



Fig. 1 The pyramid complex of King Djedkare in South Saqqara, with the Dahshur pyramids in the background (photo H. Vymazalová)

Djedkare's pyramid complex: Preliminary report of the 2016 season

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Documentation work carried out by the Egyptian mission in the pyramid complex of King Djedkare at South Saqqara continued between October 8 and November 10, 2016 (fig. 1). It was noticed during the earlier documentation seasons that the only available architectural plans of the pyramid complex, which were published by the Italian architects Vito Maragioglio and Celeste Rinaldi in 1962 and 1977, not only contain a number of inaccuracies, but are also inconsistent among themselves (Megahed 2011a; Megahed 2011b; Megahed 2014; Megahed *et al.* 2016; Megahed 2016: 13–14, 81; Megahed – Jánosi 2017). Therefore, it is the aim of the current Egyptian mission to confirm or correct their plan in the areas of the mortuary temple of Djedkare, excavated in the 1940s and 1950s. In addition, the mission intends to protect, consolidate and restore the royal monument as well as the surrounding structures including non-royal tombs.

The work in 2016 concentrated on four areas of the pyramid complex:¹

1. The magazine rooms to the south of the entrance hall (*pr-wrw*) (T.f 3–9);
2. The western end of the causeway (C) and its connection to the entrance hall (*pr-wrw*);
3. The area to the south of the causeway (C);
4. Restoration and consolidation works inside the pyramid of Djedkare.

The magazine rooms to the south of the entrance hall (*pr-wrw*) (T.f 3–9)

Temple area T.f features two distinct parts (see fig. 2). The western part is badly preserved, only containing a few floor blocks indicating the existence of a corridor in the southern half, while the northern part of the area presents itself as an open courtyard (T.f 1–2).² The eastern half of T.f is situated between the entrance hall (T.a) in the north and

the massif (T.i) to the south. It consists of a corridor (T.f 3) running east-west from which six doors opened into six rooms (magazines?) to the north (T.f 4–9). The area was selected with regard to the other parts of the funerary temple, which were documented during the previous seasons, including T.a – T.b – T.c – T.d and the northwestern part of the open courtyard T.e (Megahed – Jánosi 2017). As in the previous seasons, the aim of the work in 2016 was to fully document this part of the temple and to cover it again for protection. Thus, the site was carefully cleared of the sand and rubble debris, and the large limestone blocks that were lying on the floor of that area were moved aside. A large part of the original limestone pavement survived in good condition. The floor was built of good quality limestone showing the characteristic patchwork pattern already observed in other parts of the pyramid temple (see *e.g.* Megahed 2016: 84–85). Even though no traces of walls remained *in situ*, the surface of the floor featured the smooth and rough parts clearly indicating the outlines of the individual rooms that once existed in this area (figs. 3–4). It is also typical that the floor blocks of the rooms and corridor were generally smaller in size, while larger blocks once supported the side walls.

The corridor (T.f 3) was 1.6 m wide and the length of the preserved parts reached 14.25 m. Its outlines are fairly well visible, although large areas of its limestone floor blocks, especially in the western part, are missing today. The eastern part is better preserved. Enough remained, however, to show that at its western end a door existed, clearly marked by the traces of a door socket and faint traces of typical scratches of a door wing on the floor's surface (see fig. 4). No masonry between the corridor and the core of the massif (T.i) to the south has survived. The outlines on the floor blocks and the narrow space make it clear, however, that no doors opened to the south and simply a plain wall of about 2 m thickness formed the bonding device between the corridor and the southern massif.

Two of the pavement blocks under the south wall of the corridor bear so-called quarry marks of a cross in a circle written in red paint on their sides (once hidden, now looking south). These marks are known from other royal monuments as well.³ In addition, an inscription in black paint was added onto one of these blocks, perhaps referring to one of the work gangs (fig. 5a, b).

Several more hieratic inscriptions were recorded on the blocks of the north wall of the southern massif (T.i), which was cleaned to its foundation. The bottom of this massif

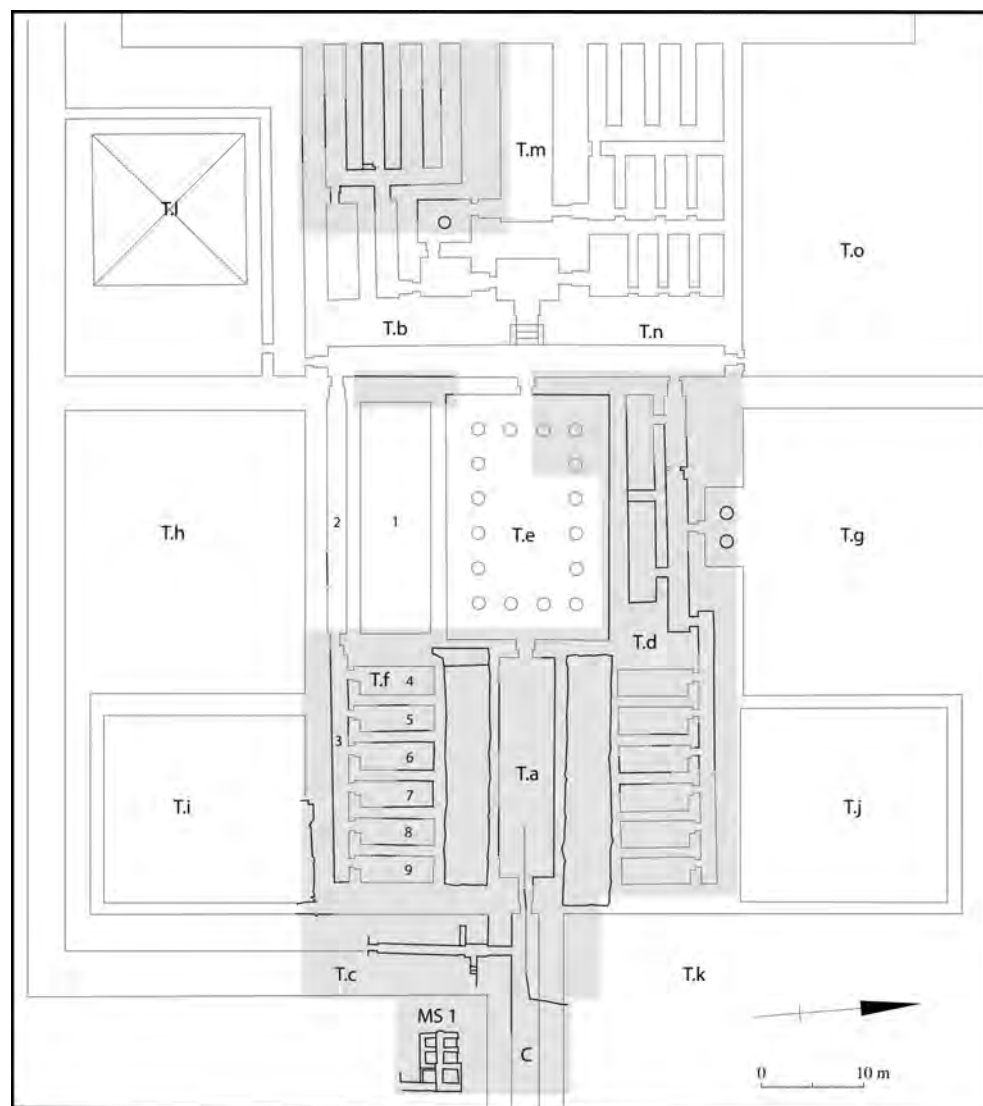


Fig. 2 General plan of Djedkare's pyramid temple. The areas marked in grey represent the cleaned and documented parts of the precinct in 2013–2016, thick lines show the preserved parts of the rooms. The layout and size of the rooms in white areas are based on Maragioglio's and Rinaldi's plan (1977) (drawing P. Jánosi)



Fig. 3 Rooms 3–9 of area T.f (view from west to east), showing the preserved parts of the floor, outlines of the storerooms and the corridor situated to the south of the entrance hall (photo P. Jánosi)

was built of large blocks of grey limestone, on which the same sign repeated several times in red paint (fig. 6a, b). It is clearly a sign of a building, similar to the shape of the *šnw*-sign (Gardiner 1957: 498, O 51). However, the *šnw*-sign usually has its side walls oblique and the strokes inside short (Goedicke 1988: 30a; Möller 1909) even though variants with two vertical lines can be found as well (Ransom-Williams 1932: pls. Ij and IIb). With no further context, the interpretation of this hieratic sign is not easy; it might also represent an *ḥ*-shrine (Gardiner 1957: 495, O 21) or a *pr-nw*-chapel (Gardiner 1957: 495, O 20). It perhaps designates the structure itself, but further exploration of the pyramid complex is needed to confirm or correct this hypothesis. Outlines on the pavement, which supported the massif's northeastern corner, showed that the eastern façade of the temple was once adorned with a pair of torus moldings. One was at the southeast corner of the massif, the other marked its northeastern corner, which was hidden behind the temple's façade. A cavetto cornice crowned the top of the cased massif, as is shown by large limestone blocks still lying in this area and displaying these features.

The north wall of the corridor (T.f 3) featured six doors leading to six rooms or magazines (T.f 4–9). Only two of these entrances can be traced on the preserved parts of the pavement today, namely the doors to magazines T.f 4 and T.f 5. The back (north) walls of these rooms were constructed against the southern side of the south wall of the entrance hall (*pr-wrw*, T.a). As in other parts of this

area, no walls exist anymore, but the outlines of the missing walls of almost all the rooms are clearly visible on the preserved surface of the floor blocks. None of the storerooms has its outline preserved in full, however, the missing parts of individual rooms can be reconstructed accordingly. The walls between the rooms have more or less the same width of 1.05 m to 1.10 m (corresponding to 2 cubits). Rooms T.f 5–T.f 9 measured 2.50–2.60 m (ca. 5 cubits) in width.

It is worth mentioning that the thickness of the walls and the widths of the rooms are comparable to the storerooms located to the north of the *pr-wrw*, which were explored in 2015. In that area, however, only a very small part of the floor blocks survived until today. The floor outlines show that the walls of these rooms did not run entirely straight. As the pavement did not survive in the southern parts of the magazines, it is difficult to determine precisely their original lengths. Based on the preserved northern outlines of T.f 6–T.f 7 and the southern outlines and door sockets of T.f 3 and T.f 5, it can be calculated that the original length of each room was ca. 8.75 m (ca. 16.5 cubits).

The western end of the causeway (C) and its connection to the temple's entrance hall (*pr-wrw*)

Today the original course of the temple's causeway leading down into the valley can clearly be discerned.⁴ Its entire length remains unknown, however, since the position of the

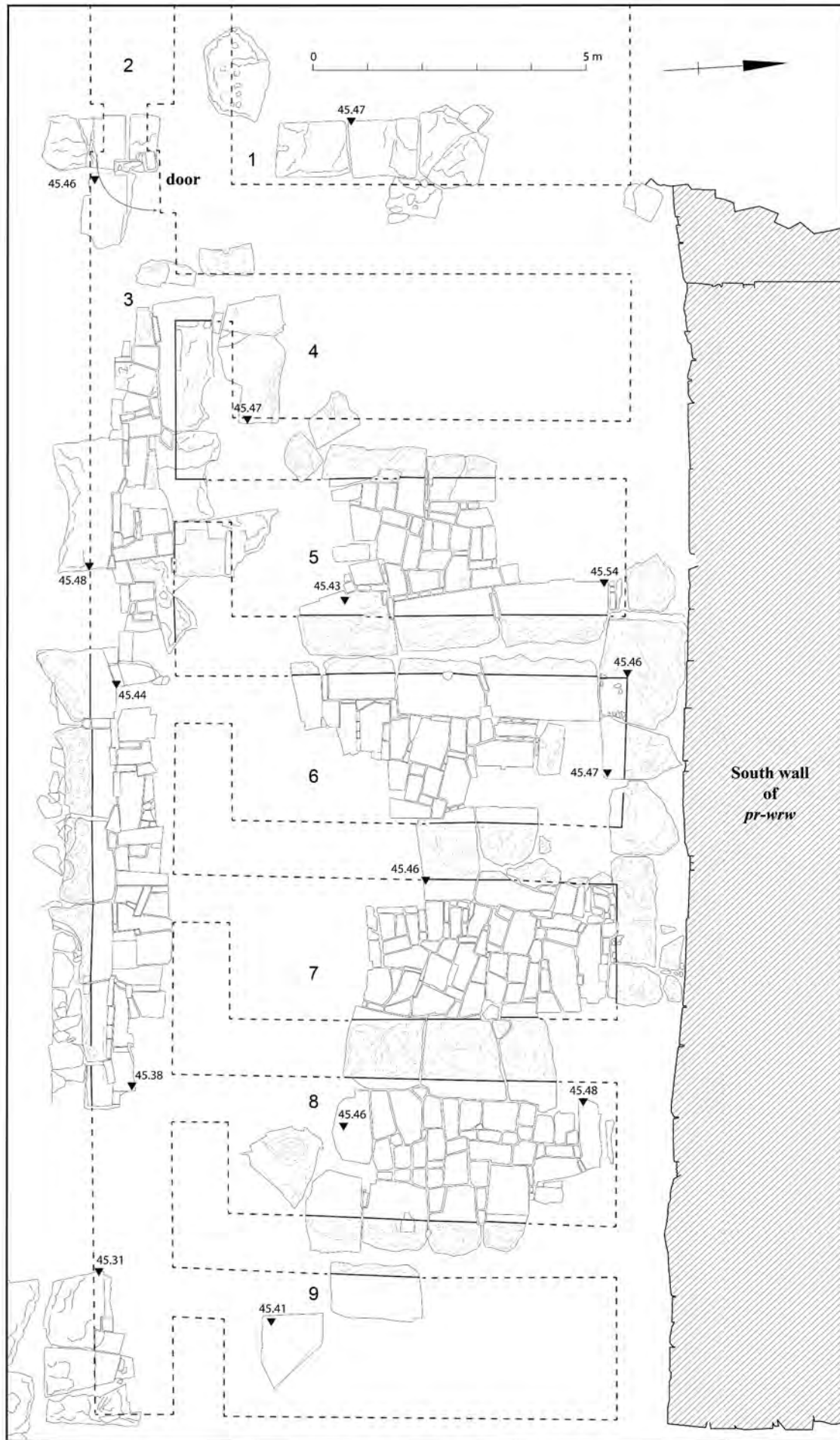


Fig. 4 Archaeological plan of rooms 3–9 of area T.f (drawing P. Jánosi, H. Vymazalová)



Fig. 5a, b Hieratic inscription on a pavement block of corridor T.f 3 (photo and drawing H. Vymazalová)



valley temple – which is lost under the modern houses of Saqqara – is also unknown.⁵ In 2016 season an area of ca. 13 × 8 m in front of the entrance into the *pr-wrw* was cleared in order to document the remaining parts of the western end of the causeway (C) and its connection to the temple. Part of the causeway's southern side is still quite well preserved and visible (fig. 7). Only five large limestone blocks remained on its north side, which once belonged to

the foundation of the causeway's north wall. From the actual pathway, only three blocks of white limestone remained, which sit on small coarse limestone blocks of different quality. The width of the pathway did not exceed 2.6 m (5 cubits) and the causeway walls were ca. 2.4 m thick, but no masonry remained and these measurements are only inferred from the sizes of and the traces on the existing foundation blocks.⁶ Unfortunately, also no blocks

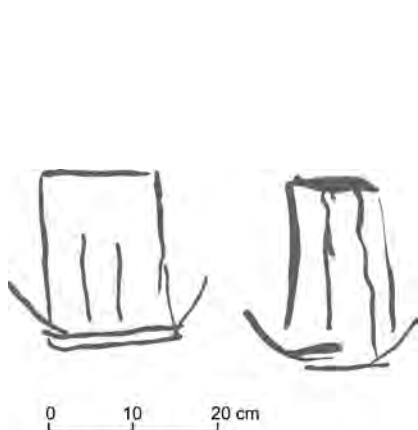


Fig. 6a, b Hieratic sign repeated twice on one of the blocks *in situ* in the north wall of the so-called southern massif (photo and drawing H. Vymazalová)



with architectural features could be found, which would help to reconstruct the original form of the causeway's architecture.⁷ Contrary to Nyuserre's causeway (Borchardt 1907: 45), where basalt blocks formed the dado of the inner walls, not a single fragment of this kind of stone has come up thus far, and it must be concluded that Djedkare's causeway was entirely built of white limestone as Sahure's causeway (Borchardt 1910: 39). The total height of the passage remains unknown.⁸ However, the causeway was once certainly covered and had a ceiling decorated with stars. Some blocks decorated with the typical star pattern were found during the clearance of that area. The inner side walls were vertical and certainly decorated with fine raised relief. A fragment showing female personifications of funerary domains or offering bearers, which might have originated from the causeway's south wall, was retrieved from the pit in the entrance into the *pr-wrw* (DJ 216).

By cleaning down to the causeway's foundation, we revealed part of a well-preserved water drain, which consists of oblong quartzite blocks of differing lengths.⁹ The entire length excavated in the causeway is 6.5 m. The orientation of the drain does not strictly follow the east-west alignment of the causeway, but angles slightly from southwest to northeast. At a certain point to the east, the drain shows a marked bend to the northeast and runs for another 4 m. No further blocks were found there, but it seems likely that the end of this drain was constructed similarly to the water conduit found at the western end of Nyuserre's causeway, where the drain ends above a huge sandstone basin to collect the liquid.¹⁰ The drain channel

is not evenly cut out of the hard stone and shows a puzzling variation of depth from very shallow at 3 cm to as deep as 8 cm. The broadest section varies between 10 to 16 cm. Crude limestone blocks forming part of the foundation covered these drain blocks. The joints and gaps between the quartzite blocks were patched with thick white plaster, some of it covering even the inside of the drain. The cutting, setting, and bonding of these blocks are rather carelessly executed¹¹ and one wonders for how long this drain functioned after the temple was finished.¹²

Further to the west, following the path into the temple, the drain disappears under the floor blocks of the causeway. After a distance of 6 m, it reappears again in a huge hole, which was obviously dug by stone robbers in the entrance of the *pr-wrw*. On the other side of this hole, a further drain block is present, clearly indicating the course of the drain ran through the entire length of the *pr-wrw*. It might be supposed that, as in the temple of Nyuserre, the drain ran straight to the centre of the columned courtyard, where a basin set in the pavement collected the rainwater (Borchardt 1907: 61). Thus far, no traces of this drainage system have been uncovered in the *pr-wrw* or in the courtyard.

The area to the south of the causeway: a private necropolis of the late Old Kingdom

The area located to the south of the causeway and immediately adjoining the temple's eastern façade is one of the most intriguing parts of Djedkare's pyramid complex.



Fig. 7 The western part of the causeway with partly preserved pavement and foundation blocks, showing the remains of a drain (photo P. Jánosi)



Fig. 8 The mud brick structures located to the southeast of the funerary temple at the beginning of the work (photo H. Vymazalová)

The site was explored by Ahmed Fakhry in late 1952 during his excavations in the pyramid complex, but except for a very brief account (Fakhry 1959: 30), the importance of this private necropolis remains enigmatic (*cf.* Porter – Moss – Málek 1979: 672). According to the excavator's report "seventeen tombs which had all been robbed" were discovered and obviously explored.¹³ These structures, constructed entirely of mud bricks (but see the limestone burial chamber in shaft 5), made them susceptible to damage and destruction, and most of them have been covered again by wind-blown sand (fig. 8). Presently, the layout of these tombs is difficult to understand without further exploration. The goal of the 2016 season was, therefore, to start documenting the northwestern part of the still visible structures, consolidate them and to ascertain their relationship to the temple architecture.

Tomb MS 1

Several tombs, respectively tomb shafts, could be distinguished on the surface of the site, but the work in 2016 focused on the northwestern part of a mud brick structure (mastaba MS1) comprising several shafts.

This tomb measures *ca.* 5.5 × 4.0 m and is adjoined by other structures on its eastern and southern side (fig. 9). The complex consisted of 40–70 cm thick mud brick walls built in a north-south and east-west direction forming six inner compartments. The north wall of the tomb, *i.e.* the north wall of shafts 1, 3 and 5 is almost completely destroyed. It was only possible to ascertain the existence

of this wall in the lowermost courses of the shafts. On the eastern side, a narrow corridor between MS 1 and another tomb to the east (which was not explored in 2016) was uncovered. This corridor continues about 2 m to the south, but was not further explored. The floor of the corridor consisted of a mud layer, still partly preserved, which featured discoloring in various parts, indicating some kind of ancient use. The southern side of the structure is also not entirely explored and the southern side of MS 1 – if there was any – not yet detected. The remains of a mud brick wall running east-west in this part do not belong to the original tomb structure; it seems to be of a much later date (Late Period?), although the mud bricks are the same as used in the construction of MS 1. In later periods, temple squatters reused old building material for their own purposes at the site, a feature that can be observed in various parts of the temple precinct.

The area immediately to the south of shafts 2, 4 and 6 was cleaned as well, which in the upper layers revealed debris probably left by Fakhry's workmen. About 1.3 m deeper and below the debris, a simple burial placed in an east-west direction was found together with a complete pottery jar of a Late Period date. Further south, another structure was located, which was not explored in 2016.

The inner compartments of the tomb included five shafts (1–5) and a small burial place (6). The shafts are arranged in two rows comprising three shafts each. It becomes clear that shaft 5 in the northeastern corner is the main shaft of the tomb building. All shafts were uncovered and emptied

by Fakhry's workmen. Fakhry mentioned that all the shafts were robbed (Fakhry 1959: 31). In some of them, various finds (including bones) were redeposited.

Shaft 1

This shaft is located in the northwestern corner of the tomb complex. The shaft is 1.26×0.82 m wide at its opening and reached 4.73 m deep (mud brick size: $33 \times 16 \times 9$ cm). The north wall of this shaft is almost entirely missing due to long exposure to weather and destruction. The other three walls are better preserved. At the bottom of the shaft, rows of well laid mud bricks were found, but these do not cover the entire floor area of the shaft. The fill of the shaft (certainly the backfill from Fakhry's work) consisted of limestone chips of different sizes and brown sand.

The burial chamber was constructed to the south of the shaft, and it reaches under the bottom of shaft 2 to the south. The entrance to the burial chamber was 1.24 m high and was built as a semi-circular arch. The chamber was 2.64×0.85 m large with a north-south orientation, and it was found empty of any fill. As the walls of the shaft, the walls of the chamber were constructed entirely of mud bricks, as was its vaulted ceiling. At the southern end of the chamber we found scattered human remains, however, not in their original place. In the same area, waste and old plastic bags from the remnants of the old excavation work were also found.

Shafts 2 and 4

These two shafts are located in the southern part of the tomb and were apparently built together. Shaft 2 is located to the south of shaft 1; it is 1.05×0.95 m wide at its opening and reached 2.80 m deep (mud brick of $32/33 \times 16 \times 8$ cm). Shaft 4 is situated to the east of shaft 2; it is 1.10×1.10 m wide at its opening and reached 2.80 m deep (the same depth as in shaft 2). The fill of the shafts consisted of brown sand, limestone chips, stones, rubble and very fine dust.

The burial chambers of the shafts were constructed to the south and were both oriented north-south. The entrance to the burial chamber of shaft 2 was 1.08 m high and was built in the form of a semi-circular arch. The chamber of this shaft was 3.50×0.95 m. The entrance to the burial chamber of shaft 4 was 1.14 m high and was built in the form of a semi-circular arch. The chamber was 3.50×0.95 m. While Fakhry refilled the shafts, both burial chambers were found empty of any fill. The burial chamber of shaft 2 contained a few scattered human remains.

The chambers were constructed entirely of mud bricks and each had a vaulted ceiling. No floor was detected on the bottom of the two shafts, and their chambers and the lowermost course of the mud brick walls was built directly on sand mixed with rubble. Older, disturbed mud brick masonry with limestone pieces can be seen underneath the southern and eastern wall of the chamber in shaft 4.

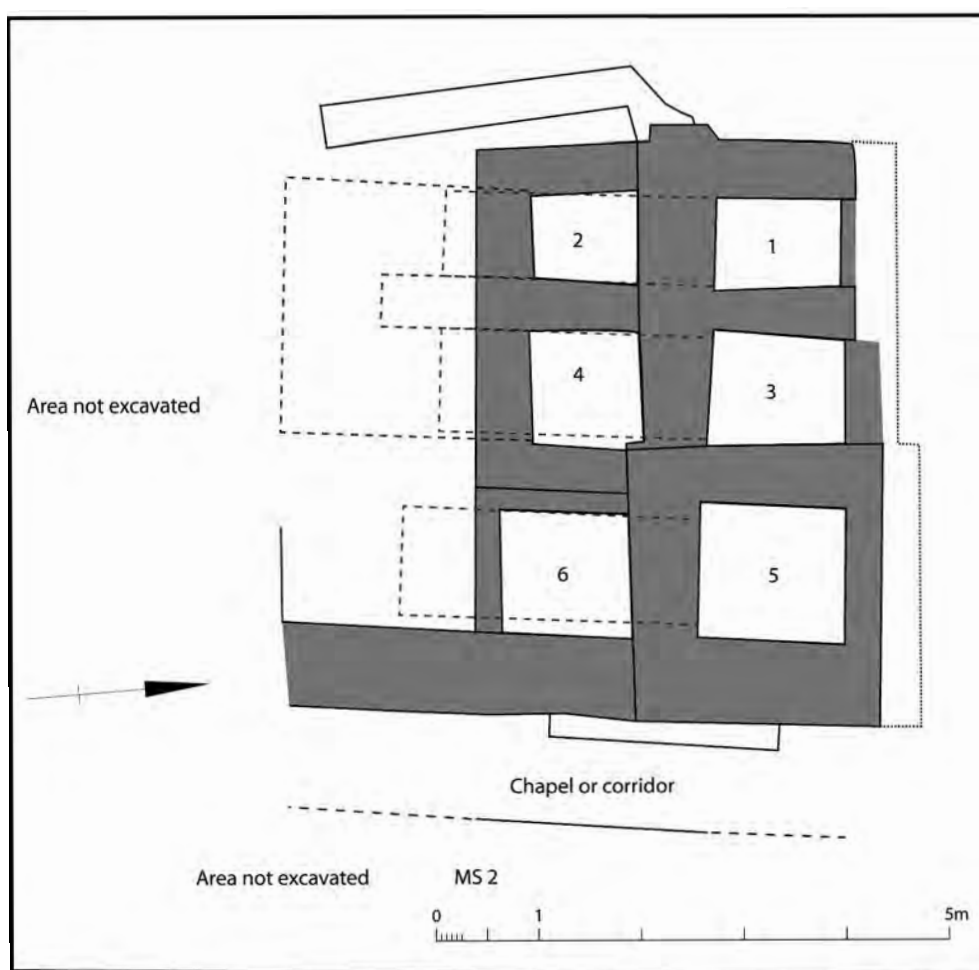


Fig. 9 Plan of tomb MS 1.
The substructures are indicated in dashed lines (drawing P. Jánosi)



Fig. 10 The vaulted burial chamber in shaft 4, showing the passage into the chamber of shaft 2 on the right side (photo H. Vymazalová)

The mud brick masonry of the burial chamber of shaft 1 (namely its outer south wall) was detected underneath the central part of both burial chambers. To the south of it, the two chambers of shafts 2 and 4 were connected through a 1 m wide opening in the dividing wall (fig. 10).

Shaft 3

Shaft 3 is located to the east of shaft 1; it is 1.30 × 1.05 m wide at its opening and reached 4.96 m deep. The north mud brick wall of the shaft is almost entirely destroyed, only 1.70 m remained. No floor was detected on the bottom of the shaft and the fill of the shaft contained limestone chips of different sizes and brown sand.

The burial chamber was constructed to the south of the shaft, and its entrance was built in the form of a semi-circular 1.55 m high arch. The chamber has a north-south orientation, and it measures 2.62 × 1.05 m. The walls and the vaulted ceiling of the chamber are constructed entirely of mud bricks. The entrance to the burial chamber was found blocked by a modern wall built by the previous excavator, perhaps to protect the neighboring shaft 5 (see below) as well as an unscribed offering table with a *hṯp*-sign and two shallow basins on its sides (DJ-F15/2016; 40 × 26.5 × 12 cm), which was left inside the chamber.

Shaft 5

This shaft is the most important part of MS 1; it is the largest shaft in the tomb, measuring 1.46 × 1.30 m at its opening and reaching 4.75 m deep. The top of this shaft was partly reconstructed and protected by a modern wooden roof and a wooden door, installed by the previous excavators; these installations were in bad state and no longer played their protective role. Therefore, a new iron roof and an iron door were installed on this shaft.

The shaft was found free of any fill and contained a wooden ladder left by the previous explorers, which is strong enough to be used again. After a simple cleaning of fine dust collected at the bottom of the shaft, the burial

chamber was easily accessible. As expected, this was the decorated burial chamber dated to the Sixth Dynasty (Fakhry 1961: 181; Moursi 1988a).

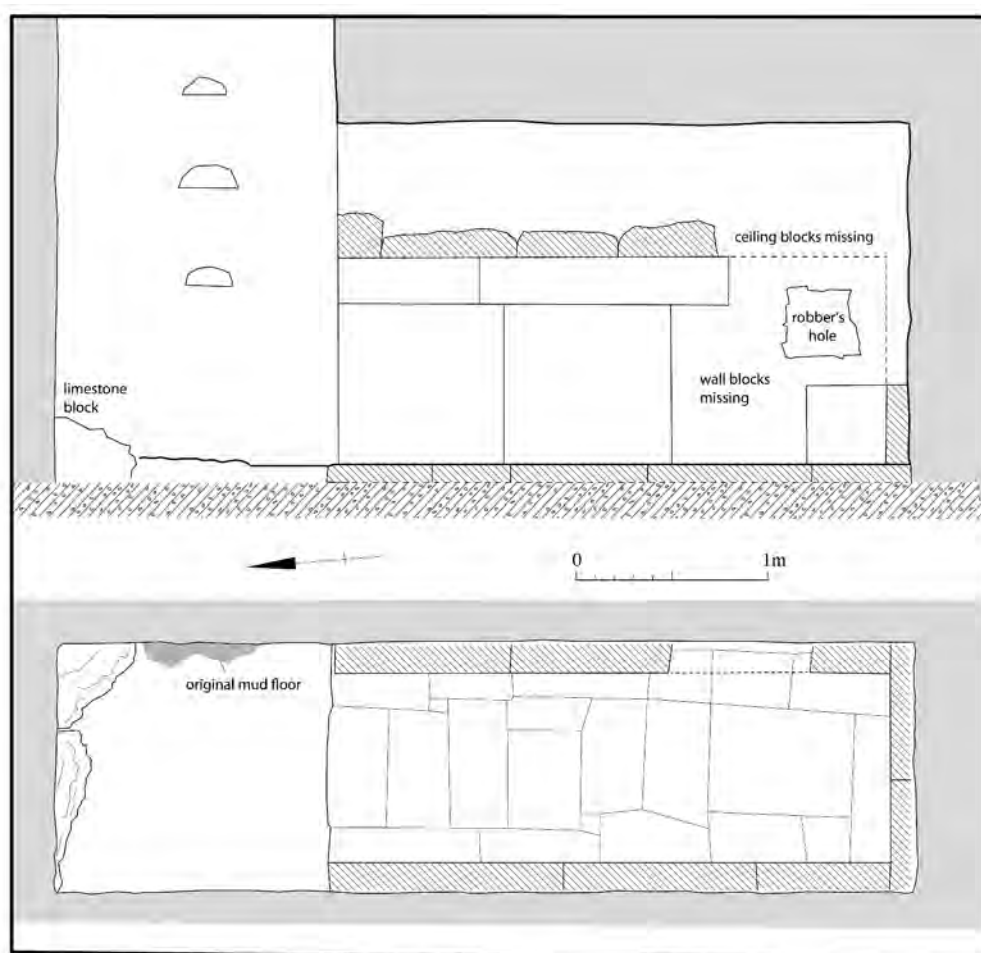
The burial chamber, constructed of mud bricks, is located to the south of the shaft with a north-south orientation, and it is 3.0 × 1.3 m large and 1.8 m high, with a plastered vaulted ceiling. This chamber contained the proper burial chamber built of limestone, which measured 2.90 × 1.02 × 1.07 m and was once closed with limestone slabs found at the bottom of the shaft. Its floor is made of limestone blocks and is well preserved (fig. 11). Its flat ceiling made of 12–25 cm thick slabs is painted in red and black to imitate red granite; it is not preserved in the southern part of the chamber, thus revealing the mud brick vault above. The side walls of ca. 10 cm thick slabs bear painted decoration in good quality and a good state of preservation (figs. 12–13).

The west wall is the most complete in the chamber but is missing part of its southern end. The scenes on this wall represent various offerings, e.g. numerous jars, jewelry, oil vessels, ornaments jars, folded cloth, and mirrors. Beside them, a depiction of the palace façade (false door) follows, further followed by at least three registers of chests (the upper slab is missing in this scene). Above the offerings a single line of inscription runs: *hṯp dj nzwṯ Inpw hntj zh-nṯr jmj wt, nb t3 dsr krs.t(w).f m hrt-nṯr jm3ḥw Ppjj-ḥnḥ*, “A boon which the king gives and Anubis, foremost of the divine booth, who is in the embalming place, lord of the sacred land, that he be buried in the necropolis, the revered one Pepyankh”.

Of the southern wall of the chamber, only the bottom section is preserved; the scene depicts heaps of different kinds of grain. Interestingly, a picture of the chamber published by Moursi in 1988 shows that the southern wall was complete at that time (Moursi 1988a: 65–68) and also contained scenes of four granaries.

The east wall of the chamber is missing a large part of its southern end. The wall exhibits paintings in the northern part, with various food offerings, e.g. meat, bread, and

Fig. 11 Plan and section (view to the east) of shaft 5 in tomb MS 1 (drawing P. Jánosi)



geese together with different types of jars. Above the offerings, the offering formula is written with the title and another name of Pepyankh, it reads: *ḥtp dj nzwṯ Wsjr prt-ḥrw n smr-wṯy šps-nzwṯ jm3ḥw Sṯw*, “A boon which the king gives, and Osiris, an invocation offering to the sole-companion, the noble of the king, Setju” (for the name *Sṯw*:

Ranke 1935: 298, no. 17; Ranke 1952: 385; Dobrev 1996: 105–106, figs. 1–5, photos 3, 5). The offerings are followed by a depiction of the palace façade (false door) and further by an offering list, of which only a small part is preserved. Underneath the offering list, there is a small part of a scene of slaughtering animals.



Fig. 12 The vaulted mud brick chamber in shaft 5 containing the limestone burial chamber of Pepyankh Setju (photo H. Vymazalová)



Fig. 13 The painted burial chamber of Pepyankh Setju (photo H. Vymazalová)

In the space between the flat ceiling of the limestone burial chamber and the mud brick vaulted ceiling, an offering table of a certain Isesy was found (DJ-F12/2016; 44 × 27 × 16 cm), apparently left there by the earlier excavator (fig. 14). It shows a *htp*-sign and two shallow basins on its sides and the base of the *htp*-sign bears a line of hieroglyphic inscription reading: *htp dj nzw t Inpw tp-dw.f prt-hrw nt šps-nzwt mt-n-z3 Izzjj*, “A boon which the king gives like Anubis who is upon his mountain, an invocation offering for the noble of the king and the regulator of a phyle, Isesy”. This basin was moved to the Saqqara storeroom of Ministry of Antiquities no. 1.

“Shaft” 6

“Shaft” 6 is rather a mere burial chamber, measuring 1.20 × 1.30 m and reaching only 0.90 m deep. Like the other shafts and chambers, it has no floor but ends on natural gravel. The walls of this shaft were all built of mud bricks, adjoining the south wall of shaft 5 and east wall of shaft 4. From its layout and the structure, it becomes clear that this chamber is a “cheap” addition created as an afterthought to the tomb’s structure. The room has a vaulted roof, which was disturbed in its southern part. The ancient looters evidently entered through this opening, and certainly also did the previous excavator. Piled up in the upper layer of

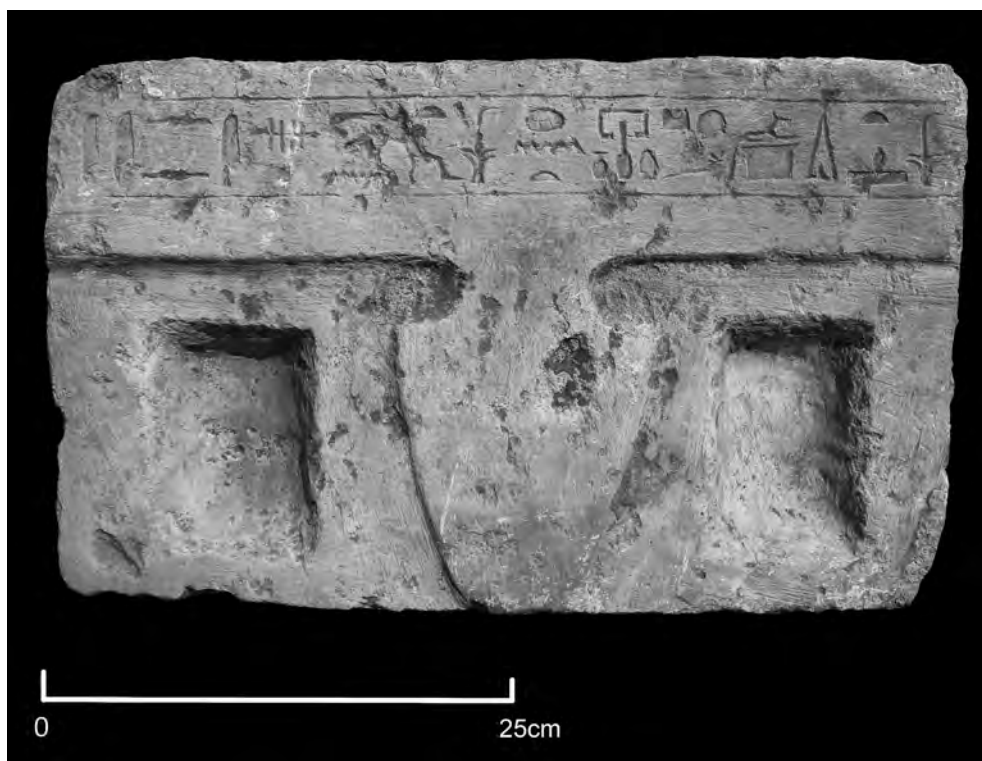


Fig. 14 The offering table of Isesy found in shaft 5 (photo H. Vymazalová)

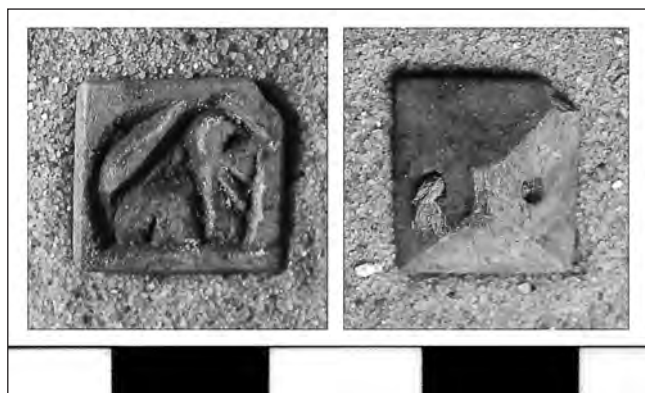


Fig. 15 The stamp seal found in “shaft” 6 (photo H. Vymazalová)

its fill, human remains were found in the northeastern corner of the chamber, including four skulls. The assemblage of such a large number of skulls renders it doubtful that four individuals were buried in such a narrow chamber. Thus, the origin of these bones remains obscure. This deposit of bones was probably left by Fakhry's workmen. From the fill, some small faience beads and a small stamp seal (DJ-F10/2016; 13.5 × 12.5 × 8.0 mm) were retrieved. The stamp-seal has a pyramidal shape (Wiese 1996: 54–55, Typ SF-BB3) and contains a small hole at the top in which the remains of a string were still preserved. The stamp face of the amulet bears an incised decoration of a simple figure of a seated lion facing right, and another simplified crouching enemy (fig. 15) (for comparison, see *e.g.* Wiese 1996: nos. 426, 427). This type of stamp seal can be dated to the Sixth Dynasty or the First Intermediate Period (Wiese 1996: 55, 65, 81–83), and this dating corresponds with the Sixth Dynasty date of the decorated burial chamber in another shaft of tomb MS 1.¹⁴

As MS 1 is built surprisingly close to the royal temple, one of the objectives of the 2016 season was to investigate the space between the private tombs and the royal temple. As it turned out, the narrow corridor separating these two structures suffered from heavy damage and looting. Presently, the area is filled with clean yellow sand and huge limestone blocks fallen from the temple and causeway. It is not quite clear how much of this accumulated debris is the result (backfill) of Fakhry's work. As it turned out, no intact layers seem to exist anymore, and by excavating deeper it soon became apparent that eventually more of the temple's still intact parts to the east would inevitably collapse without further measures to consolidate the architecture, especially the foundations. This coincides with the fact that due to this destruction (in ancient times) large parts of the tomb's northern side are missing today. Nevertheless, at the bottom of the northernmost three shafts (1, 3 and 5), it was possible to observe that tomb MS 1 was obviously built right upon the natural floor level of the plateau, consisting of dense sand and huge flint stones that formed a compact and hard layer. At the bottom of shaft 5, rough limestone blocks were visible, which are probably part of the base of the causeway's south embankment.

For the time being, it seems that these mud brick structures were built when restrictions regarding the

temple's sanctity no longer existed. How far the tomb builders respected the temple's architecture cannot be stated at the moment. Were these mud brick tombs built directly against the sloping southern face of the causeway's embankment? To answer this question, further clearance along the causeway's south side is needed.

After having explored the extant structures, it became clear that shaft 5 (the burial of Pepyankh Setju, see above) was the main shaft of this complex. Shafts 1 and 3 were built against shaft 5, followed by the construction of the southern two, shafts 2 and 4, which do not reach deep into the ground but “sit” on the substructures of 1 and 3. “Shaft” 6 in the southeastern corner seems to be the youngest; it was a simple addition in order to create more space for burials. These six shafts were constructed within a short period of time or even in one building period as is indicated by the same building material and the bonding method. The original height of the tomb structure (the shafts) is nowhere preserved.

During the clearance and documentation of tomb MS 1, a number of finds were uncovered, which were undoubtedly already found by Fakhry in 1953. These include not only the above-mentioned offering tables but also the many human bones (in shafts 1, 2, 4, 5, 6) and fragments of a large clay coffin (in shafts 2 and 4 and to the south and east of the tomb). We presume that Fakhry left these finds, which in those days were deemed inappropriate to be moved to magazines, in the places where he found them. But concerning the find spots of the many bones, it cannot be ascertained if they really originated from the place we found them (see “shaft” 6). On the other hand, several finds which seem to have come from this particular area were removed by Fakhry, and a few of them were later published, including *e.g.* the false door and offering table of Setju (Moursi 1988b). These objects might have come from one of the tombs explored in 2016 season.

Restoration and consolidation works inside the pyramid of Djedkare

The substructure of Djedkare's pyramid is unique since it features several architectural elements that appeared for the first time in an Old Kingdom pyramid building. These include, *e.g.*, the entrance into the substructure of the pyramid located on the floor of the northern chapel. Its position is shifted out of the pyramid axis to the west. For the first time, the existence of a northern chapel is attested, which became standard from then on (Maragioglio – Rinaldi 1977: 74, tav. 10, fig. 1; Jánosi 1995: 146–147).¹⁵ The subterranean rooms show an enlargement to the east of the antechamber, the so-called serdab, which features three small compartments (Megahed 2016: 75).

The substructure of the pyramid was badly damaged by looters and stone robbers over the course of time. This was already clear in 1945 when Abdel Salam Hussein and his team entered the pyramid (Drioton 1947: 520). The burial chamber and the antechamber built of fine white Tura limestone were painstakingly quarried and moved out of the pyramid. Of the side walls, only a few blocks survived in the western part of the burial chamber. Thus, the substructure presents itself as one huge hall allowing a



Fig. 16 The antechamber of Djedkare's pyramid before the 2016 season (photo S. Vannini)

direct view “behind” into the masonry supporting the roof as well as into the pyramid's core masonry. This consists of irregular blocks and small chips of local limestone piled up in an irregular manner to form the inner structure of the pyramid (Megahed 2016: 74–75). Only the serdab with the three niches/chambers to the east escaped vandalism and presents itself as fairly intact, exhibiting a flat roof. The antechamber and the burial chamber have a vaulted saddle back ceiling made of large limestone blocks measuring over 10 cubits (5.25 m) in length.

Previous expeditions (Egyptian and French) consolidated only parts of the entrance passage of the pyramid (Mathieu 2001: 545–546, no. 22; Mathieu 2002: 527, no. 21).

However, the antechamber and the burial chamber have not been consolidated yet (Megahed *et al.* 2016). The wall that originally separated the two chambers is completely missing as well as some of the ceiling blocks and parts of the north, south and west walls (fig. 16). During the past seasons, we monitored the falling of limestone pieces of masonry from the exposed core of the pyramid. Consolidation of the substructure became, therefore, very urgent and a 3D scan of the substructure was carried out in 2015, documenting the state of preservation before the reconstruction (Megahed *et al.* 2016).

During the course of the 2016 season, the reconstruction works in Djedkare's substructure focused on the core



Fig. 17 The consolidation works of the eastern wall of the antechamber (photo M. Megahed)



Fig. 18 The consolidated east wall of the antechamber of Djedkare's pyramid (photo H. Vymazalová)



above the serdab and the east wall of the antechamber where a large part of the pyramid's core was missing (Megahed *et al.* 2016: Abb. 10, 16). Before the work started, the area of the missing floor and the adjoining masonry was carefully examined and the remains of hieratic builders' inscriptions on the foundation blocks, the floor blocks and the blocks of the masonry behind the missing south wall of the antechamber were documented. The missing part of the floor was then filled with clean sand to support the stability of the reconstructed part of the antechamber (fig. 17).

The method suitable for the consolidation of the antechamber was consulted with authorities of the Saqqara Inspectorate of the Ministry of Antiquities and its Conservation Department. The missing part of the pyramid's core was entirely filled with limestone blocks, chips, and mortar, and the outer casing was constructed of smoothed white limestone blocks. The mortar consisted of a mixture of kaolin and lime, which has also been used in the restoration of the Step Pyramid in Saqqara (this method and material is required by the Conservation Department of the Saqqara Inspectorate). The reconstructed part of the east wall of the antechamber is clearly distinguishable from the original part of the wall (fig. 18).

During the work, also eastern sections of the north and south walls of the antechamber near the serdab had to be reconstructed. It is planned in the future to continue the consolidation in the other areas inside the pyramid, where the walls, as well as parts of the pyramid's core, are also missing (Megahed *et al.* 2016: 46, Abb. 11, 14, 16). It is worth mentioning that the missing parts of the walls that reveal the core of the pyramid enable us to peer into the pyramid itself and help us understand the construction methods of the ancient builders. For instance, two layers of the saddle ceiling blocks are clearly visible, exhibiting shallow holes on their sides for their manipulation with the help of wooden beams, while the third layer (see

Maragioglio – Rinaldi 1977: tav. 12 fig. 2) seems not to have been used in Djedkare's pyramid. Even though the reconstruction eliminates this advantage by hiding the exposed parts of the pyramid, it is necessary for the stability of the pyramid, its safety, and preservation.

Notes:

- ¹ As for the numbering of the different parts of the pyramid temple, see Megahed (2016: Pl. 1).
- ² This part of the temple needs further cleaning and documentation. The more so since in their plans Maragioglio and Rinaldi offer three possible ways of reconstructing the access into T.f from the east wall of the transverse corridor (Maragioglio – Rinaldi 1962: tav. 6; Maragioglio – Rinaldi 1977: tav. 13 and 14).
- ³ For other examples, see, for instance, the pyramid complex of Sahure (Borchardt 1910: 90, M49), the pyramid complex of Neferefre (Verner *et al.* 2006: 187–204, nos. 1, 10, 33), also the mastaba of Ptahshepses (Verner 1992: nos. 29, 34, 58, 115, 119, 122, 129, 139, 181, 238, 298, 300, 379, 390, 408, 416), and other tombs at the royal necropolis of Abusir. For discussion on this geometric mark, see *e.g.* Verner (1992: 164–165).
- ⁴ Thus far, it cannot be confirmed that the causeway deviated to the south from the axis of the pyramid temple as stated by Maragioglio – Rinaldi (1977: 86): “The direction of the causeway is not exactly east-west but inclined a few degrees to the south”. The western end of the causeway investigated thus far does not yield such a deviation but runs straight into the temple.
- ⁵ See the remarks in Grinsell (1947: 143), furthermore Megahed (2016: 87); Maragioglio – Rinaldi (1977: 86) give a length of 220 m. Thus, it seems that Djedkare's causeway might have been as long as Sahure's causeway, 235 m (Borchardt 1910: 11–12). For the position of the valley temples in the Old Kingdom, see Klemm – Klemm – Murr (1998: 173–189).
- ⁶ Our measurements do not contradict the reconstruction by Maragioglio – Rinaldi (1977). The only point on which we differ is the exit in the north wall of the causeway as suggested by the Italian scholars (Maragioglio – Rinaldi 1966: tav. 6; Maragioglio – Rinaldi

- 1977: tav. 13). This exit was proposed based on the door in the opposite, south wall. No architectural remains confirm this suggestion, and we find it quite unlikely. Further cleaning along the northern façade of the temple and the northern massif should settle this question. It should be noted, however, that an exit at the west end of Unas' causeway is proposed based on the evidence of Djedkare, Pepy II and possibly Pepy I (see Labrousse – Moussa 2002: 11, figs. 6–8).
- ⁷ Maragioglio – Rinaldi (1977: 96, Obs. 18, tav. 14, fig. 5) suggested that the causeway had a form similar to Unas' causeway, showing no cornice at the top. Nothing is known about the slope of the outside walls.
- ⁸ Borchardt assumes an inner height of 10 cubits for Nyuserre's causeway (Borchardt 1907: Bl. 6 and 7). Unas' causeway has a height of 3.93 m (= 7.5 cubits) (Labrousse – Moussa 2002: 8, fig. 5). Whether the top of the causeway was adorned with a cavetto cornice (as reconstructed for Nyuserre) is not known, but feasible (see also footnote 7 above).
- ⁹ Neither Fakhry nor the Italian architects mention drains in their reports, and it seems that this feature was not uncovered by the excavators Hussein, Varille or Fakhry.
- ¹⁰ The only difference is, however, that the drain blocks and their covering slabs in Nyuserre's temple were made of red sandstone, see Borchardt (1907: 45, 62–63, Abb. 28, Bl. 6), foldout map at the end of the book; Maragioglio – Rinaldi (1977: 34).
- ¹¹ Compare the solid and exact construction in Sahure's temple, where in the drain blocks a pipeline made of copper was carefully set (Borchardt 1910: 76–83).
- ¹² For further thoughts on the effectiveness of the drains, see Borchardt (1907: 62) and Borchardt (1910: 83). The fact that Sahure's system was not repeated in other temples seems to show that the Egyptians quickly realized that the effectiveness of such a complex drainage system was limited.
- ¹³ Due to the lack of any detailed information or documentation from Fakhry's excavations regarding this part of the site, we were not able to identify his system of numbering the mastabas and shafts (Fakhry 1959: 30) (for the identification of shaft 5, see pp. 43–44, fig. 9 above); therefore, we gave them new numbers starting from west to east (the west represents the closest shafts to the funerary temple). It is clear, however, that this necropolis forms an important addition to the private tombs surrounding Pepy II's complex further south, see Jéquier (1929).
- ¹⁴ It is worth mentioning that an example of a pyramid-shaped stamp-seal with a Bes-figure was uncovered in 2010 in Abusir (Dulíková – Odler – Březinová – Havelková 2015).
- ¹⁵ We suppose that the so-called "pyramid of the Queen" also featured a northern chapel at the entrance. This part was, however, never properly excavated and awaits further exploration.
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Abstract:

The article presents the results of the 2016 archaeological season of the Egyptian mission in the pyramid complex of King Djedkare in South Saqqara. The works focused on the western part of the causeway where remains of a drainage was documented, and on the storerooms situated to the south of the entrance passage. During this work, also the north side of the so-called southern massive was cleaned. Besides the funerary temple, also the private cemetery located to the south-east of it started to be documented in this season. A mud brick structure, MS 1, was cleaned; it consisted of six shafts with vaulted burial chambers. Only one of the chambers (in shaft 5) was cased with limestone slabs, which bear a well preserved painted decoration. This burial chamber belonged to Pepyankh Setju and can be dated to the late Sixth Dynasty. Another part of the work in 2016 concentrated inside the pyramid of the king. The consolidation and restoration works were carried out in the burial apartments, concentrating on the missing part of the eastern wall of the antechamber and the core behind it.

Old Kingdom – South Saqqara – Djedkare – pyramid complex – mastaba

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