

ARCHAEOLOGY MEETING GEOPHYSICS ON POLISH EXCAVATIONS IN EGYPT

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Abstract

The article presents the results of archaeological excavations in two locations where geophysical surveys were carried out for the first time on Polish excavations in Egypt: Tell Atrib (ancient Athribis in Lower Egypt) and Saqqara (west of the pyramid of Djoser). It emphasizes the interdependence of archaeological and geophysical research. Particularly interesting were the results of three geophysical surveys made in Saqqara in 1987, 1997 and 2012 by three different teams using different methods. All of them helped identifying archaeological structures in two subsequent layers corresponding to two periods: a) Old Kingdom (lower stratum) with rock-hewn tombs of high officials; b) Ptolemaic Period with hundreds of burials found in a layer of sand (upper stratum).

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Key words: Tell Atrib, Saqqara, Old Kingdom, Ptolemaic Period

The first application of geophysics on an archaeological site in Egypt excavated on behalf of the Polish Center of Mediterranean Archaeology, University of Warsaw, was in 1985. It preceded rescue excavations at Tell Atrib (Lower Egyptian Athribis, capital of the tenth Lower Egyptian nome), which were carried out on an area in the eastern suburb of present-day Benha, adjacent to the hill of Kom Sidi Youssef (Fig. 1) which is venerated by the local populace (Myśliwiec & Sztetyło, 2000; Myśliwiec & Krzyżanowska, 2009; Myśliwiec & Herbich, 1988; Myśliwiec & Herbich, 1995). The survey, conducted by Tomasz Herbich (Fig. 2), aimed at supplying data to aid in choosing the most promising location for a series of trial pits testing for archaeological substance in an area intended under modern urban development (Dąbrowski, 1962; Leclère, 2008; Szymańska, 2005).

The survey was carried out using the electrical resistivity method in seven places located within this area (Myśliwiec & Herbich, 1988; Myśliwiec et al., 1993). Seven trenches were opened based on the results, including one (no. III) in a part of the area where the salinity of topsoil consisting of camel excrement (a consequence of camels being herded there for a long time) thwarted any geophysical prospection (Fig. 3). In the case of this trench, archaeologists were tempted by a large regular rectangle devoid of vegetation, which could be observed on the surface. The results here proved a revelation: an assemblage of fragmentary marble figurines representing Aphrodite and other Greek divinities, found in the context of coins and stamped handles of imported amphorae from the 3rd century BC. In all likelihood the remains belonged to a Greek sculptor's workshop (for references see: Myśliwiec & Krzyżanowska, 2009).

The other trial pits uncovered ruins of brick and stone architecture from Ptolemaic, Roman and early Christian peri-

ods, revealing the specific character of this northeastern suburb of ancient Athribis (Myśliwiec, 2011; Młynarczyk, 2012). In effect, the geophysical survey combined with archaeological testing put a temporary stop to modern building development in the area surrounding Kom Sidi Youssef (Fig. 4), turning it over instead to a joint archaeological team from the Polish Center of Mediterranean Archaeology, University of Warsaw, and the Egyptian Antiquities Service. Rescue excavations (Fig. 5), directed successively by the author of the present article and Professor Hanna Szymańska, were carried out annually until 1999 (For the last campaign, cf. Szymańska, 2000).

A geophysical survey was carried out next on a site in western Saqqara (Fig. 6). The prospection, carried out also by Tomasz Herbich (Fig. 7), preceded the start in 1987 of archaeological excavations by the Polish Center of Mediterranean Archaeology, University of Warsaw (Myśliwiec & Herbich, 1995; Herbich, 2003). The area selected for exploration was located directly to the west of the Djoser pyramid enclosure. The magnetic method applied in this case was not really expected to be successful in view of the conditions and character of the site: presumed stone architecture in a sandy layer, neither material with sufficient magnetic susceptibility to generate distinct “anomalies”. To the joy of both geophysicists and archeologists, the results of the survey surpassed all expectations. A dense conglomeration of “anomalies” was mapped on the magnetic map, doubtless reflecting the presence of mud-brick walls belonging to Old Kingdom mastabas, which – as the excavations later proved – lay sometimes directly below the sandy surface (Figs 8, 9).

This *embarrass de richesse* forced archaeologists to use other criteria in placing their first trenches. Three spots were selected. Trial pit I was located more or less on the western



Fig. 1. Tell Atrib: area south of Kom Sidi Youssef before excavations (phot. K. Myśliwiec).



Fig. 2. Geophysical survey at Tell Atrib in 1985. From left to right: Marek Chłodnicki, Barbara Ruszczyc, Jarosław Dobrowolski, Tomasz Herbich (phot. K. Myśliwiec).

TELL ATRIB — KOM SIDI YOUSUF

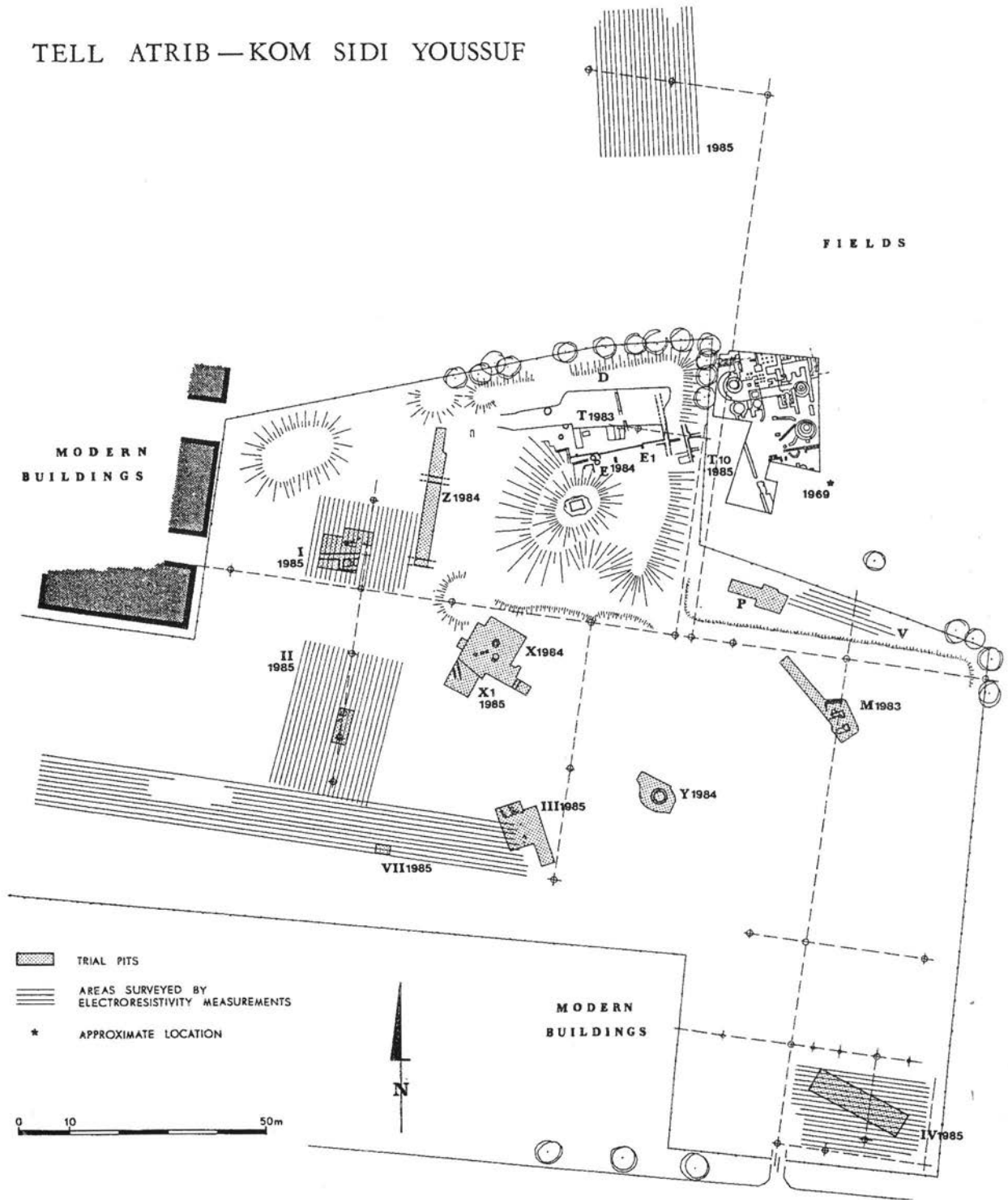


Fig. 3. Tell Atrib 1985. Geophysical survey and trial pits. (drawing by J. Dobrowolski).

extension of the E-W axis of Djoser's pyramid, trial-pit II was closer to the mastaba of Ptahhotep and trial-pit III lay on the eastern slope of a longitudinal hill spanning the area south of the Ptahhotep complex (Myśliwiec & Herbich, 1995). The lattermost trench was dug to check the character of the

sand-covered elevation, that is, to see whether it was a natural, geological formation or an architectural structure. The first season of excavations left no doubt that this part of Saqqara had been used as a necropolis from the Old Kingdom through the Byzantine Period.



Fig. 4. Remains of Ptolemaic and Roman Athribis upon excavations at Tell Atrib (phot. K. Myśliwiec).

The structures and small finds discovered in trial pit I located close to the pyramid enclosure were particularly promising (Myśliwiec et al., 2004). It was here that the mission, headed by the author of the present article, started regular excavations when it returned to the site in 1996. Below an upper layer containing simple, sometimes intact burials from the Ptolemaic Period (Radomska et al., 2008; Kaczmarek et al., 2008), an extraordinary tomb was discovered in 1997. It consisted of a finely carved rock-hewn cult chapel and a mud-brick superstructure with recessed walls, belonging to a man of three names – Merefnebef, Fefi and Unisankh, who was a vizier and who had four wives, represented in the tomb carvings as a quartet of harpists. This funerary structure from the beginning of the Sixth Dynasty turned out to be the first of its kind established in the location of a stone quarry dating from more than three hundred years earlier, when the adjacent pyramid was being constructed (Welc, 2011). Another important tomb from the same period, that of a noble called Ny-ankh-nefertem, was discovered beside the mastaba of Merefnebef (Myśliwiec & Kuraszkiewicz, 2010). The wall decoration of both funerary chapels is not only a unique record of late Old Kingdom relief and painting, but also an important source for the history of a turbulent time following the reign of Unis (Kanawati, 2003).

The Old Kingdom cemetery (our “Lower Necropolis”), which these tombs are part of and which was founded at the end of the Fifth Dynasty in an old stone quarry, remained in use till the First Intermediate Period. Excavations carried out after 1997 demonstrated that it had developed to the east and

west of the two mastabas mentioned above (Kuraszkiewicz, 2013; Rzeuska, 2006). In the east, excavators reached the enclosure wall of the pyramid of Djoser, and in the west the west side of a feature called the “Dry Moat” was taken as the limit (Fig. 10). At both ends of the explored area they uncovered features both surprising and mysterious.

At the east end there is a huge mud-brick-built platform built over Old Kingdom funerary structures (Myśliwiec, 2002; Myśliwiec, 2005; Myśliwiec, 2006a). It stands adjacent to the enclosure wall of the pyramid complex, extending southwards from a small wall aligned almost perfectly with the E–W axis of the pyramid (Fig. 11). Some features and particularly the pottery sherds found lying below and upon the platform, as well as between and inside the bricks used for its construction, suggest a terminus post quem for the structure, which seems to be the beginning of the Ramesside Period (Rzeuska, 2002; Rzeuska, 2007).

Its purpose remains a mystery. It has demonstrated no evidence of cult purpose and can be considered best as a form of protection for some earlier funerary structures of particular importance. It is still not clear how far south it extends beside the enclosure wall of the pyramid; it runs at least 50 m to the south of the excavation field, as indicated by a series of trial pits dug by the team. What were the original dimensions? What was it supposed to hide or protect? Who built this curious structure and for whom? These and many other questions cannot be answered at the present stage of research, and they will surely be instrumental in shaping the mission’s excavation program in the future.

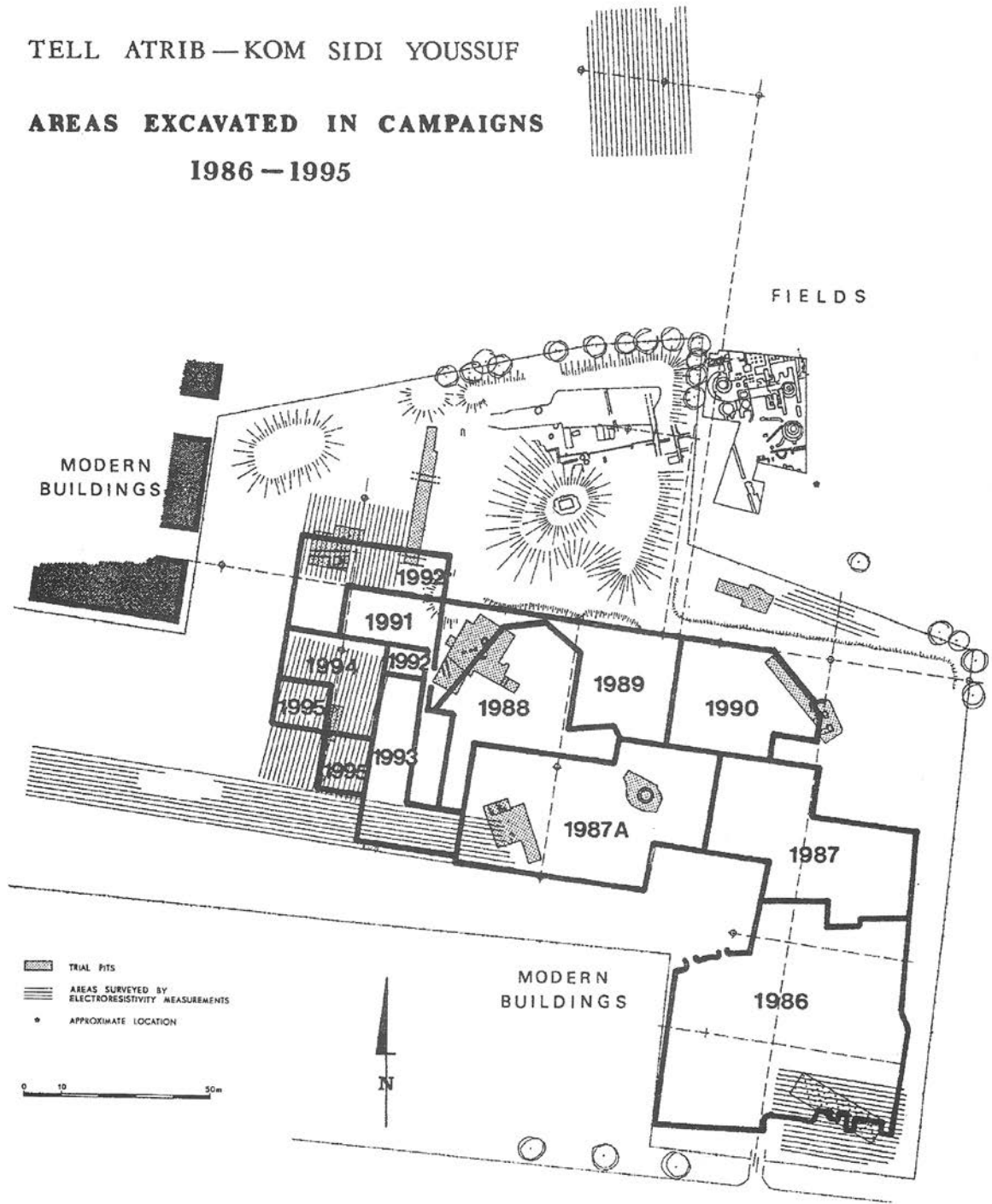


Fig. 5. Tell Atrib. Areas excavated in 1986-1995 (drawing by J. Dobrowolski).

The questions concerning the west part of the “Dry Moat” have proved equally important. Only the central part of the feature has been explored, spanning approximately 20 m from north to south. Digging has reached depths of about 5 m adjacent to the eastern and western façades (Myśliwiec, 2006b). The excavations uncovered some Old Kingdom structures, not all of funerary character, hewn into the “upper floor” of both rock walls bordering the depression. Of the three structures discovered in the east wall a long corridor

running to the west and ending in a kind of crypt proved unique (Figs 12, 13). The fill of the crypt contained two unusual deposits:

- a) concentration of wild animal skeletons lying on the surface of the fill (Ikram, 2002), possibly associated with the god Seth;
- b) a huge wooden harpoon decorated with representations of attacking snakes in relief, deposited in a long cylindrical box also of wood, doubtless a ritual object symbolizing



Fig. 6. Saqqara: area adjacent to the west side of the pyramid of Djoser before geophysical survey in 1987 (phot. K. Myśliwiec).

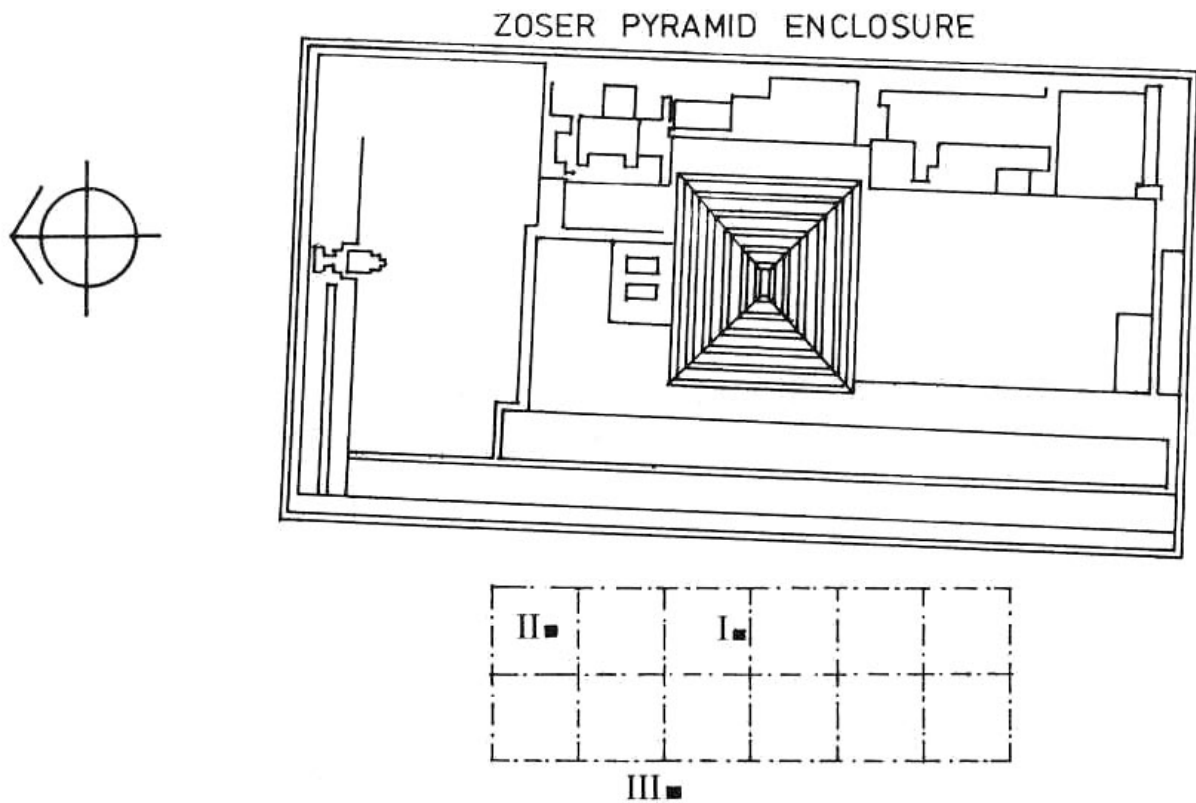


Fig. 7. Saqqara. Location of the geophysical survey 1987 west of the step pyramid (drawing by K. Kamiński).

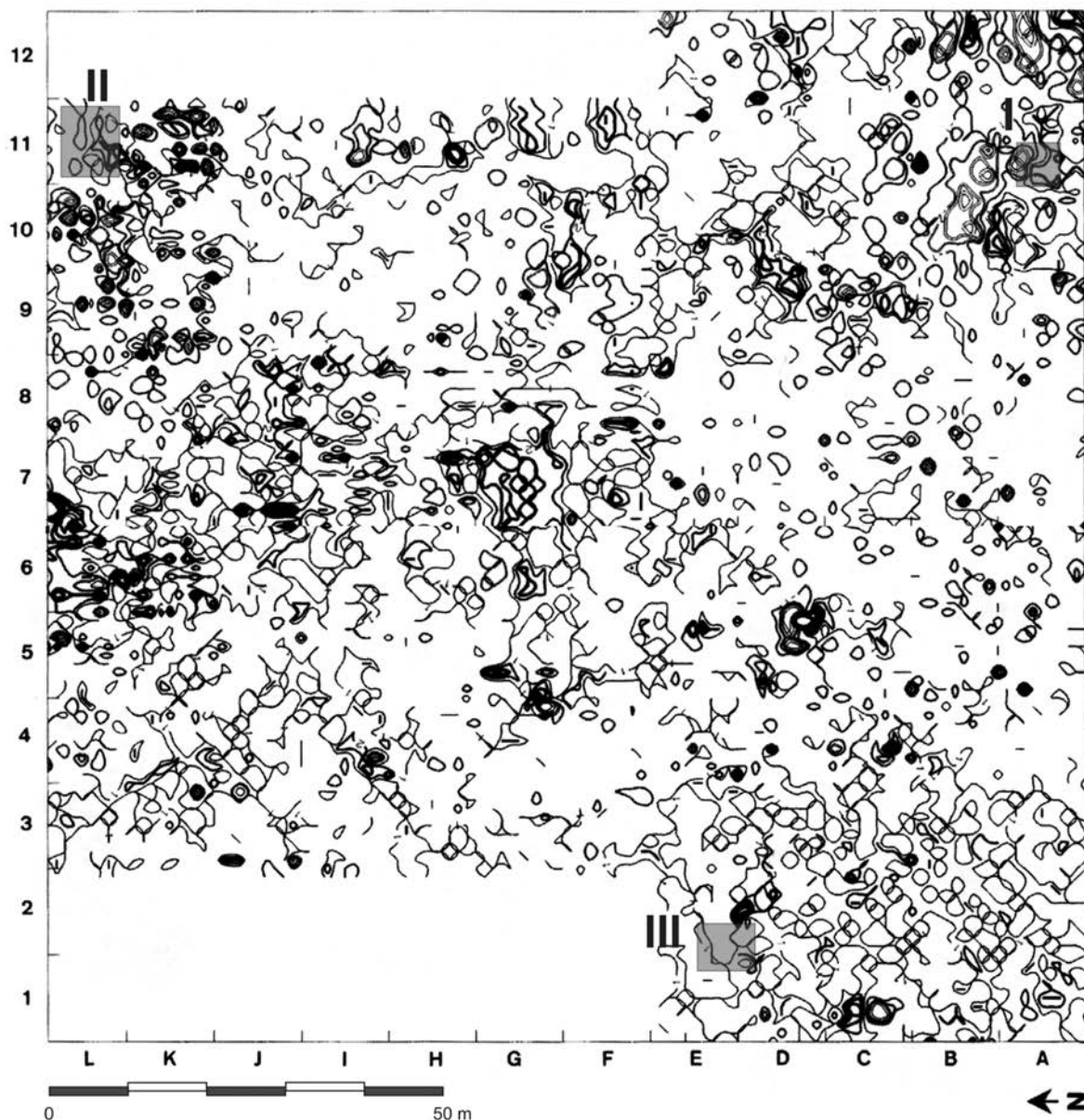


Fig. 8. Saqqara West (1987). Magnetic contour map. Contour intervals 1 nT. Bold lines represent positive values; double lines represent negative values. Grey transparent rectangles represent test trenches I, II and III (by T. Herbich).

the god Horus (Myśliwiec, 2001; complete bibliography in: Myśliwiec, 2012) (Fig. 13).

Among the structures hewn in the west wall of the “Dry Moat”, the tomb of Ikhi/Mery, one of the highest officials from the reign of Pepy I, was of greatest interest (Kuraszkiewicz, 2003).

How deep is the “Dry Moat” at the point where these tombs were discovered? Are there any funerary structures hewn in the walls of the “Dry Moat” below these tombs? Has the “moat” a uniform shape and function all through its length? These and other questions inspired the mission to undertake a geophysical survey of the area prior to any further excavation, especially as neither the prospection in 1997 (Figs 14, 15) (Fassbinder et al., 2001) nor similar, still unpublished work carried out by the late I. Mathiesson in 2001 have supplied a sufficiently clear picture of “subterranean topog-

raphy” to determine directions for research. A team of geophysicists including Dr. Jerzy Trzcinski, Dr. Fabian Welc and Dr. Sebastian Kowalczyk, joined the mission in 2012 (Fig. 16). The preliminary results of the overall survey of the concession field that they carried out using georadar are found in contributions presented in this volume.

As it often happens (and like it was at Tell Atrib in 1985), a surprising discovery made at the close of the field season in October 2012 unexpectedly changed the focus of future work by the team in Saqqara. Cleaning in front of the façade of the rock-hewn chapel of Ikhi/Mery revealed that its floor served a double function: it was also the ceiling of a tomb lying directly under this chapel (Fig. 17). The lower structure must be significantly earlier than the tomb in the “upper (uppermost?) floor”, for the latter could have been hewn and subsequently visited only once the sand filling the “moat” had

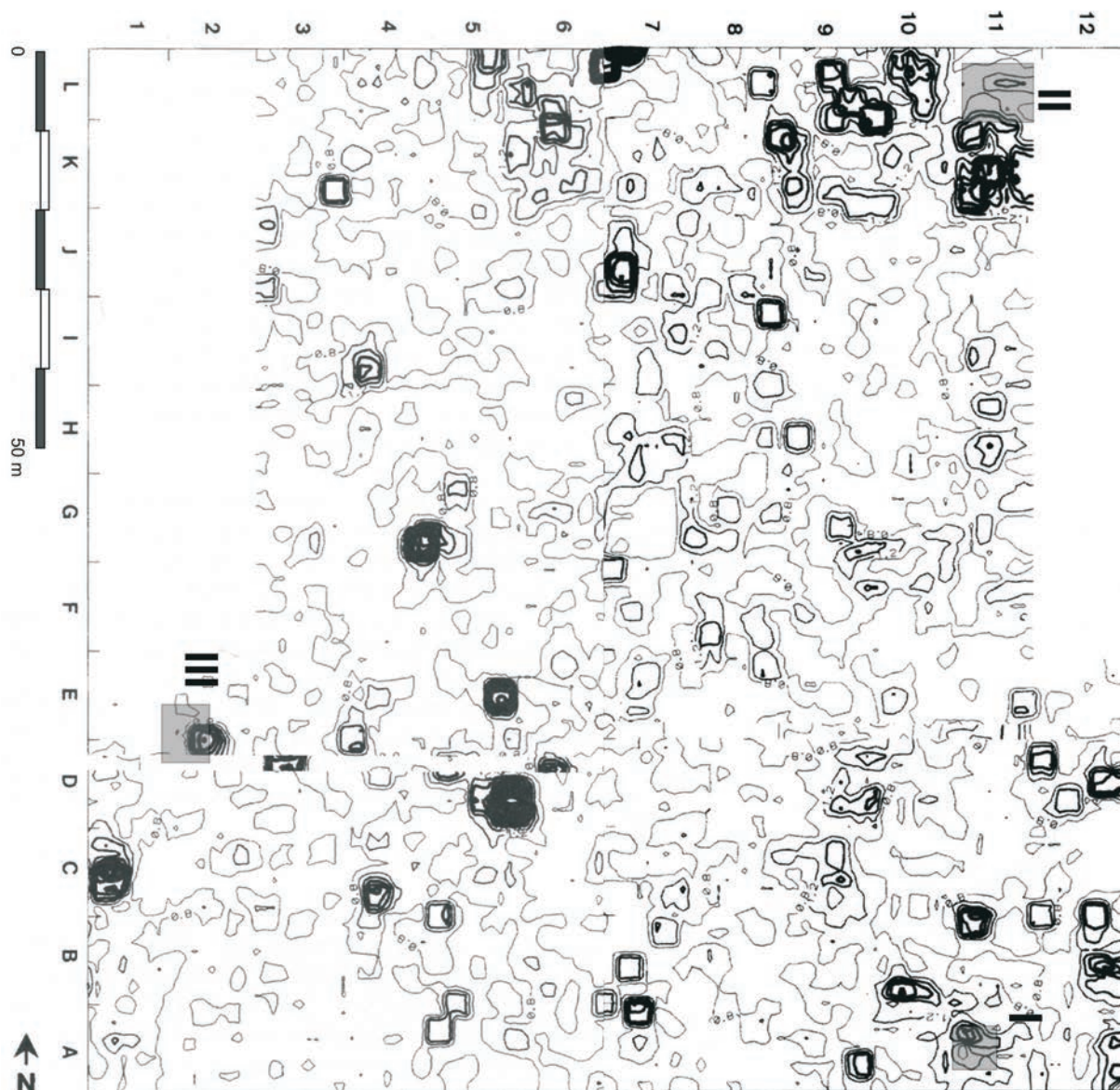


Fig. 9. Saqqara West (1987). Standard deviation contour map. Contour interval 0.4. Grey transparent rectangles represent test trenches I, II and III (by T. Herbich).

reached the top of and effectively concealed the earlier structure. The chronological sequence is corroborated by the observation that some shafts belonging to funerary structures of the upper level were cut in the fill and through the floor of the tomb below. The exploration of this lower tomb has become the most important and urgent task for the mission in the coming years. This structure may turn out to be an important source for the history of Saqqara before the Sixth Dynasty.

Following those first two geophysical surveys on Polish excavations at Tell Atrib (1985) and in Saqqara (1987), Tomasz Herbich's team has conducted extensive prospection and has helped to discover ancient structures on several other sites in Egypt excavated by Polish archaeological missions, e.g. Deir el Naqlun (Godlewski et al., 1990), Qasr el-Saga (Herbich, 2001), Tell el Farkha (Herbich & Chłod-

nicki, 1999; Chłodnicki et al., 2002a; Chłodnicki et al., 2002b; Herbich, 2003; Herbich, 2004; Herbich, 2012a), Berenike (Herbich, 2011a; Herbich, 2011b), Tell el-Retaba (Rzepka et al., 2009; Rzepka et al., 2011), Pelusium (Herbich, 2007; Herbich, 2009a; Herbich, 2012b) and Marina el-Alamein (Herbich et al., 2011), as well as by other teams, e.g. Napta Playa (Herbich, 2007; Herbich, 2009a), Tell et Daba/Qantir (Herbich, 2008; Herbich, 2010; Herbich, 2012b), Tell el-Balamun (Herbich & Spencer, 2006; Herbich, 2007; Herbich & Spencer, 2008; Herbich & Spencer, 2009; Herbich, 2009b; Herbich & Spencer, 2010; Herbich, 2011a; Herbich, 2012b), Ain el-Gazzareen (Smekelova et al., 2003), Tell el-Ghaba (Herbich, 2011a) and others.

The usefulness of the geophysical prelude to the Polish excavations at both Tell Atrib and Saqqara for determining



Fig. 10. Saqqara West in 2009 (cf. Fig. 6): remains of the Upper Necropolis (Ptolemaic Period) and Lower Necropolis (Old Kingdom) (phot. W. Wojciechowski).

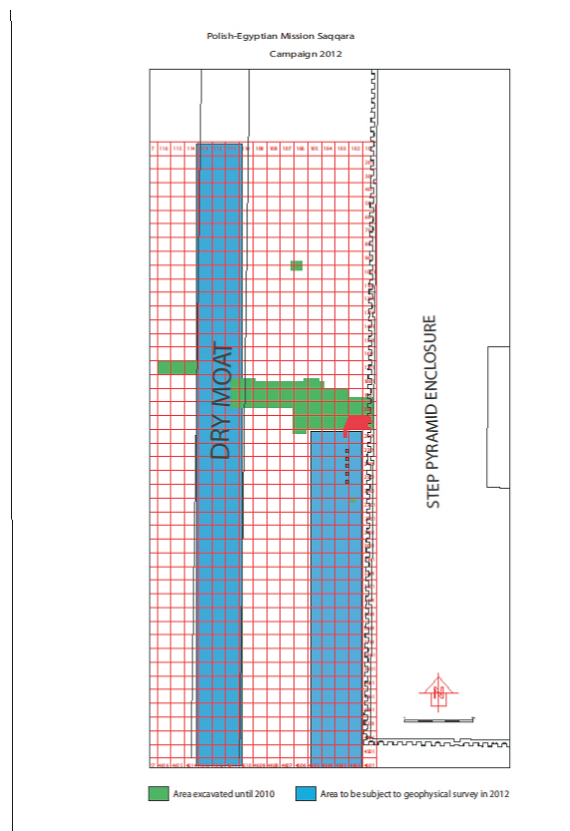


Fig. 11. Saqqara: area west of the pyramid: geophysical survey in 2012, blue strips indicating the location of “Dry Moat” (left side) and of the mud-brick platform at the enclosure wall of the pyramid (right side) (drawing by K.O. Kuraszkiwicz and M. Radomska).

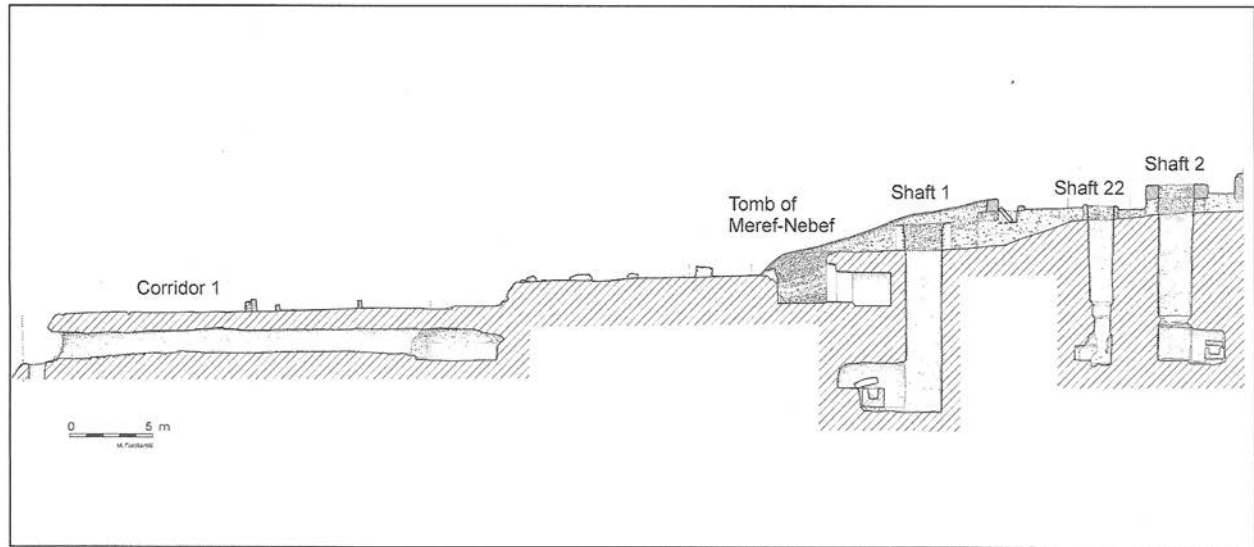


Fig. 12. Saqqara. Cross-section (E-W) through the Old Kingdom necropolis (drawing by M. Puskarski).

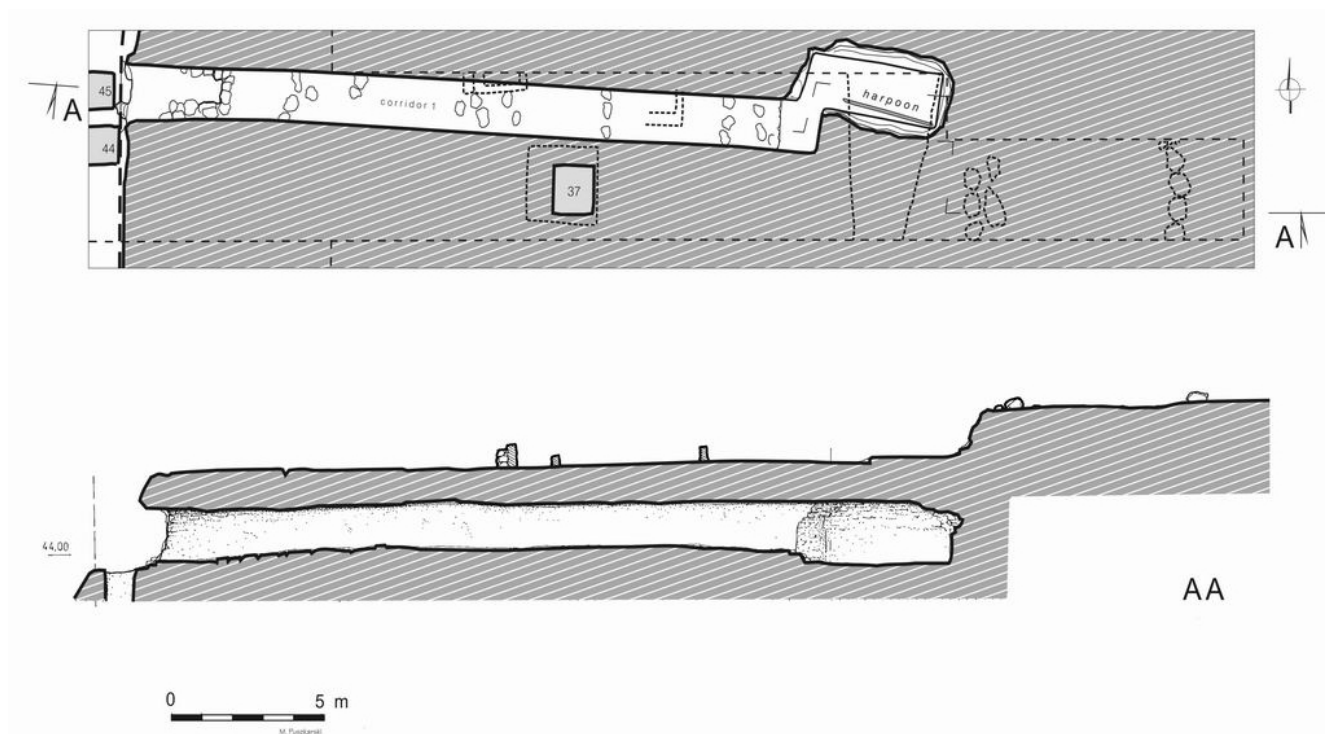


Fig. 13. Corridor 1: plan and vertical section. Location of the harpoon (drawing by M. Puskarski).

the main objectives of subsequent archaeological research encouraged many other missions to repeat the effort, often on a much larger scale and sometimes with even more spectacular and unexpected results.

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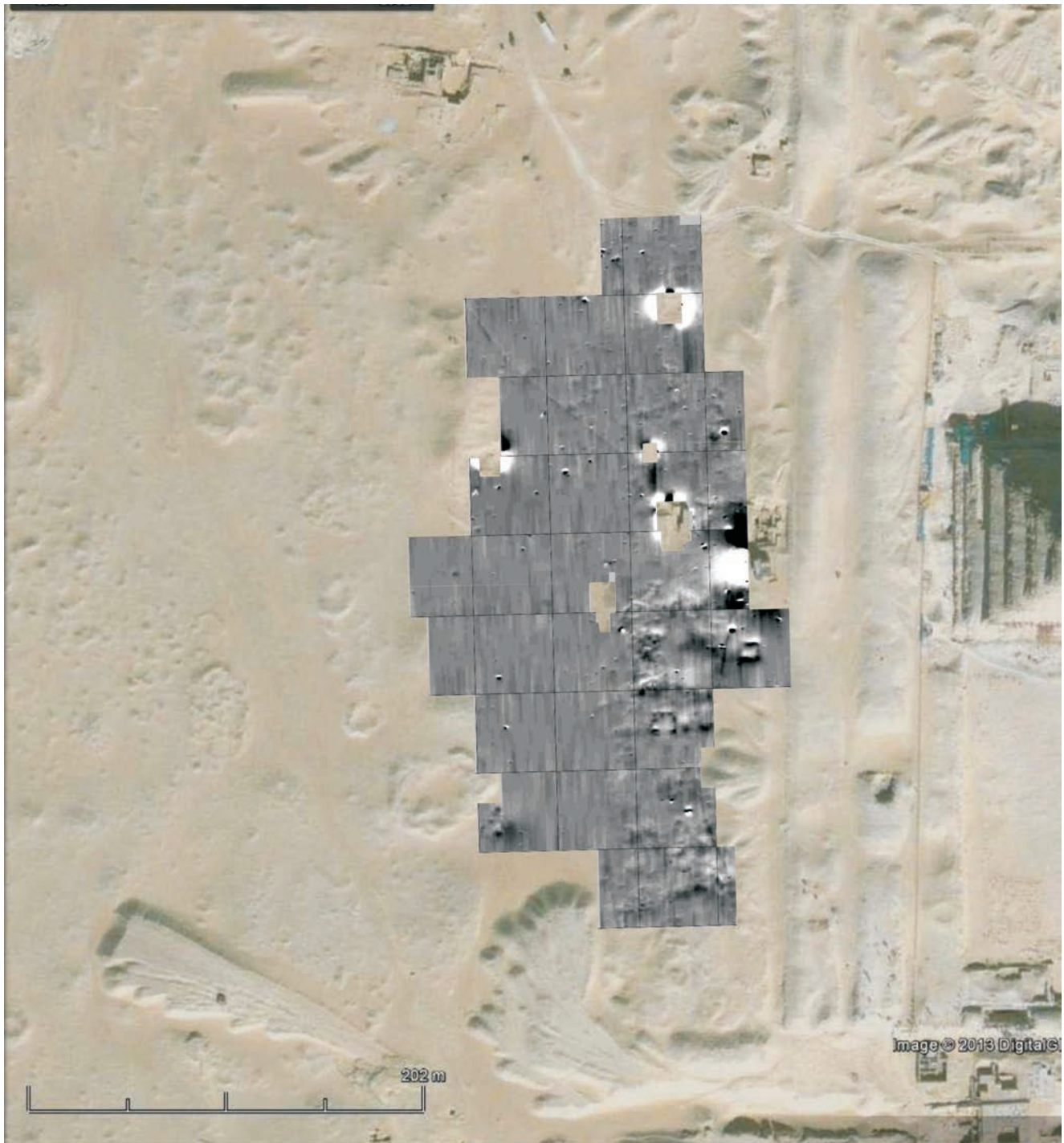


Fig. 14. Saqqara West. Results of the geophysical survey in 1997 (by T. Herbich).

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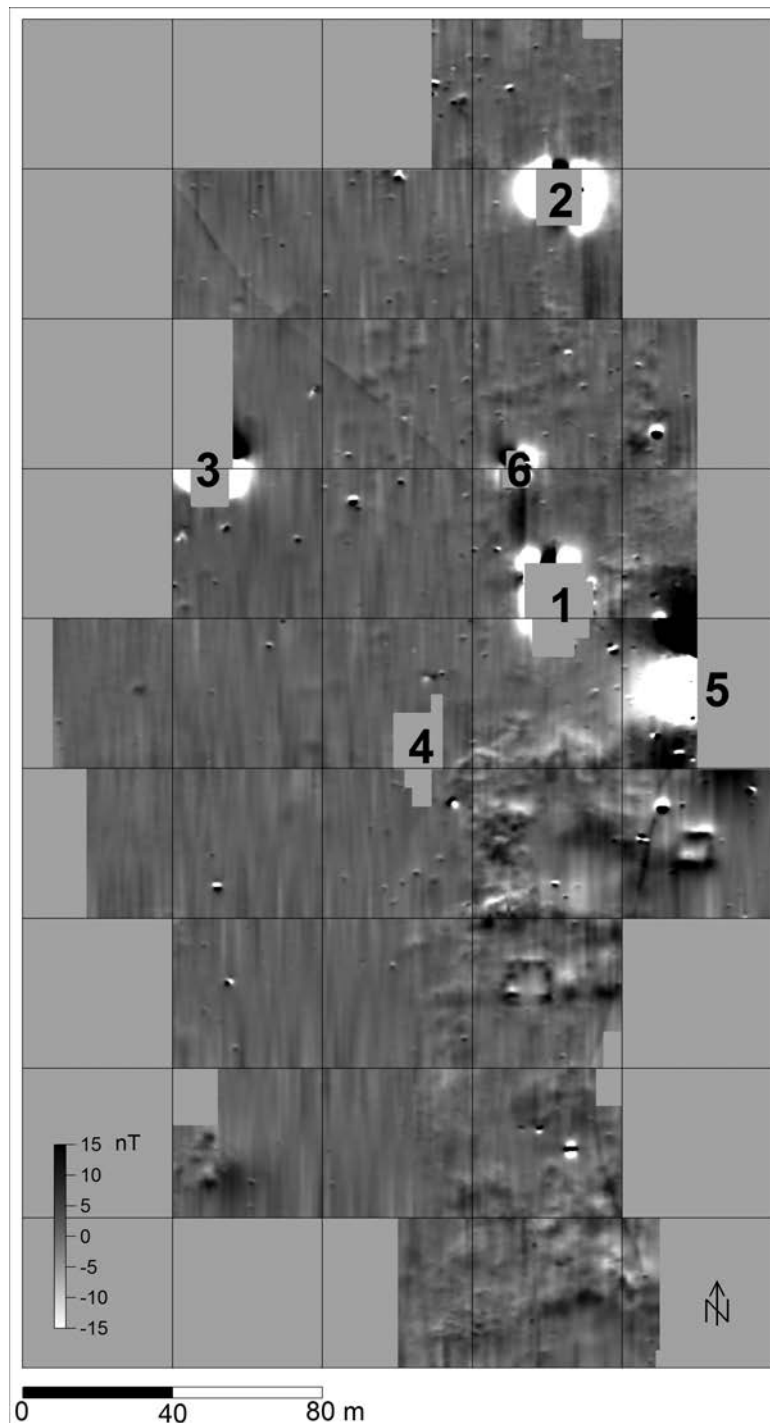


Fig. 15. Details of the geophysical map (cf. Fig. 14): 1. Trial pit 1 (1987) - tomb of Merefnebef; 2. Trial pit 2 (1987) - Old Kingdom structures; 3. Trial pit 3 (1987) - Ptolemaic Period burials in Old Kingdom shaft (belonging to the tomb of Ikhi/Mery); 4. Waste-heap; 5. Modern building; 6 - Tent of the mission (by T. Herbich, J. Fassbinder).

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Fig. 16. Georadar at work in the 2012 (phot. J. Dąbrowski).

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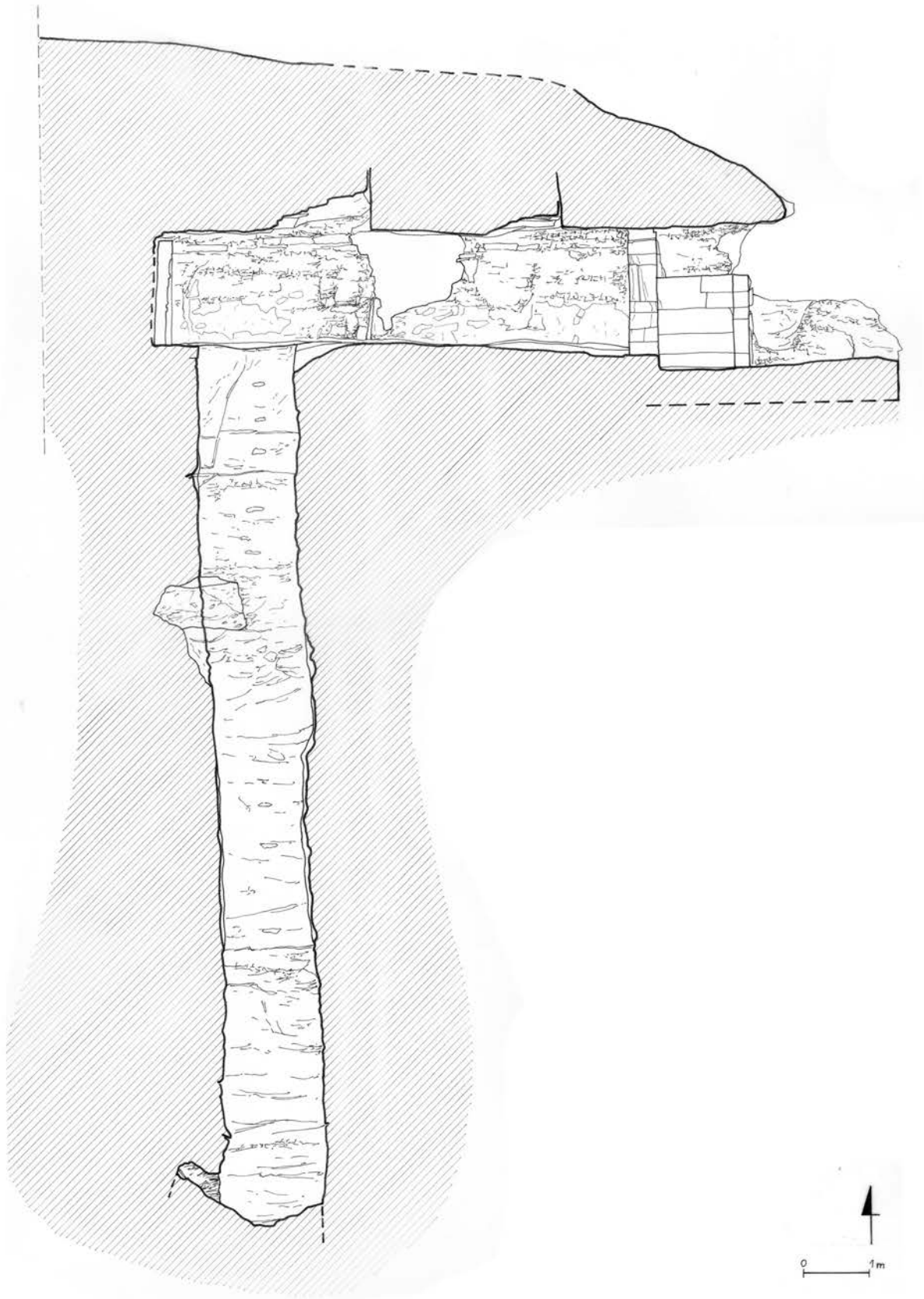


Fig. 17. The tomb of Ikhi/Mery and a new funerary structure underneath, vertical section (drawing by B. Błaszczuk).

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