Nilometers – or: Can You Measure Wealth?

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1. Introduction

In his 1982 article in the *Lexikon der Ägyptologie* Horst Jaritz mentioned, besides other types, nilometers consisting of:

> "Skalen […] an freistehenden Säulen inmitten brunnenartig angelegter Räume, womit offenbar erstmals eine spezifische Bauform des N[ilmessers] entwickelt ist; röm. belegt nur nach Darstellungen, islam. neuerbaut auf Roda."[1]

The following article deals with images of such nilometers from Roman and late antique times and their iconographic interpretation.[2]

2. The nilometer motif – the documents

Doc. 1

In the lower part of two Coptic tissue medallions (Louvre, AF 3448) with an identical motif, a stonewalled, cylindrical structure, which is interpreted as a

1 Jaritz, 1982, p. 496.

2 See also for nilometers as an element of Nilotic landscapes: Balty, 1984, p. 828. 831; Boissel, 2007, p. 368–373; Bonneau, 1976; Id., 1991; Hachili, 1998, p. 110–111; Hairy, 2011; Hermann, 1959, p. 62–63; Id., 1960; Pfister, 1931–1932; Römer/Zanella, 2013, p. 906. 913; Versluys, 2002, p. 271; Meyboom, 1995, p. 244–245, n. 77–78.

well by some authors,[3] is depicted (figure 1). At the bottom of the structure there are an arch and a staircase, which leads to the arch. In the middle of the structure there emerges a pointed stela. It is inscribed with the Greek numbers IZ and IH (17 and 18). A naked male child stands at the lefthand side of the structure and touches the stela with a chisel in his left hand near the number 18, while he strikes out with a hammer in his right hand. The child symbolises a cubit, the unit used to measure the rise of the annual flood on a nilometer scale. A second child with a water bird in his hands sits at the righthand side of the scene, perhaps in a papyrus boat. In the upper part of the medallions the male personification of the river Nile, Neilos, with a cornucopia in his left arm and a female counterpart, probably the personification of abundance, Euthenia, reclining in the middle of a Nilotic landscape marked by water birds and Indian lotus.

Date: seventh century A.D.
Provenance: said to be from Antinooupolis/Egypt
Bibliography: Du Bourguet, 1964, 132, D 36-37; Rutschowscaya, 1997; Id., 1999.

Figure 1. Coptic tissue medaillion (Rutschowscaya, 1997, p. 225); Figure 2. Mosaic Sarrin, province Osrhoene/Syria (Balty, 1990, pl. XXXIII, 1).

3 E.g. Meyboom, 1995, p. 244, n. 77.

Doc. 2

A scene in the Nilotic frame of a mosaic with Greek mythological motifs[4] shows a naked male cubit child with a chisel and a hammer in the same attitude as the child in doc. 1. He is shown standing in front of a rectangular structure positioned atop a slightly wider rectangle (figure 2). The upper shape is inscribed with the Greek numbers 17 and 18. A well from which a stela emerges as in doc. 1 is probably what is meant to be shown here.

Date: late fifth to mid sixth century A.D.
Provenance: a building of unknown character in Sarrin, province Osrhoene/Syria
Bibliography: Balty, 1990, p. 65-67, pl. XXXIII; Versluys, 2002, p. 474, cat. 44.

Doc. 3

A nilometer consisting of a column with five horizontal zones on an arched pedestal emerging from the river appears in the upper part of another late antique Nilotic mosaic (figure 3).[5] Three zones at the top of the column are inscribed with the Greek numbers from 15 to 17. A cubit child standing on the back of a bent second child seems to be marking the first figure of the number 17 with a chisel and a hammer. The nilometer is surrounded by further cubit children.

Date: second half of the sixth century A.D.
Provenance: a public building in Sepphoris/Palestine
Bibliography: Hachili, 1998, p. 110-111, fig. 4; Versluys, 2002, p. 233-235, cat. 130.

4 Like hunting Artemis, Dionysos and his Thiasos, the abduction of Europa, the birth of Aphrodite, Herakles and Auge, Meleager and Atalante, see Balty, 1990, p. 24–57.

5 For the entire mosaic see Versluys, 2002, p. 233–235. The nilometer and the cubit children are flanked by the reclining figures of Neilos and the female personification of Egypt, identified by a Greek inscription. Beneath the Nilotic scene there are other scenes with a city gate with the Greek inscription ‘Alexandria’, horsemen and fighting animals.

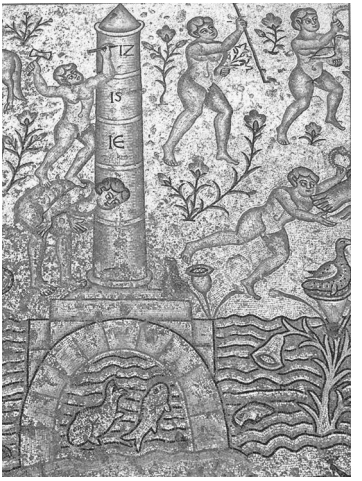

Figure 3. Mosaic Sepphoris/Palestine (Hairy, 2011, 109, fig. 23); Figure 4. Silver trulla, found in Perm/Russia (Bank, 1985, fig. 53).

Doc. 4

In the middle medallion of a silver *trulla* a nilometer well from which a pointed scale emerges is depicted. Only the letter Δ for the number four is clearly legible on the scale (fig. 4). On the lefthand side of the column, a cubit child standing on the back of a bent second child is engraving a figure at the top of the column. A reduced Nilotic landscape is indicated by fish, water plants and birds. The vessel was found in Perm/Russia, but it is unknown when and how it got there.

Date: beginning of the sixth century A.D.
Provenance: Perm/Russia
Bibliography: Bonneau, 1976, p. 9-10, fig. 14; Versluys, 2002, p. 216, cat. 115.

Doc. 5

In Kynopolis/Egypt, a headless marble statue of Neilos sitting on a throne was found (Alexandria, Graeco-Roman Museum 22173, figure 5). Along the left leg of the river god a rock is depicted as wells as two cubit children. One child,

sitting on the shoulder of the second, raises his arms towards a stela. A scale or numbers are not visible, but there are remains of a Greek inscription.[6]

Date: second century A.D.
Provenance: Kynopolis/Egypt
Bibliography: Adriani, 1961, p. 57-58, no. 200, pl. 95, 311. 313; Bakhoum, 2002, pl. 26, 2; Bonneau, 1964, p. 282. 347-348; Id., 1995, p. 3212; Jentel, 1992, p. 722, no. 35; Platz-Horster, 1992, p. 17.

Doc. 6

On a glass cup (London, British Museum 1868.5-1.919) with cut figured decoration, a beefy man with a helmet and a short cape stands with chisel and hammer in the typical position of a cubit child, facing a slim stela ending in a flat curve with several horizontal subdivisions (figure 6). Tatton-Brown recognises a *zeta* on the nilometer.[7] But the small, not very deep carving looking like a *zeta* is a little higher than the top of the chisel and above are other meaningless carvings. Thus, the alleged *zeta* could simply be another scratch in the glass. On the other side of the cup[8] a reclining woman, surrounded by a stylised Nilotic landscape with an Egyptian-style building, is holding a sistrum in her right and a cup in her left hand. Perhaps the woman is the Egyptian goddess Isis or the personification Euthenia.

Date: around 200 A.D.
Provenance: probably from Campania[9]
Bibliography: Jentel, 1990; Platz-Horster, 1992, p. 13. 16, fig. 15; Tatton-Brown, 1991; Versluys, 2002, p. 169-171, no. 078, fig. 106; Walker, 2006, p. 190, fig. 167.

6 SEG 20659. The inscription is very difficult to decipher. For divergent translations see Fraser, 1961, p. 141; Bonneau 1964, p. 347–348.

7 "The principal scene shows a sturdy man with a chisel and a mallet, carving the Greek numeral 7 (the letter *zeta*) on a Nilometer, (…).", Tatton-Brown, 1991, p. 87.

8 See Walker, 2006, p. 190, fig. 167.

9 See Versluys 2002, p. 170. Tatton-Brown, 1991, p. 87 suggests an Egyptian provenance because of the motif.

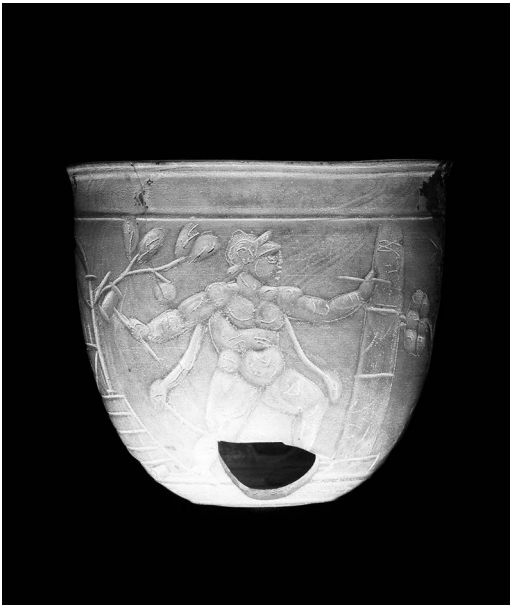

Figure 5. Marble Statue of Neilos (Bakhoum, 2002, pl. 26, 2); Figure 6. Glass cup with Nilotic scene (© British Museum).

Doc. 7

A nilometer is also depicted in various ways on several Roman coin series from Alexandria. Four series were engraved during the reign of Imperator Trajan. They show the female personification Euthenia reclining on a Sphinx or Neilos reclining on a hippopotamus. Above the legs of the gods, a child marking cubits stands in front of a nilometer. On the coins with Euthenia, the nilometer has the shape of an arch,[10] partly on a staircase with two steps,[11] but on the coins with Neilos the structure looks like a column.[12] The nilometer on the coins of Antoninus Pius is again an arch on a staircase with three steps (figures 7.1, 7.2). Sometimes the Greek letters *iota* and *sti* for the number 16 are legible inside the arch. On a series from the year A.D. 153/154, one child marking cubits stands inside the nilometer arch (figure 7.1),[13] on a second series from the

10 E.g. Geissen, 1974–1983, no. 607; Bakhoum, 2002, pl. 9, 11 (year 112/113 A.D.).

11 E.g. Geissen, 1974–1983, no. 578 (year 111/112 A.D.).

12 E.g. Ibid., no. 652 (year 113/114 A.D.) and 677–678 (year 114/115 A.D.).

13 E.g. Ibid., no. 1705–1708 (year 153/154 A.D.).

same year the child marking cubits sits on the shoulder of another (figure 7.2).[14] Here the two children are outside the arch. The coins of Annia Faustina[15] and Severus Alexander[16] from the first quarter of the third century A.D. adopt the child marking cubits on the shoulder of another, but the nilometer itself looks like a column or a pillar. Altogether, the nilometer motif was used on nine coin series over a century from the beginning of the 2nd century to the 3rd century.

Figure 7.1. Coin of Antoninus Pius (replica) (Roman Provincial Coinage Online, http://rpc.ashmus.ox.ac.uk/coins/4/13802/, accessed 18.05.2016); Figure 7.2. Coin of Antoninus Pius (replica) (Roman Provincial Coinage Online, http://rpc.ashmus.ox.ac.uk/coins/4/14929/, accessed 18.05.2016).

Doc. 8

Two reliefs on the opposite of a monumental stairway at the riverside of the island of Elepantine depict the same scene in mirror image (figure 8): [17] The reclining river god Neilos leans on a rock with a cornucopia in his left arm. Beside the cornucopia is a (water?) bird. Above the knee of the river god is a small arch. A tiny figure with raised arms stands on the top of the arch. In his article about the two reliefs, Hanz Günter Martin discusses whether the arch could be a nilometer because of the gesture of the figure on the arch, which is similar to the marking position of the

14 E.g. Ibid., no. 1709–1711 (year 153/154 A.D.).

15 E.g. Ibid., no. 2387 (year 221/222 A.D.).

16 E.g. Ibid., no. 2397 (year 221/222 A.D.).

17 Martin, 1986. One of these reliefs is still in situ, the other is located today in the Graeco-Roman Museum of Alexandria, see Hölbl, 2004, p. 36, n. 114.

cubit child on the above mentioned silver *trulla* (doc. 4, figure 4).[18] He dismissed the idea, because there is no cylindrical construction on the Elephantine reliefs as in the nilometer well depicted in our document 4. However, there actually is a nilometer on these two reliefs: in the form of an arch and not in the form of a well. It seems not unlikely that one of the above-mentioned Alexandrian coins – with the reclining river god, a cubit child and a nilometer that looks like an arch (figure 7.1) – served as the model for the two reliefs in Elephantine. Because of their poor state of preservation, the reliefs in Elephantine can be dated only roughly to the second or third century A.D.[19] If this dating is correct, the reliefs were carved during the same period when the mentioned coins were in circulation. In contrast to a coin series of Antoninus Pius, the cubit child in the reliefs stands at the top of the arch and not inside it.[20] Perhaps it was difficult to cut the child with his widely extended arms inside the arch into the rough crystalline rock of Elephantine.[21] Coins are light and easily portable and in this way an Alexandrian motif may have reached the deep south of Egypt.

Date: second/third century A.D.
Provenance: Elephantine/Egypt
Bibliography: Adriani, 1961, p. 59, no. 203, pl. 96, 315; Hölbl, 2004, p. 36-37, fig. 42; Martin, 1986.

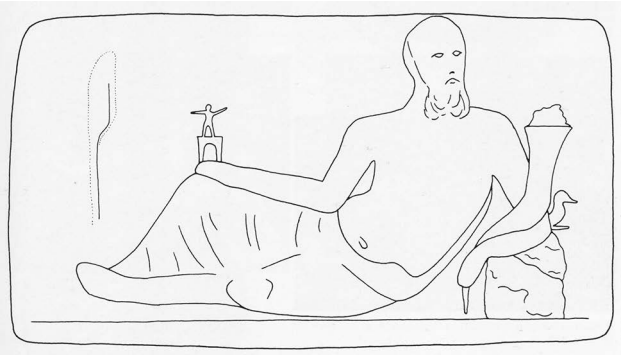

Figure 8. Neilos relief from Elephantine (Martin, 1986, pl. 23 b).

18 Martin, 1986, p. 190.

19 Ibid.

20 E.g. Geissen, 1974–1983, no. 1705–1708 (year 153/154 A.D.).

21 Martin, 1986, p. 188, n. 5.

Doc. 9

On a mosaic of a Christian church in Tabgha/Palestine, the upper part of a tower with a conical roof is depicted in a Nilotic landscape (figure 9). Although there is no child marking cubits, the interpretation as a nilometer is clear because of the scale with Greek numbers on the wall of the tower. Only the zone between the six- and ten-cubit marks is preserved, but it is likely that the scale originally started at 1.[22]

Date: fifth century A.D.
Provenance: Tabgha/Palestine.
Bibliography: Hachili, 1998, p. 110-111, fig. 2; Versluys, 2002, p. 228-230, no. 127.

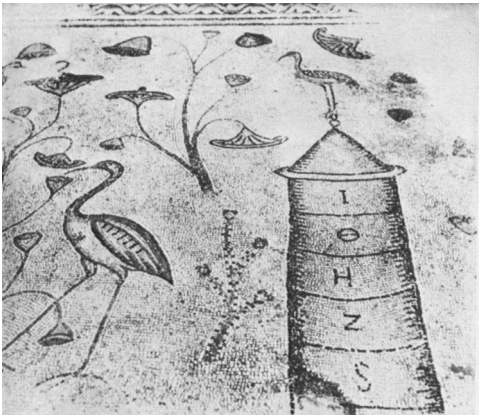

Figure 9: Mosaic in Tabgha/Palestine (Bonneau, 1976, 8, fig. 13); Figure 10: Mosaic in Beth Shean/Palestine (Balty, 1990, pl. XXXV, 1).

Doc. 10

A nilometer in the form of a tower and a city representation named Alexandria[23] stand near the reclining Neilos in a mosaic from Beth Shean/Palestine (figure 10). Here, the nilometer scale reaches from 10 to 16. The river god is shown holding a bird (?) in his right hand and a branch in his right arm. In addition, two

22 For the entire mosaic see Hachili, 1998, p. 109, fig. 2 c.

23 For late antique city pictograms see Decker, 1988; Duval, 2003.

fighting animals and a Nilotic landscape consisting of birds, fish, plants and a sailing boat are depicted.

Date: sixth century A.D.
Provenance: a guest room of a synagogue in Beth Shean/Palestine
Bibliography: Hachili, 1998, p. 110-111, fig. 1; Jentel, 1987, p. 211-212, pl. 8; Nauerth, 1998, p. 194-196, fig. 3; Verluys, 2002, p. 226-227, no. 125.

Doc. 11

A Jordanian mosaic shows a similar composition as doc. 10. Unfortunately, only a sketch of the heavily damaged pavement has been published (figure 11).[24] According to an inscription, the reclining Neilos was depicted in the upper half. A nilometer in form of a column with a scale ranging from 11 to 18 on a rectangular pedestal stands beside him. In the lower part are a building labelled with 'ΕΓΥΠΤΩC' and a stretch of water with a fish and a sailing boat.

Date: sixth century A.D. (?)[25]
Provenance: Christian church in Umm al-Menābîa/Jordan
Bibliography: Decker, 1988, p. 349; Duval, 2003, p. 223, fig. 7 b. 241; Hermann, 1962, p. 79-86, fig. 10; Piccirillo, 1993, p. 341, fig. 752.

24 For the discovery and the further fate of the mosaic see Augustinović/Bagatti, 1952, p. 286–288; Glueck, 1951, p. 229–231; Piccirillo, 1993, p. 341.

25 Augustinović/Bagatti, 1952, p. 288.

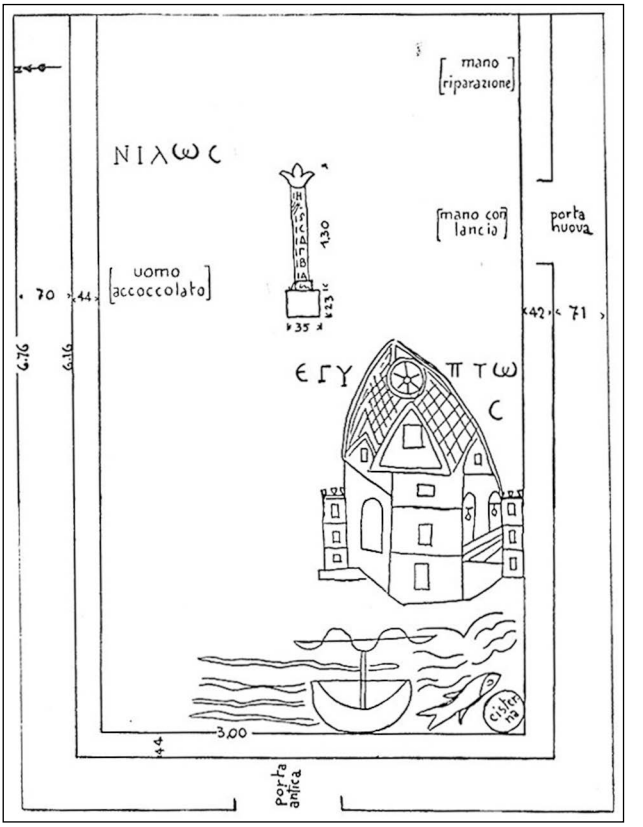

Figure 11. Sketch of the Nilotic mosaic in Umm al-Menābî/Jordan (Hermann, 1952, 80, Abb. 10).

Doc. 12

On a famous Nilotic mosaic from the third century A.D., a procession of cubit children and two female musicians lead the river god Neilos, reclining on a hippopotamus, to a nilometer in the shape of an obelisk (figure 12). Two Egyptian priests await the procession sitting on the pedestal of the obelisk. Instead of a scale with numbers there is a Greek inscription at the top of the obelisk: ΑΓΑΘΗ ΤΥΧΗ "Good fortune".

Date: third century A.D.
Provenance: a bathroom of a villa in Leptis Magna/Libya

Bibliography: Boissel, 2007, p. 69, no. 61; Hermann, 1960, p. 37-41, pl. 2 a-b; Jentel, 1987, p. 210, pl. 5; Versluys, 2002, p. 185-186, no. 91.

Figure 12. Mosaic in Leptis magna/Libya (© Uwe Mahler).

3. Scholars and nilometers

In antiquity the annual cycle of the Nile and the devices for measuring this – the nilometers – were also of interest to Greek and Roman writers. Stephan Seidlmayer collected the statements of classical authors on this subject.[26] Most of them consider a flood with 14 to 16 cubits the optimum.[27] According to their records, a higher flood brings damage and a lower inundation causes famine. The famous description of the 16 fortunate cubits of Plinius the Elder belongs to these statements.[28] None of the authors mentioned a specific Egyptian nilometer where the optimum of 14 to 16 cubits was measured. Comparing the information given by Arabic authors and the known values of the nilometer in Roda we can establish that the nilometer of Memphis is meant.[29]

In the described nilometer images, the measured value or the maximum of the depicted scales are rarely the auspicious 16 cubits well known in antiquity (only on some Roman coins (doc. 7) and in doc. 10). Therefore, Alfred Hermann suggested that three nilometer images (doc. 1, 4, 12) reproduce particular nilometers in various areas of Egypt,[30] where different values were

26 Seidlmayer, 2001, p. 33–37.

27 Ibid., p. 34, table 2 (a).

28 For the Egyptian roots of the concept of the 16 fortunate cubits see Preys, 1999.

29 Seidlmayer, 2001, p. 33.

30 Hermann, 1960, p. 39.

measured because of the natural slope of the Nile from South to North. Hermann attempted to determine the real position of the depicted nilometers by means of the inscribed numbers. Contrary to most scholars, he assumed that Plinius' fortunate 16 cubits were measured in Herakleopolis Magna. In his opinion the nilometer of the Coptic tissue medallions (doc. 1) was located in Middle Egypt. Although only the letter *delta* on the scale of the silver *trulla* (doc. 4) can be read without doubt, Hermann adds an *iota* to every sector of the scale arguing that maximum values of fourteen and fifteen cubits are intended. In his opinion, this could refer to a nilometer in the area of Heliopolis or Memphis. Because of the presence of 12 cubit children in the mosaic of Leptis Magna (doc. 12) Hermann located the nilometer of the mosaic in the Egyptian Delta. However, there is no proof that the number of the cubit children can be interpreted as a measured value of the depicted nilometer.

Some of the nilometer images not mentioned by Hermann contain other references for their real place. The two exemplars of the Beth Shean mosaic (doc. 10) and the mosaic from Sepphoris[31] (doc. 3) stand near a city pictogram in form of a building with the Greek inscription Alexandria. This makes clear that a nilometer in this city is meant here. According to Jeanne Balty the nilometer besides a building similar to doc. 3 on the Syrian mosaic (doc. 2) could be an illustration of the Alexandrian nilometer, too.[32] The maximum scale values of the three probable depictions of the Alexandrian nilometer are surprisingly high (16 to 18 cubits). According to Egyptian records and classical authors, the peak of the flood could reach 28 cubits in Elephantine, but at the Mediterranean coast (Tell el-Balamûn) only 2 to 7 cubits.[33] If an inundation of 16 or even 18 cubits had really been measured in Alexandria, the rest of Egypt would have been under water.

Besides the mentioned mosaics (doc. 2, 3, 10), another exemplar includes a geographical identification: A building of the mosaic in Umm al-Menābîa/Jordan is labelled with ΕΓΥΠΤΩC. According to Hermann this indicates Babylon, the fortress near old-Cairo in late antiquity, but he does not provide an argument for this statement.[34] Subsequently, he identified the nilometer of the mosaic with the nilometer of Roda and regarded the entire mosaic as a more or less exact map of

31 See Hachili, 1998, p. 111, fig. 4.

32 Balty, 1990, p. 67.

33 Seidlmayer, 2001, p. 97, table 8. Aelius Aristides records only 2 cubits for Tell el-Balamûn (Orationes XXXVI, 115).

34 Hermann, 1952, p. 82.

Old Cairo.[35] Other researchers did not share Hermann's opinion. They believed ΕΓΥΠΤΩC to be a designation of the whole of Egypt symbolised by a city pictogram.[36] In addition, Decker proved that such pictograms in late antique mosaics never show actual views of certain locations or actual buildings.[37] They are exchangeable and can only be linked to a certain city by an appropriate inscription.[38]

In my opinion, it was never intended to show realistic values of different Egyptian nilometers in the mentioned illustrations. All indications to specific places (doc. 3, 10, perhaps 2) refer to Alexandria. But the given values are not likely for this location. Instead the number 16 of the Alexandrian coins (doc. 7) and in the Beth Shean mosaic (doc. 10) pick up the literary topos of the 16 fortunate cubits. Two scales feature lower values: on the silver trulla (doc. 4) 1 to 5 cubits and on the Tabgha mosaic (doc. 9) 1 (?) to 10 cubits. Perhaps the topos of the 16 cubits in these cases was not known to the designers and they created a scale which logically starts with 1 and ends arbitrarily or determined by the available space. The marked flood level of four nilometers (doc. 1, 2, 3, 11) is higher (17 and 18 cubits) than the literary optimum of 16 cubits. Perhaps the intention was here to show an inundation that is even a little better than the optimum.

35 Ibid., p. 86–92.

36 Decker, 1988, p. 349; Duval, 2003, p. 241.

37 Decker, 1988, p. 343–361.

38 This is an argument against Balty's opinion that the building near the nilometer of the Syrian mosaic symbolises Alexandria, see above and n. 25.

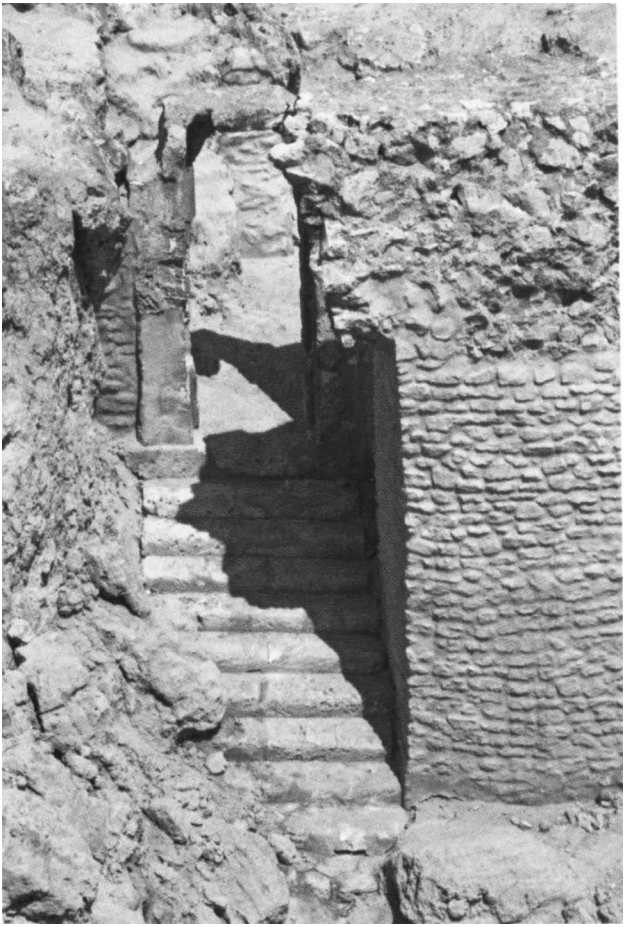

Figure 13. Remains of the nilometer of Alexandria (Hairy, 2011, 107, fig. 21).

4. The Alexandrian nilometer

In Alexandria, the remains of a nilometer construction were found (fig. 13),[39] but it looks quite different to the mentioned nilometer images: A wide staircase leads down from the terrace of the Serapeum to a platform in an easterly direction. Another staircase with two turns connects the platform with a rock-cut chamber

39 Sabottka, 2008, p. 243–245.

(2.50 x 2.70 m). According to the excavator, Alan Rowe, a small corridor linked the chamber with an underground aqueduct supplied by a Nile canal south of Alexandria. Because of the indirect access to the Nile it is not clear whether the construction functioned like a real nilometer or only in a symbolic manner. During the modification of the Alexandrian Serapeum in Roman times the staircase was rebuilt at a larger scale. It is unknown whether the Ptolemaic nilometer remained accessible after these reconstruction works.[40]

Today, the nilometer is in a bad state of preservation, but one detail is very interesting: the staircase to the rock-cut chamber was open at its upper half and covered in antiquity at its lower half. The passage between the open and the covered staircase, which has now collapsed, was an arched door (figure 13).[41] A similar arch with steps is depicted on some of the coins mentioned above (doc. 7) and the Neilos relief from Elephantine (doc. 8), which is probably influenced by the coins. This leads to the assumption that this architectural detail of the Alexandrian nilometer is depicted on coins minted in Alexandria.

5. Provenance and date of the nilometer images

Only doc. 1, 5, 7 and 8 are of Egyptian origin, but seven documents were found outside: one in Syria (doc. 2), three in Palestine (doc. 3, 9, 10), one in Jordan (doc. 11), one in Libya (doc. 12), one probably in Italy (doc. 6) and one even in Russia (doc. 4). Both in antiquity and today it was necessary for the interpretation of the motif to know that the Nile floods its banks annually and that its flood is measured in cubits by nilometers. It must be assumed that those who initiated these non-Egyptian nilometer images were well-educated and highly interested in Egypt and that they – like the executing craftsmen – had probably never seen an actual nilometer with their own eyes.

Chronologically, two main phases can be recognised. Five documents (doc. 5-8, 12) date to the second and third century A.D. After a hiatus of about 150 years seven documents follow from mid-fifth to the seventh century A.D (doc. 1-4, 9-11).

40 Ibid., p. 245, n. 857.

41 Ibid., pl. 112–114; Hairy, 2011, p. 107, fig. 21.

6. Routes and means of transport of the nilometer motif around the Mediterranean

The oldest undubitable images of a nilometer[42] can be found on Alexandrian coins (doc. 7) from the beginning of the second century A.D. – objects which were produced in large quantities and were widely spread because of their material value and their small size. It can be assumed that these coins significantly influenced the development of the older group of nilometer images from the second and third centuries A.D. After the third century A.D., coins with a nilometer were no longer produced. Perhaps nilometer images have therefore been out-of-favour for 150 years, too. The reason why nilometer images emerged again is not quite clear. Also in the younger group of nilometer images from the fifth to the seventh century A.D. some elements of the mentioned coins of the second and third century A.D. were still used.

Depending on the coin (see figures 7.1, 7.2) which was used as model, one child marking cubits (doc. 1, 2, 6, 8) or one on the shoulder of a second child (doc. 3, 4) were depicted. The gesture of the child marking cubits does not really make sense. It does not measure a water level but gestures in the air: It seems to be engraving the highest number of the nilometer scale with hammer and chisel which would be in fact under water during the depicted surrounding flood. As a matter of fact, the scale was certainly fixed before its first use during the inundation season.[43] But because of this "unrealistic" depiction it is easier for the observer to recognise the motif.

Another problem is the design of the nilometer itself, because it is normally an underground construction which can only be used while being flooded. The artisans solved this problem by using the *pars-pro-toto* principle. They depicted particular details side by side, like a scale with horizontal divisions and numbers floating in the centre of a well (e.g. figures 1 and 4), although it has to be at the bottom of the well, not visible from the outside.

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42 A well in front of an Egyptian temple on the famous Palestrina mosaic from the first century B.C. is usually interpreted as a nilometer (see Meyboom, 1995, pl. 15). But some scholars refuse this interpretation, because there is no measuring scale; so it could also be a common well (see Ibid., p. 244, n. 77).

43 After the installation of a nilometer scale only the so called "Nilstandsmarken" were placed: inscriptions which indicate the height of the flood in a certain year (see Borchardt, 1908, Seidlmayer, 2001, p. 53). But this was not done every year.

The selection and appearance of the particular details depend on the used model. The arch with stairs on the coins of Antoninus Pius was adopted on three documents (doc. 1, 3, 8). On the Coptic tissue medallions (doc. 1) the arch with stairs is located on the wall of the well. The arch could probably be meant as the end of a canal from the well to the Nile, which, being underground, could not be depicted. But the staircase which leads from the outside up to the arch makes no sense at this place. Presumably, the artisan regarded a staircase and an arch as basic elements of a nilometer, but he was not really aware of their actual function. On the Sepphoris mosaic (doc. 3) the arch seems to be the beginning of a vault in a cubic base standing in the Nile, whereas the nilometer scale is above the water level.

The appearance of the nilometer scale itself differs both on the coins (see description doc. 7) and in the other documents. It can look like a stela (doc. 1, 5, 6), a column (doc. 3, 4, 11), a tower (doc. 9, 10) or an obelisk (doc. 12).

Presumably, the coins were not the only source for the nilometer depictions. Several classical authors such as Plinius the Elder dealt not only with the unique phenomenon of the Nile flood but also with the technical aspects of nilometers and their function.[44] Two of them, Strabo (first century B.C. – first century A.D.) and Heliodorus (third century A.D.), describe in similar words the nilometer of the temple of Khnum in Elephantine as a well consisting of rectangular stones and a cubit-based scale with horizontal lines at the inside wall of the well.[45]

> "The nilometer is a well on the bank of the Nile constructed with close-fitting stones, in which are marks showing the greatest, least, and mean rises of the Nile; for the water in the well rises and lowers with the river. Accordingly, there are marks on the wall of the well, measures of the complete rises and of the others. So when watchers inspect these, they give out word to the rest of the people, so that they may know; (…). This is useful, not only for the farmers with regard to the water-distribution, embankments, canals, and other things of this kind, but also to the prefects, with regard to the revenues; for the greater rises indicate that the revenues also will be greater."[46]

The mentioned stonewalled well is clearly visible on the Coptic tissue medallions (doc. 1), the silver *trulla* (doc. 4) and in a stylised form on the Syrian mosaic (doc. 2). In contrast, it was not possible to copy a nilometer scale inside the well,

44 Postl, 1970, p. 36–48. 138–154.

45 Strabo XVII.1.48; Heliodorus IX.22.

46 Strabo XVII.1.48 (Translation: Jones, 1982, p. 128–129).

so it was depicted either on a stela floating in the well (doc. 1, 2, 4) or on the outside walls of a tower-like building (doc. 9-10).

7. Technical aspects

Based on several nilometer images, Horst Jaritz assumed in his lexicon article mentioned at the beginning that a specific Roman design for nilometers existed in the form of a well with a column inside, on which the height of the flood was read in Roman times. But none of the images (doc. 1, 3, 4) that show a nilometer of this form predates the sixth century A.D. No surviving building of this kind dates earlier than the seventh century A.D., like the nilometer structures of Schedia near Alexandria[47] and Roda.[48] Unlike the images of the nilometer columns, these sites stood at the bottom of a rectangular and not a round well.[49]

The nilometer images are not an accurate reproduction of a technical construction and its data. They show a conglomerate of single elements which seem to belong to a nilometer and were important for the comprehension of the motif. In Roman times, a standardised nilometer "design" did not exist. It rather depended on the source – image and/or text – used by the artisan. Therefore it seems difficult to reconstruct an actual structure based on these images.

8. Conclusion

Most nilometer images are part of Nilotic landscapes. They, like other Nilotic landscapes, appear in several contexts: in a private house (doc. 12), in a public building (doc. 3), in the periphery of an Egyptian temple (doc. 8), in Christian churches (doc. 9, 11) and even in a synagogue (doc. 10).

Today, it is not inconsistent for us to find sphinxes, obelisks and pyramids on Christian cemeteries. We immediately recognise these elements as "Egyptian", even if they are in a Hellenized form like female sphinxes. In the context of a modern grave-yard their original meaning has narrowed: the function of the sphinx as a manifestation of the king or the obelisk as a solar symbol is irrelevant here.

47 Daressy, 1900; Hairy, 2011, p. 108, fig. 18.

48 Popper, 1951.

49 See Daressy, 1900, p. 91; Popper, 1951, p. II.

For well-educated ancient viewers Nilotic images were presumably just as "Egyptian" as sphinxes, obelisks and pyramids are to us. Apparently it was no problem to integrate motifs of a foreign culture and religion in their own houses and chapels. The symbolism of these pictures – wealth, prosperity, abundance – was attractive for believers of all religions. And, via the depicted nilometers, it was actually possible to measure the expected wealth with numbers.

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