeau de Ti, Fasc. II, La chapelle*, Le Caire: Institut français d'archéologie orientale.  
1966 *Le tombeau de Ti, Fasc. III, La chapelle*, Le Caire: Institut français d'archéologie orientale.
- Yamine, Kaissar  
2014 “The prevalence of os acromiale: A systematic review and meta-analysis”, *Clinical anatomy* 27/4, pp. 610–621.
- Yoshimura, Sakuji (ed.)  
2001 *Abusir south [I]*, Tokyo: The Institute of Egyptology – Waseda University (in Japanese).

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