

FILIP COPPENS, HANA VYMAZALOVÁ

## MEDICINE, MATHEMATICS AND MAGIC UNITE IN A SCENE FROM THE TEMPLE OF KOM OMBO (KO 950)

ABSTRACT: A single relief from the Ptolemaic-Roman temple of Kom Ombo in Upper Egypt is remarkably well-known among most scholars interested in the history of ancient medicine. The depiction in question, often referred to as KO 950 and dated to the second – third century CE, portrays a set of medical, perhaps even surgical instruments, and other realia from Roman Imperial times. This particular relief forms a small part of a much larger offering scene, a fact that has often been overlooked in the past. The paper aims to place the depiction of the medical instruments and assorted realia into its broader context on the basis of a detailed analysis of all components of the scene, including the other items depicted, such as a tapered jar and shallow basin, the wadjet-eyes presented by the pharaoh to the associated deities, as well as the associated hieroglyphic inscriptions. Integrated analysis of text and image indicates that the scene combines elements from the scientific fields of medicine and mathematics with magic and religious rituals to bring about renewal and resurrection to the land of Egypt.

KEYWORDS: Egypt – Medicine – Mathematics – Magic – Ritual

The land at the banks of the river Nile, whether in Egypt or Nubia, has from very early played a significant role in the life of today's celebrant. Throughout the long and rich scientific career of Professor Eugen Strouhal, studies on the life and death of the ancient Egyptians have formed a recurring theme. Over the past decades he has greatly contributed to our knowledge of diseases, mummification and embalming, palaeopathology and the history of medicine in ancient Egypt, as well as many other areas of Egyptological research. In a recently published volume on ancient Egyptian surgery (Strouhal et al. 2010: 96-97), he briefly discussed a set of surgical instruments depicted on the walls of the Ptolemaic-Roman temple of Kom Ombo in Upper Egypt. On the festive occasion of his eightieth birthday this contribution takes a more detailed look at this specific relief and discusses its content and meaning in a much broader context. It has often been overlooked that this depiction of a set of surgical instruments and other realia forms only a very small part of a much larger scene,

whose themes reach far beyond surgery or even medicine in general – involving other scientific fields, as well as religious rituals and the world of magic.

The monumental temple of Kom Ombo, where the scene in question is located, was erected during the reign of Ptolemaic monarch Ptolemaios VI Philometor (180–145 BCE) in the course of the third century BCE (Arnold 1999: 187–189). From its beginning, the temple was dedicated to two deities and their divine families – to the crocodile headed-god Sobek and to the falcon god Haroeris (Eg. *Her-wer* or "Horus the Elder") (Janák 2005: 77–78, 158–159). Numerous Ptolemaic successors contributed to the further architectural development and decorative programme of this temple, depicting themselves in the guise and role of traditional Egyptian pharaohs, and the decoration of the temple walls continued well into the Roman period, even as late as the late second – early third century CE (Hölbl 2000: 88–100).

The scene under discussion is located in the north corner of the outer ambulatory, which surrounds the core of the



FIGURE 1. Surgical instruments and other *realia* on a scene from the temple of Kom Ombo. Drawing H. Vymazalová.

temple (De Morgan *et al.* 1909, scene 950). It is not known during the reign of which Roman ruler it was engraved unto the temple wall, but a date between the reigns of Emperors Antoninus Pius and Macrinus (i.e. between 138–218 CE) seems most plausible. Some scholars (Porter, Moss 1939: 180 (no. 228), Hölbl 2000: 96–97) have attributed this scene to the reign of Emperor Marcus Aurelius (161–180 CE), but since the name of the pharaoh depicted is nowhere mentioned on the relief, this is far from certain.

The medical instruments depicted in this scene have been a favourite topic of discussion for many years. (Figure 1) Some researchers have rejected any connection with medical instruments, suggesting instead that they were perhaps part of a foundation deposit buried at the time of the construction of the temple (Ghalioungui 1973: 100-102). However, the majority of scholars consider them to be surgical instruments clearly comparable to tools that were used in Roman medicine of the time, perhaps even in ophthalmology (Bowman 1986: pl. 65 and 69, Nunn 1996: 164). The instruments include various hooks, blades, probes, knifes, forceps, but also a balance, boxes, a sponge, flasks and sachets, two amulets in shape of the *wadjet* eyes, and a case for instruments. The whole set apparently forms part of medical realia, used by ancient Egyptian (and Roman) physicians in their practice. This medical set, often discussed out of its wider context, is one element of a much more complex scene. In order to better understand the exact meaning and function of these medical instruments, this relief needs to be analysed within the context of the whole scene (as Broze 1994, Kurth 1995, Sambin 1997).

Only the lower part of the scene survives (*Figure 2*). On the remaining area of the wall the figure of a Roman pharaoh kneels on a pedestal underneath a kiosk, facing

a pair of deities: the seated god Haroeris with the goddess Senetneferet (her name means "The Good Sister"), his consort at Kom Ombo, standing behind him. The offering the king holds in his outstretched hands has not been preserved, but the accompanying inscriptions indicate that he presented the two *wadjet*-eyes; the eye of the god Ra and the eye of the god Horus that symbolized the two parts of the land – Upper and Lower Egypt. The accompanying inscriptions, translated and discussed in detail by Dieter Kurth (1995: 151–156), mention that the scene depicted the ritual of the restoration and purification of the two eyes, and concomitantly, of Egypt itself. The god Haroeris, who was the main recipient of the offering, was known as a god of medicine within the temple of Kom Ombo; his epithets include, for example, wer-sunu ("the head of the physicians"; Gutbub 1973: 118–119) and "the healer of the wadjet-eyes" (Gutbub 1973: 94-95, 118-120, Broze 1994: 191), and also "the protector of the limbs of Osiris" (Sambin 1997: 196-197) - the god of underworld and, above all, regeneration. The importance of this latter epithet for the understanding of this particular scene is illustrated further below.

In front of the pair of gods a number of objects have been placed. (Figure 3) These include the famous set of medical instruments, laid out on an offering table, a small statue or amulet of the goddess Isis and one of a male deity, perhaps Osiris, both seated on a small offering table, a shallow basin on a stand positioned behind the table and a tapered jar depicted above the basin. This part of the scene is interesting from a technical point of view. The depiction of the tapered jar positioned above the shallow basin on the stand is reminiscent of a description of a device found in traditional Egyptian temples, according to the mathematician and engineer Heron of Alexandria (ca. 10-70 CE) in his Pneumatica (de Rochas 1912, Sambin 1997: 101–103). The purpose of the device was apparently to cool water before it was deposited in a shallow basin for making libations and/or ablutions. The text on the jar is spread out over several lines, but only 10 of presumably 14 lines have been preserved (Kurth 1995: 153-155, 157-158, Derchain 1995: 90-91). Each line contained a fraction on the right side and the name of a city on the left. The fractions go from top to bottom in descending order, starting with 1/2, followed by 1/4, 1/8, 1/16, 1/32, 1/64 and ending with 1/128, thus creating a scale. At the same time, the cities were arranged geographically from north to south. The preserved upper part of the vase listed several cities of the Delta, such as Sais (San el-Hagar), Mendes (Tell el-Rub'a) and Busiris (Bahheyt), followed by cities along the Nile valley, including Heliopolis (a suburb of modern-day Cairo), Mennofer (Memphis), Herakleopolis (Ehnasiya al-Medina), Hermopolis Magna (al-Ashmunein) and Thebes (Luxor), while the bottom was reserved for the island of Elephantine, opposite Aswan, the traditional southern border of the country. The particular shape of the vase, with its wide top and narrow base, was a deliberate choice, imitating schematically the shape of Egypt with the



FIGURE 2. The scene with the surgical instruments from the temple of Kom Ombo. Photo M. Bárta.

broad Delta in the north (upper part) and the long, narrow valley reaching to the south (lower part).

The tapered vase functioned as a measuring vase like the modern graduated glass. Archaeological evidence from Egypt of Ptolemaic and Roman times indicates that vases of this shape and appearance - usually made of bronze or silver and on average 10-11 cm tall - were used for measuring liquids or fine powdery products (Sambin 1997: 189–191). Examination of the depiction reveals that the partly preserved text on the tapered vase is a recipe, listing the various components to be brought together inside the vase. In this ritual, a certain volume of water, specified by the fractions, from the Nile inundation was to be collected from each of the listed places. The towns mentioned were not arbitrarily chosen, but refer specifically to the places in Upper and Lower Egypt where, according to ancient mythological tales, parts of the chopped-up body of Osiris were thrown in the Nile after he was killed by his brother Seth (Beinlich 1984). In this understanding, inside the tapered vase was gathered not only Nile floodwater, but also the separate parts of the chopped-up body of Osiris - these were protected by Haroeris as the epithet, "the protector of the limbs of Osiris", suggests. Thus, within the vase, the body-parts located at these respective sites were joined together again and the body of the god was reconstituted and given new life. The two small statues or amulets of Isis and a male deity, perhaps Osiris, positioned in front of the offering ruler might well be considered a reference to this well-known Egyptian myth. It was none other than Isis who, according to the myth, gathered the body-parts of Osiris at the various sites throughout Egypt (Beinlich 1984).

The water gathered according to this recipe constituted a "medical" substance, i.e. purifying Nile water from the time of the inundation. It was then to be poured from this vase into the shallow water basin on the stand below. The hieroglyphic text in between the vase and the basin explained that "*the sweet water comes out of the interior of the vase to purify the two wadjet-eyes*". In light of this it is interesting to note that, in the hieroglyphic script, fractions were often not rendered as figures, but as individual parts of the *wadjet*-eye. These various fractions, with the



FIGURE 3. A detail of the scene (from left to right): the two seated deities (Isis and presumably Osiris), a set of surgical instruments and other objects laid out on a table, and a shallow basin on a stand surmounted by a tapered jar bearing a hieroglyphic text. Photo F. Coppens.



FIGURE 4. The various fractions representing the *wadjet*-eye. Drawing J. Malátková.

exception of 1/128, constituted together the complete, healed eye (*Figure 4*). For example, in the New Kingdom units of volume measured in *hekat* and *ipet* could be written with these six fractions in the form of parts of the eye (Vymazalová 2002, 2004, Derchain 1995: 90, Kurth 1995: 158). By means of these fractions, the complete and healed eye was also part of the components gathered in the tapered jar. The additional fraction of 1/128 was most likely added in an attempt to reach a vast, impossible (and thus divine) totality (Kurth 1995: 158, 162, Sambin 1997: 190).

According to the inscriptions accompanying this scene, inundation water from all over Egypt would purify the magic eyes – representing the whole of Egypt – and concomitantly resurrect Osiris, resulting in a new Nile flood and the continuation of the life-cycle. The illness of the eyes was cured by a combination of a medical recipe, based on precise components (in fractions) of a magical-religious substance: Nile floodwater from the places where parts of the body of Osiris were deposited.

The instruments laid out on the table in front of the tapered jar and shallow basin likewise integrate a medical reality with magical and ritual practices. The surgical instruments, sometimes even considered ophthalmologic tools, combined with the measuring scale and the small sachets containing perhaps products for the fabrication of ointments or eye-drops, all form part of medical *realia*. The *wadjet*-eyes and most likely also the statues/amulets of Isis and Osiris in front of the table with surgical instruments refer to the magical world of amulets, and the censer to the purifying fumigation that often took place during and at the end of rituals to drive away any remaining traces of evil and impurity (Broze 1994: 191–193).

The Kom Ombo relief offers a beautiful synthesis of the Egyptian belief system, using science, magic and rituals at one and the same time. It combines elements from the "real" world of medicine and mathematics (surgical instruments and fractions) with the natural event of the inundation, and the world of magic and rituals (the recipe on the basis of the floodwater, the reconstitution of the body of Osiris, the amulets, and fumigation). Ancient Egyptian science, especially medicine, mathematics and astronomy, served not only a practical purpose but also played a very important religious and ideological role. Science was in the hands of "wise men" (Eg. *rekh khet*), who were in possession of sacred knowledge coming from the gods. They studied the sacred papyrus scrolls in the House of Life (Eg. *per ankh*), and the aim of this institution was to collect, copy, keep, learn and use all this knowledge for a single purpose – the maintenance of life created by the gods (Vymazalová 2011). The knowledge included scientific disciplines but also, no less importantly, mythology, rituals, and magical and religious spells. To the ancient Egyptians, only the correct use and combination of all elements of knowledge would allow them to bring any required task to its desired, fruitful ending.

Medicine served the purpose of life-keeping in every aspect. The medical practice of ancient Egyptian physicians developed from early times from numerous experiences with battle wounds and injuries, as well as with illness and disease more generally. Great knowledge was collected by generations of doctors who, often by example, passed on their experience to their students during a period of apprenticeship. Giants of Greek literature and historiography, like the epic poet Homeros (probably Ninth or Eight century BCE) or the historian Herodotos of Halicarnasos (ca. 485-425 BCE), show deep respect for their medical knowledge, especially in the fields of gynaecology and ophthalmology long before the Ptolemaic royal house took control over Egypt. Hippocrates of Kos (ca. 460-370 BCE), often considered to be the father of Western medicine, is said to have studied for some time in the temple of Imhotep and in the Serapeum in Saggara to enrich his medical knowledge. The number of classical authors referring to the superior knowledge of Egyptian medicine grew exponentially as Greeks, and later Romans, settled along the banks of the Nile. The scene with the surgical instruments in the temple of Kom Ombo dates precisely to this later period in Egyptian history (Coppens 2011).

The scientific fields of mathematics and astronomy contributed to life-keeping in a different manner. The mathematical knowledge of the Egyptian scribes not only enabled them to design, organise and construct monumental temples and tombs for eternity with precise astronomical orientation, but it was likewise used for all sorts of measurements, including the various components of a cure in medical recipes. Detailed knowledge of astronomy allowed priests to calculate the proper time for the enactment of all sorts of important religious festivals, such as the timing of the New Year, during which the rituals of the renewal were celebrated (Coppens 2007).

The scene in Kom Ombo thus brought together the scientific and the magical-ritual elements that were necessary for attaining the required result: the fractions and precise prescription served to collect given amounts of magical floodwater in order to reconstitute the body of Osiris, and the related rituals incorporated amulets and fumigations. The purpose of the whole scene was to heal and renew the two magical eyes, representing the entirety of the Egyptian country, and in this way, to ensure the renewal and maintenance of life and the order of the world created by the Egyptian gods. At the end, we hope that this brief contribution has likewise brought some renewal and rejuvenation to the celebrant upon entering his ninth decade.

## REFERENCES

- ARNOLD D., 1999: *Temples of the Last Pharaohs*. Oxford University Press, Oxford New York. 373 pp.
- BEINLICH H., 1984: Die "Osirisreliquien": zum Motiv der Körperzergliederung in der altägyptische Religion, (Ägyptologische Abhandlungen 42). Harrassowitz Verlag, Wiesbaden. 329 pp.
- BOWMANA. K., 1986: Egypt after the Pharaohs. 332 BC–AD 642. From Alexander to the Arab Conquest. University of California Press, Berkeley. 264 pp.
- BROZE M., 1994: Het "reliëf van de chirurgische instrumenten" in de tempel van Kom Ombo: de mythe in de geneeskunde en de geneeskunde in de mythe van het oude Egypte. *De Scriba* 3: 177–195.
- COPPENS F., 2007: *The Wabet. Tradition and Innovation in Temples* of the Ptolemaic and Roman Period. Charles University in Prague, Prague. 243 pp.
- COPPENS F., 2011: Dědictví. Literatura a věda v ptolemaiovské a ímské době. In: H. Vymazalová, F. Coppens (Eds.): *Moudrost* svitků boha Thovta. Pp. 233–281. Charles University in Prague, Prague.
- DE MORGAN J., BOURIANT U., LEGRAIN G., JEQUIER G.,
- BARSANTI A., 1909: Catalogue des Monuments et Inscriptions de l'Egypte antique I. Haute Egypte 3. Kom Ombos II. Holzhausen, Wien. 355 pp.
- DERCHAIN P., 1995: Miettes (suite) 11. L'Egypte, symbole de l'œil. *Revue d'Egyptologie* 46: 89–92.
- GHALIOUNGUI P., 1973: The House of Life: Per–Ankh. Magic and Medical Science in Ancient Egypt. B. M. Israel, Amsterdam. 198 pp.

- GUTBUB A., 1973: *Textes fondamentaux de la théologie de Kom Ombo*, (Bibliothèque d'Étude 47/1). Institut Français d'Archéologie Orientale, Cairo. 546 pp.
- HÖLBL G., 2000: Altägypten im römischen Reich. Der römische Pharao und seine Tempel 1. Römische Politik und altägyptische Ideologie von Augustus bis Diocletian, Tempelbau in Oberägypten, (Sonderbände der Antiken Welt. Zaberns Bildbände zur Archäologie). Verlag Philipp Von Zabern, Mainz. 122 pp.
- JANÁK J., 2005: Brána nebes. Bohové a démoni starého Egypta. Libri, Prague. 220 pp.
- KURTH D., 1995: Die Ritualszene mit den medizinischen Instrumenten im Tempel von Kom Ombo (Nr. 950). In:
  M. Schade-Busch (Ed.): Wege öffnen. Festschrift für Rolf Gundlach zum 65. Geburtstag, (Ägypten und Altes Testament 35). Pp. 149–164. Harrassowitz Verlag, Wiesbaden.
- NUNN J. F., 1996: Ancient Egyptian Medicine. British Museum Press, London. 240 pp.
- PORTER B., MOSS R. L. B., 1939: Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs and Paintings VI. Upper Egypt: Chief Temples. Griffith Institute, Oxford. 264 pp.
- DE ROCHAS M. A., 1912: Les bénitiers à tirelire et à tourniquet dans les temples de l'ancienne Égypte. *Annales du Service des Antiquités de l'Egypte* 12: 95–96.
- SAMBIN C., 1997: La purification de l'oeil divin ou les deux vases de Kom Ombo. *Revue d'Egyptologie* 48: 185–200.
- STROUHAL E., VACHALA B., VYMAZALOVÁ H., 2010: Lékařství starých Egypťanů I. Staroegyptská chirurgie. Péče o ženu a dítě. Academia, Praha. 239 pp.
- VYMAZALOVÁ H., 2002: The Wooden Tablets from Cairo: The Use of the Grain Unit hk3t in Ancient Egypt. Archiv Orientální 70, 1: 27–42.
- VYMAZALOVÁ H., 2004: Zkusme měřit měřicí. In: J. Mynářová (Ed.): Pražské egyptologické studie 3: 159–167 (http://pes. ff.cuni.cz/?req=id:21) accessed on 03. 01. 2011.
- VYMAZALOVÁ H., 2011: Výuka a písaři. In: H. Vymazalová, F. Coppens (Ed.): *Moudrost svitků boha Thovta*. Pp. 15–43. Charles University in Prague, Prague.

Filip Coppens Czech Institute of Egyptology Celetná 20 110 00 Prague 1 Czech Republic E-mail: filip.coppens@ff.cuni.cz

Hana Vymazalová Czech Institute of Egyptology Celetná 20 110 00 Prague 1 Czech Republic E-mail: hana.vymazalova@ff.cuni.cz