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The glass flask from Damboya: a window on Islamic trade from the Near East to the Indian Ocean

The site of Damboya is located in the Shendi region, some twenty kilometres southwest of Meroe (Fig. 1). Although first mentioned in the 1970s by Friedrich Hinkel, work only began in 2020 after a cooperation agreement was signed between the *Section Française de la Direction des Antiquités du Soudan*, the National Corporation for Antiquities and Museums and the Louvre Museum, which holds the El-Hassa-Damboya concession. The excavations focused on three major sectors: A, E and G. The main occupation is represented by a religious area (Sector A), a rectangular edifice built on a podium (Sector E) and a monumental structure accessed by a 13-meter-long ramp, of which only the façade and a few walls have been exposed so far (Sector G). The remains of a fourth redbrick building were also uncovered but not excavated (Sector H). The orientation of the structures as well as the ceramic material point towards a single construction phase in the second half of the first century AD[1].

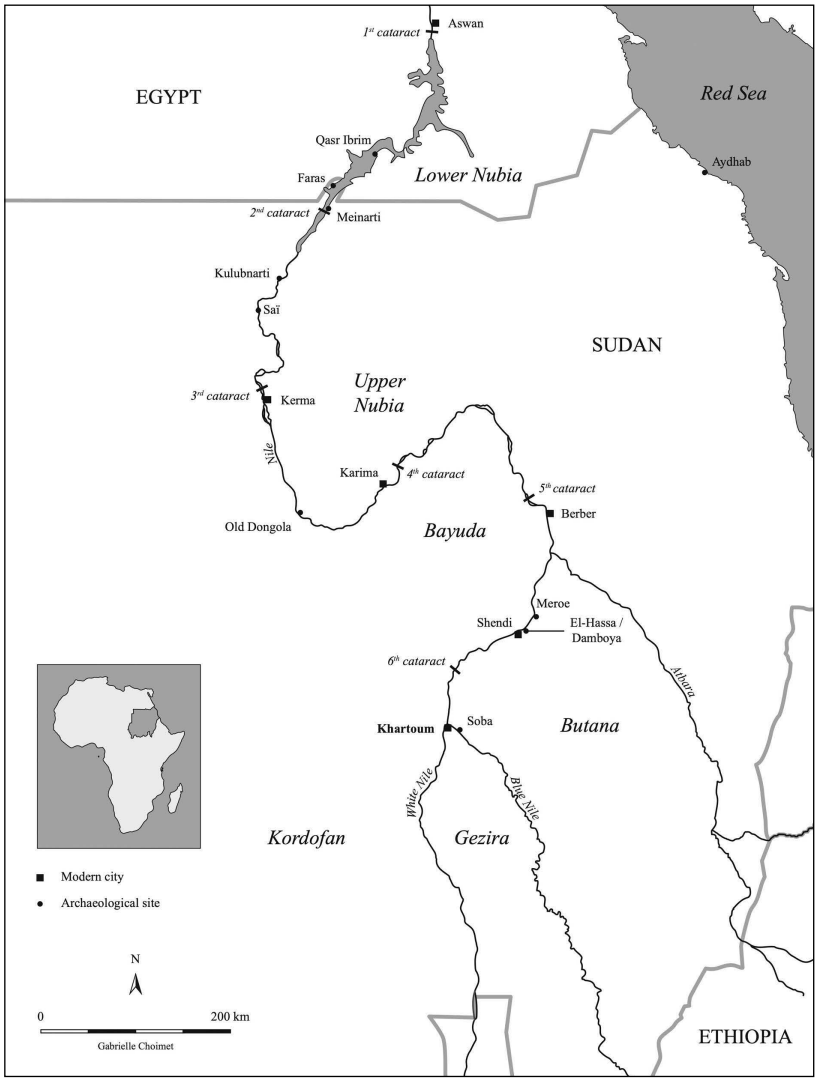

Fig. 1: Map showing the location of Damboya (© Gabrielle Choimet).

The medieval necropolis

Several centuries after its abandonment in the first half of the second century AD, the site was home to a medieval community whose members were buried in tombs dug among the ancient buildings. Neither settlements nor cult places have yet been located in the vicinity, as is generally the case in central Sudan where architectural remains of this period are scarce. The three excavation campaigns at Damboya yielded a total of twenty-seven single primary burials and five secondary deposits, all located in the three main sectors[2]. The negative test trenches carried out in

1 At least one earlier phase has been identified in Sector A, which will not be discussed here.

2 Maillot 2020, 187, fig. 2; Choimet 2021, 179-181, figs. 14-16; 2022, 130, fig. 12; Maillot, Poudroux 2022, 118-119.

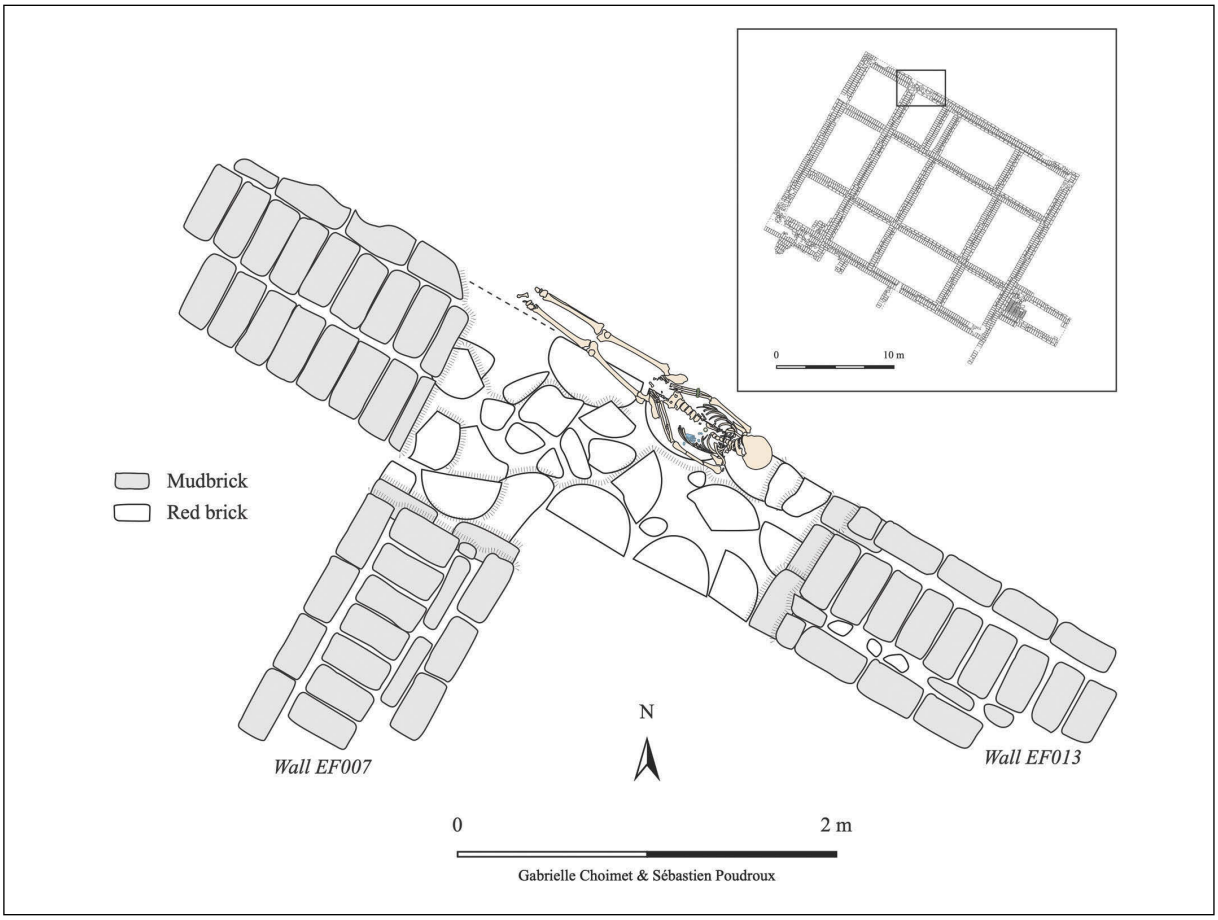

Fig. 2: Location of grave EF103 within Sector E (© SFDAS / musée du Louvre).

the surrounding area[3] seem to suggest that tomb diggers favoured locations inside and around the ancient ruins. At this stage, the burial distribution is roughly equivalent in each sector, indicating a certain homogeneity in the area investigated. However, as excavations have just started in sector G, a greater number of tombs can be expected. The anthropological study (age, sex and palaeopathological study) was conducted by Agathe Chen and Emma Maines in the premises of the Sudan National Museum in Khartoum. Bioarchaeological analyses were subsequently undertaken in France at Aix-Marseille university by Yann Ardagna[4].

All the individuals were buried in narrow pits according to an approximate east-west or northwest-southeast axis, with their heads either to the east (50 %) or northwest (17 %). Most of the graves were located inside the rooms or along the walls, sometimes cutting into the masonry, without any evidence of a superstructure. The predominant position was supine, but one individual was found lying face down and four in a slightly flexed position on their right or left side. The hands were placed either on the pelvis or along the upper thighs and the legs were generally in an extended position. No correlation with biological and/or spatial parameters was found. Few grave goods were recovered, with the exception of beads and fragments of shrouds of which the level of preservation varies considerably. A vegetal matting was also discovered under one individual in Sector A. The cemetery sample indicates a small homogenous group or a family unit, while comparisons with similar sites and burial practices suggest a necropolis of medieval date. The relative proximity to Soba implies that these people were subjects of the kingdom of Alodia (also known as Alwa in Arabic) rather than Makuria[5].

Tomb EF103 and its unusual accompanying material

During the 2022 season, a tomb was uncovered in Sector E not far from the angle formed by walls

3 Choimet 2020, 190-191.
4 Ardagna et al. forthcoming.
5 The extent of the medieval kingdom of Al-Abwab remains uncertain.

EF007 and EF013, where a demolition-filled pit had already been noted[6] (Fig. 2). It contained the well-preserved skeletal remains of a woman aged between 20 and 49 years old (Fig. 3). The grave was dug in a fairly loose sediment resulting from the dismantling of Building E by looters looking for building materials. The deceased was lying on her back, the upper part of her body resting on the redbrick foundations of the building, with the head towards the southeast. Her legs were fully extended and her hands were resting on the pubic area. Her head had rolled onto the right shoulder.

Fig. 3: Individual of grave EF103 alongside wall EF013 (© SFDAS / musée du Louvre).

Interestingly, this woman was buried with personal goods, contrary to what is generally assumed for burials of this period (Fig. 4). First of all, fourteen beads were recovered in the grave fill: three dark double-segmented beads possibly made of discoloured faience or glass, four standard cylindrical beads made of cream stone, four tubular beads made of a semi-translucent yellow material (stone? resin?) and four long rectangular faceted beads made of dark stone. A bronze ring was found on the sternum and was either placed on her chest before the tomb was closed, or worn on a string – now lost – around the neck. Additionally, there were corroded remains of iron upon and below the right forearm; unfortunately, their very degraded state makes it unclear whether they correspond to a bracelet or to an ornament once sewn onto a garment. However, the presence of iron bracelets or anklets has occasionally been reported, particularly in infant and female burials[7]. Even more remarkable, the broken fragments of a glass bottle – object DAM22-EF-103-004 – were found inside the grave, located on the left central part of the rib cage (Fig. 5). Given its fragility, it is possible that the vessel was deposited in a pouch or in a purpose-made basket of which nothing remains[8].

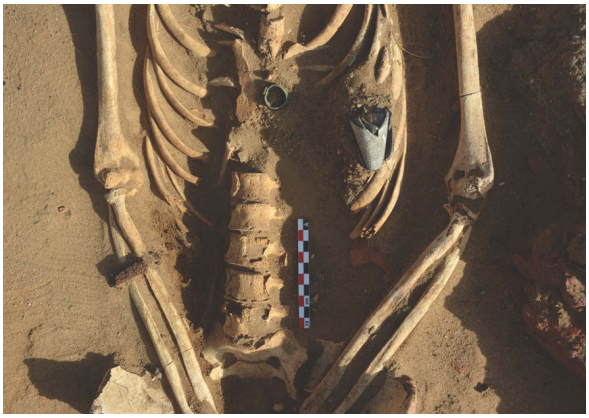

Fig. 4: Funerary material in tomb EF103 (© SFDAS / musée du Louvre).

Fig. 5: Close-up view of the glass flask (© SFDAS / musée du Louvre).

The presence of these objects in tomb EF103 is obviously not accidental but their relative abundance

6 Choimet 2020, 194, fig. 4.

7 Adams 2003, 69, pl. 16d; Anderson et al. 2017, 162.

8 Contrary to Sector A where eight graves out of ten had evidence of shroud remains, no textiles were identified in Sector E except for a few poorly preserved fragments in tomb EF043. Differential preservation of organic remains between these two areas could explain this discrepancy.

and value are highly uncommon for the medieval period. As stated by W. Adams: "*Among the many ideas brought to Nubia by the arrival of Christianity were ideas about life after death. Previously, the dead were thought to require for their afterlife the same things that make for a good life on earth. […]. Christian notions of immortality were strictly spiritual; in this view there was no need for the presence of any physical accoutrements of life because the dead were freed from their corporeal existence, and life after death was for the soul*[9]". Consequently, according to the Christian rites[10], people were simply buried in a shroud fastened with ropes. Sometimes, traces of matting reveal the presence of an outer layer of woven mats wrapping and binding the body. In spite of this requirement recommending that no object be placed in the tomb, certain exceptions did exist however and it is often the case that a piece of jewellery such as a cross accompanies the deceased[11].

In fact, the relative richness of tomb EF103 is not quite unusual. At Dangeil, eight richly adorned tombs which belong to adult women with the exception of one juvenile were recently discovered inside the temple. These graves yielded numerous necklaces, earrings, metal and stone bracelets or anklets, finger and toe rings[12], metal pendants and belts of beads made of stone, cowrie shells and ostrich eggshell discs. The total amounts to seventy copper-alloy bracelets or anklets and 18 500 beads[13]. AMS samples taken from the wood covering of one of the tombs suggests a date between the late 12th century and the early 13th century[14]. Likewise, in the 11-13th centuries cemetery A at Deir el-Naqlun in the Fayum, glass bottles and flasks were found in fifteen of the Christian burials along with other funerary material such as combs, vessels, weaving instruments and even spare clothing[15].

As some authors have pointed out, one should not assume that members of medieval (Christian?) communities in the Middle Nile valley were systematically buried on their backs, with their heads to the west and without any funerary equipment[16]. This is especially true in the kingdom of Alodia, given that there appears to be a greater variability and flexibility in medieval burial practices in central Sudan than in Nubia. Perhaps a specific way of life (semi-nomads, transhumant stock breeders, etc.) could explain these differences with people who, although they adhered to the Christian faith, may have observed different customs, preserved ancestral ones, or simply did not always follow Christian traditions rigorously. It has also been suggested that the area covered by the kingdom of Alodia was only superficially Christianised[17]. Be that as it may, the heterogeneity of what has come to be known as medieval Nubia cannot be denied, and it is essential to adopt a more nuanced approach to the socio-cultural realities it encompasses[18].

The flask

At the end of the 2022 season, the glass flask was brought to the Sudan National Museum in Khartoum so that the tiny fragments could be carefully cleaned and then reassembled. Unfortunately, the outbreak of the war which is ravaging Sudan since April 2023 has prevented the reconstruction of this object, which has no drawings either, but only photographs taken at the time of its discovery. Nevertheless, careful examination of the fragments by the author of this article has enabled her to work on a partial reconstruction.

These fragments consist in the bottom part of a V-shaped vessel of non-transparent and undecorated grey-blue glass, with areas of slight iridescence especially in cuts. It is approximately 5 centimetres high, with a diameter of 1,5 centimetre at the base and just below 4 centimetres where the body is broken off. Body walls are 1 millimetre-thick (1,5 millimetre at the thickest points) and contain a few air bubbles. The body has an inverted truncated cone shape and a square cross-section with rounded edges at the base which becomes circular towards the top. The bottom interior of the vessel has a parabolic profile. Curved fragments found inside or close to the flask indicates that the body probably met with a rounded shoulder. No pontil mark has been observed. The extent to which the burial conditions may have affected the vessel's original colour is unknown, but the silver iridescence is probably due to surface weathering over the centuries.

Obviously, the fact that the neck and rim are missing makes it difficult to find reliable parallels as we cannot ascertain whether this object had a flat or

9 Adams et al. 1999, 51.
10 Similarly, grave goods are usually banned in the Islamic religion, except for shrouds.
11 See for example: Adams et al. 1999, 23-24, 42-43, 48, 70, pl. 17A, C, E.
12 Up to sixteen copper-alloy and iron bracelets and eighteen finger and toe rings in the same tomb.
13 Anderson et al. 2017, 161-164, pls. 7-15.
14 *Idem*, 165, note 12.
15 Godlewski 2008, 475, figs. 6-8; 2011, 180.
16 Welsby 2014, 194-195.
17 Edwards 2001, 95-96.
18 *Idem*.

sloping shoulder, a cylindrical or widening neck, a plain rounded rim or a folded lip. Nonetheless, we know of similar small containers with a pointed base, tapering sides and a circular horizontal cross section that becomes square above the base: these "spearhead flasks[19]" usually have a cylindrical neck[20], a plain rim with a rounded lip, and occasionally a bulge at the base of the neck. The lower part of the body is sometimes slightly bent. Hence, although this reconstruction remains tentative, our object very probably had a slender profile, a rounded shoulder and a narrow cylindrical neck with a plain rounded or possibly a folded rim.

From one publication to another, this kind of glass vessels are either called flasks, flaskets (or flasklets), bottles, vials, phials, or even toilet-bottles, kohl or perfume bottles according to their alleged function. In cases where only the base is preserved, flasks are not to be confused with hollow lamp stems which often curve slightly inwards before broadening toward the top under an open bowl which rested onto a metallic circle[21]. These vessels are also easily mistaken for pear-shaped flasks with a more bulbous body profile and a very elongated – almost cylindrical – base and neck[22], or with "carrot-shape" bottles with cylindrical cross-section that are usually attributed to the 8th-9th centuries[23].

Parallels and tentative dating

Flasks are quite commonly retrieved on medieval sites in the Middle Nile valley: their distinctive small size and elongated shape distinguish them from bigger bottles. In central Sudan, a number of square-based flasks are reported from Soba, where the majority of the glassware is dated between the 9th and 13th centuries, and possibly slightly later[24]. An almost complete vessel made of blue-green glass[25] (Fig. 6.1), a colourless base[26] (Fig. 6.2) and another one made of weathered yellowish-brown glass[27] (Fig. 6.3) are similar in outline to object EF-103-004, although it is difficult to determine the original shape of the latter as it is broken at the transition between the base and the lower curve of the body. The upper part of some glass vessels could also have come from similar containers[28].

In Nubia, small flasks were by far the largest category in the late medieval layers at Qasr Ibrim: one of the closest matches for our flask is a dark blue specimen dated to 1300-1350 AD[29]. A short but complete flask made of pale green glass is reported from Gendal Irki[30], in a house built during the Classic Christian period (850-1100 AD) and occupied until the Late Christian (1100-1500 AD). The black colour of the residue inside the bottle suggest it almost certainly contained kohl. Sixteen kohl or perfume flasks are published from Kulubnarti where they also form the largest group of glass items, ahead of glass beads and bracelets. These flasks exhibit a wide variety of forms and colours but the most common shape is represented by vessels with a tapering body and a square cross-section (seven objects)[31]. Numerous flask bases have also been discovered at Kasanarti[32] and Old Dongola[33] but none resembling that of Damboya, unless the fragments were too small or too incomplete to provide information on their shape. Nevertheless, some rim and neck fragments could be a close match[34]. Glass appears in significant quantities in the medieval layers of Meinarti during phase 3 (660-1000 AD) and, most of all, during phases 4 and 5 (1020-1365 AD). Some examples with a squarish base transitioning upward to a circular section are known for these last two periods. Albeit a more tapering and circular profile, a flask of pale lavender glass either assigned to phase 4 or 5 resembles the one from Damboya[35].

Glass is also reported on the Red Sea coast at Badi (or Er-Rih), approximately twenty kilometres northeast of the border with Eritrea, alongside Chinese celadon and porcelain dated to the 10th-12th centuries[36]. At this site, object EF-103-004 seems to have a parallel in a pale green pointed base (Fig. 6.4). According to the excavators, the rest of the glass fragments show similarities with material from Fustat dated around the 9th century[37]. The profile of our vessel has another counterpart in a plain base at the port of Aydhab[38] (Fig. 6.5), in the Halaib Triangle,

19 Whitehouse 2010, cat. 671-678.
20 The neck could also be wider at the top than at the bottom.
21 See for example: Meyer 1992, pl. 18, no. 479; Ward 1998, fig. 34, nos. 3-4.
22 See for example: Brosh 1993, figs. 4, 6.
23 See for example: Whitehouse 2010, cat. 693-697.
24 Morrison 1991, 258.
25 *Idem*, 257, fig. 147, no. 79.
26 *Idem*, fig. 147, no. 81.
27 Ward 1998, 85, fig. 34, no. 11.
28 Harden 1961, fig. 37, no. 14.
29 Adams 1996, 115, pl. 19a, no. 5. See also no. 4.
30 Adams 2005, 50, 168, pl. 18a.
31 Adams, Adams 1998, 10, 33, pl. 5.1.C, object A.
32 Allan 1995, 14-15.
33 Jeuté 1994, 222-224.
34 See for example: Harden 1978, 85, 91, object no. 30.
35 Adams 2002, 116, pl. 19e, no. 3.
36 Crowfoot 1911, 543, 545; Kawatoko 1993, 208.
37 *Idem*, 209, fig. 4, no. 14, pl. 4 (fourth image, bottom right object).
38 Harden 1961, fig. 45 (first object on third line).

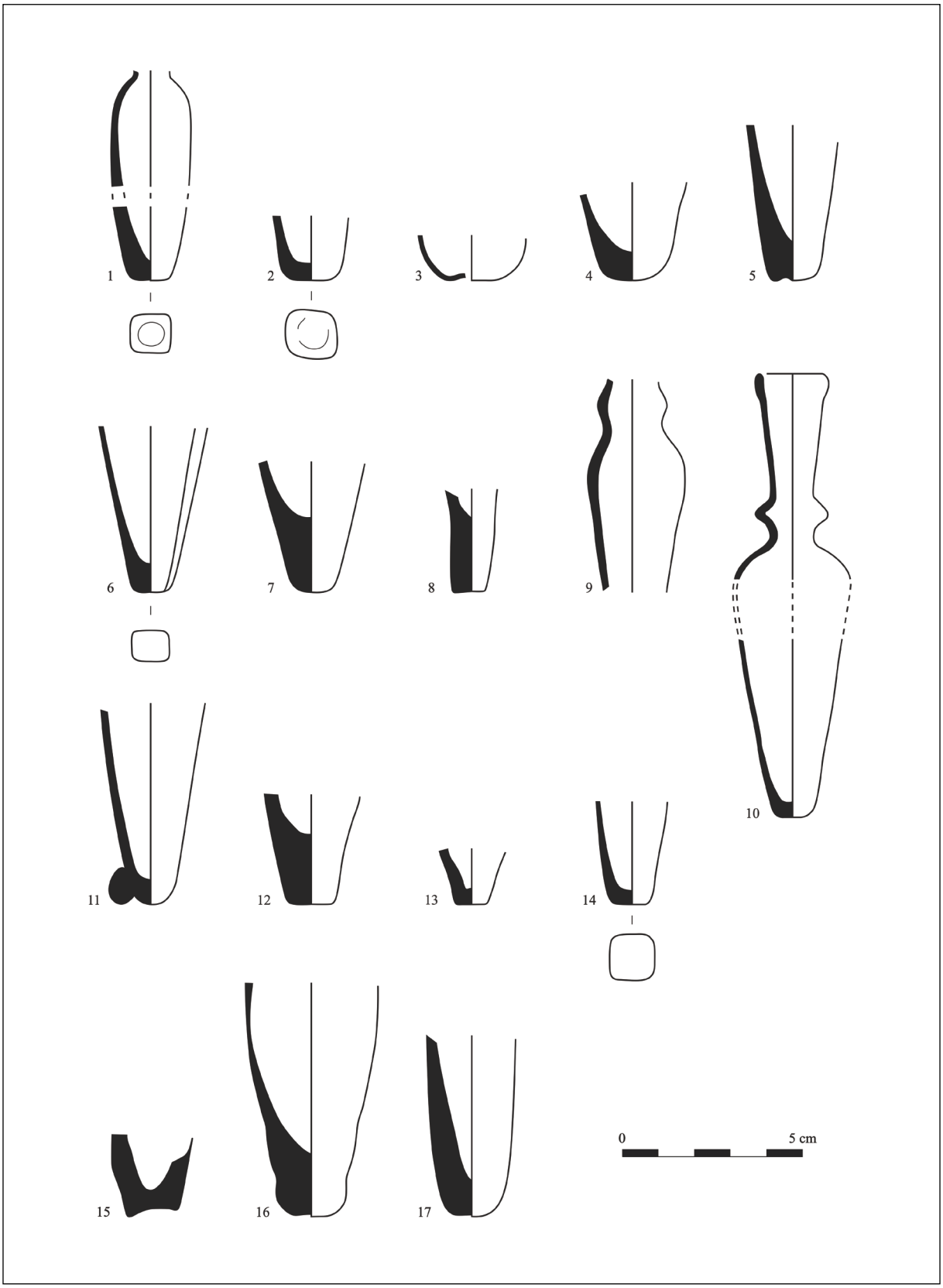

Fig. 6: Glass flasks without decoration (drawing after: 1. Morrison 1991, fig. 147, no. 79; 2. idem, no. 81; 3. Ward 1998, fig. 34, no. 11; 4. Kawatoko 1993, fig. 4, no. 14; 5. Harden 1961, fig. 45; 6. Whitcomb 1983, fig. 3t; 7. Meyer 1995, fig. 12b; 8. Kucharczyk 2015, fig. 2, no. 4; 9. Winter 2010, fig. 5.7; 10. Brosh 2012, pl. 15.2, no. G35; 11. Gorin-Rosen 2019, fig. 4, no. 6; 12. Whitcomb 1985, fig. 26q; 13. Whitcomb 1988, fig. 20j; 14. Foy 2015, fig. 234, no. 161; 5. Kirkman 1954, fig. 37j; 16. Pradines 2010, fig. 233; 17. Chittick 1974, fig. 154h).

whose occupation is dated between the 10th and 14th centuries. Further north, the closest example is perhaps the fragment of a cobalt blue phial with a squarish base published from the Egyptian port of Quseir el-Qadim[39] (Fig. 6.6). This flask comes from an area known as the "sheikh's house", which is dated to the 13th century and possibly the early 14th century[40].

The same truncated cone shape also occurs at Bir Umm Fawakhir, a Byzantine gold-mining town situated in the Eastern Desert and dated to the 5th-7th centuries. There, a green glass base was surprisingly identified as a lamp stem despite its oblique walls and the absence of a concave profile[41] (Fig. 6.7). Such vessel shape also finds parallels at Kom el-Dikka, in Alexandria, in a square-sided pointed base of yellowish-greenish pale glass from area U dated to the Mamluk period[42] (Fig. 6.8).

We may also note the body of an undecorated cosmetic bottle with a bulging neck from Nahal Haggit (Israel), probably originating from Egypt or Syria and dated to the 12th-13th centuries[43] (Fig. 6.9). Seven kohl bottles were found during the excavations of the Cardo in Jerusalem (Area X), three of them made of colourless glass and the rest of blue-green glass. Among them, one of pale blue glass is particularly remarkable since its upper part is preserved[44]: it shows a long cylindrical neck with a bulge in the lower part and a rounded rim and has been given a 14th century date (Fig. 6.10)[45]. It may be compared to a plain cosmetic bottle made of yellow-green glass from Khirbat Burin (Israel), whose base has an extra glass knob and dates back to the 14th century as well[46] (Fig. 6.11).

In Iran, an object made of green glass from western area N7 at Qasr-i Abu Nasr (Takht-e Sulayman, Fars province) has almost identical proportions and shape[47] (Fig. 6.12). Based on coins, pottery, Chinese celadon, Islamic glazed ceramics and tombstones, a dating of the occupation in this sector around the late 13th or 14th centuries has been proposed[48]. In Yemen, a comparable base made of dark green glass is known from site HDR 20 at Qarat el-Harargeh Bor, in the central wadi Hadhramaut[49] (Fig. 6.13), but this surface find has no datable context. Another Yemeni parallel comes from the fortified outpost of Sharma, whose occupation is dated between 980 and 1150 by imports from China, India, the Gulf area and Eastern Africa. Recovered from Building B34, it has a truncated cone shape and is made of weathered green glass[50] (Fig. 6.14).

On the African east coast, the excavations carried out in the 1940s and the 1950s on the Kenyan site of Gedi yielded a small green phial[51] (Fig. 6.15). The context of discovery can be securely attributed to the end of the 13th century and the first half of the 14th century[52]. In the 2000s, surprisingly little glass is reported from a new series of excavations. Most of it come from a single layer – level 1024 – which has been assigned to the 14th century, a particularly fruitful period for the glass industry. In this layer, object G01-MOSQ-1024-118 is similar in shape despite a slight narrowing at the base, and its profile appears to round out to form a shoulder[53] (Fig. 6.16). This form is also paralleled at Kilwa (Tanzania), where the lower part of a dark green phial with a nearly square section was found west of the Great House (Fig. 6.17), in a stratum that is dated to the 11th-12th centuries and possibly as late as 1200[54], that is to say a period which has seen a significant increase in the quantity of imported glass[55]. Firmly adhering brown-black residues indicate probable cosmetic use.

Comparisons with objects of similar shape but in other decorating techniques could prove useful to address dating problems. Besides, it is quite possible that the bottle from Damboya may be a cheap copy of luxurious flasks very often exhibiting an elegant marvered decoration covering their entire surface. With regard to this category, a dark blue bottle with a rounded rim and opaque white trail dragged so as to produce a festooned or feather-like pattern provides a good example (Fig. 7). Probably manufactured in Egypt, it is dated around the 11th and 12th centuries[56]. Even more sophisticated is a comparable flask of dark glass made in Egypt or

39 Whitcomb 1983, fig. 3t; Meyer 1992, 83, pl. 17, no. 464.
40 Whitcomb 1983, 104. The excavated contexts are fairly well dated, making the glass elements present in these layers reliable dating markers.
41 Meyer 1995, 57, 67, fig. 12b.
42 Kucharczyk 2015, 77, fig. 2, no. 4.
43 Winter 2010, 166, fig. 5.7.
44 In most cases, only the base survives due to its greater thickness, unlike the thinner walls and neck (Allan 1995, 17).
45 Brosh 2012, 403, 415, pl. 15.2, no. G35. See also no G36.
46 Gorin-Rosen 2019, 233, fig. 4, no. 6.
47 Whitcomb 1985, 155, fig. 26q.
48 *Idem*, 34.
49 Whitcomb 1988, fig. 20j.
50 Foy 2015, 327, 349, fig. 234, no. 161.
51 Kirkman 1954, 152, fig. 37j.
52 *Idem*, 14.
53 Pradines 2010, 232, 272, fig. 233 (second object on third line).
54 Chittick 1974, 33, 398, fig. 154h.
55 *Idem*, 237-239.
56 The Corning Museum of Glass, Corning, 50.1.32 (Carboni, Whitehouse 2001, cat. 55).

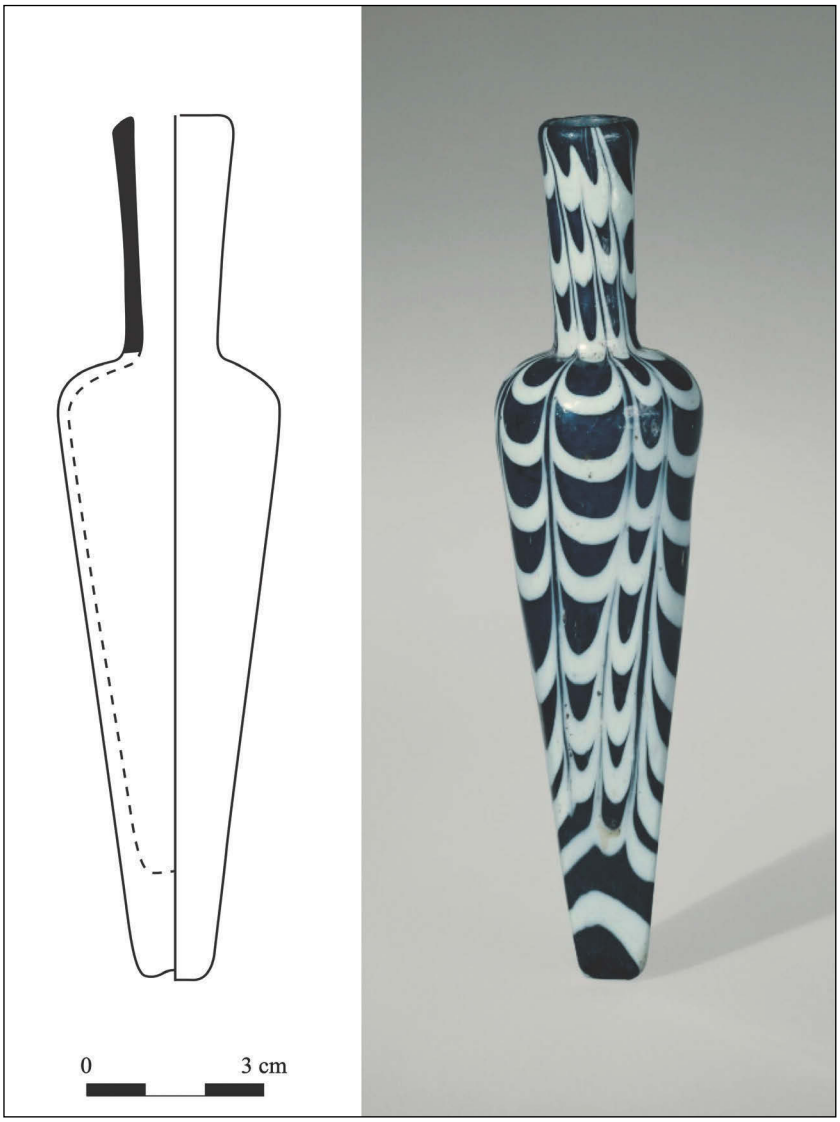

Fig. 7: Blue glass flask with marvered trails (drawing after Whitehouse 2010, 325, fig. 970; photography © The Corning Museum of Glass, Corning).

Syria between 1100 and 1300, with a folded rim and bulged neck[57] (Fig. 8).

Close parallels of this decorated ware are found at Qasr Ibrim[58], Faras[59], Meinarti[60], Kasanarti[61], Kulubnarti[62], Old Dongola[63] and Soba. At the latter site, the square base of a black tapering phial with white marvered wavy pattern overall was discovered in Area B, Building D[64] (Fig. 9.1). The same trailed decoration may be noted on two bases from the Eastern Area at Quseir, one of green glass and white threads, the other of brown glass and white threads[65] (Fig. 9.2 and 9.3). On the same site, two dragged and marvered shoulder sherds and two rims belong to a similar type of vessel, of which one with a relatively prominent bulge above the shoulder[66]. All are well dated to the 14th century, and perhaps the early 15th century[67].

This type of vessel has come to light on a number of sites in the Levant, all within Mamluk assemblages: in Jerusalem, the Cardo area yielded the base of a kohl bottle of opaque black glass decorated with a white trail marvered into festoon pattern dating from the 15th century[68] (Fig. 9.4). A short distance away, four elongated purple glass flasks with white trails and a bulge at the base of the neck have been found in an area of the Jewish quarter dating to the 14th century[69] (Fig. 9.5). At Khirbat Burin, the finds included two bases made of blue glass decorated with white trails, with a square section tapering to a pointed base[70], of which at least one is dated to the late 13th and 14th centuries[71]. Turning to southern Arabia, two truncated conical flasks from Sharma show a comparable decoration (Fig. 9.6 and 9.7); although collected on the surface, they can be securely attributed to the site's later layers[72].

57 Victoria and Albert Museum, London, C.11-1946. See also Lamm 1929-30, 102, pl. 32, nos. 5-7.
58 Adams 1996, 115, pl. 19a, no. 2; 2010, 89 (no illustration provided).
59 Morrison 1991, 257 (objects F93/62-63 and F234 62-63, no illustration provided).
60 Allan 1995, 14-15; Adams 2002, 116.
61 Allan 1995, 15.
62 Adams, Adams 1998, 33, pl. 5.1.B (d).
63 Jeuté 1994, 223, fig. 2b.
64 Morrison 1991, 257, fig. 147, no. 89.
65 Whitcomb 1983, figs. 2nn, 2pp; Meyer 1992, pl. 19, nos. 552-553. See also Lamm 1929-30, 99, pl. 30, no. 4 (red glass with marvered decoration, Egypt, 10th-11th centuries).
66 Whitcomb 1983, figs. 2cc, 2ee, 2mm, 2oo; Meyer 1992, 90, pl. 19, nos. 448-551.
67 Whitcomb 1983, 104.
68 Brosh 2012, 404, 415, pl. 15.2, no. G37.
69 Brosh 2016, 364, fig. 5, no. 15.
70 Gorin-Rosen 2019, 230, fig. 3, nos. 5-6.
71 *Idem*, 228.
72 Foy 2015, 328-329, fig. 236, nos. 197-198. See also Lamm 1929-30, 100, pl. 30, nos. 6-7 (emerald green glass with marvered decoration, Egypt, 11th-12th centuries).

Fig. 8: Dark glass flask with marvered trails (© Victoria and Albert Museum, London).

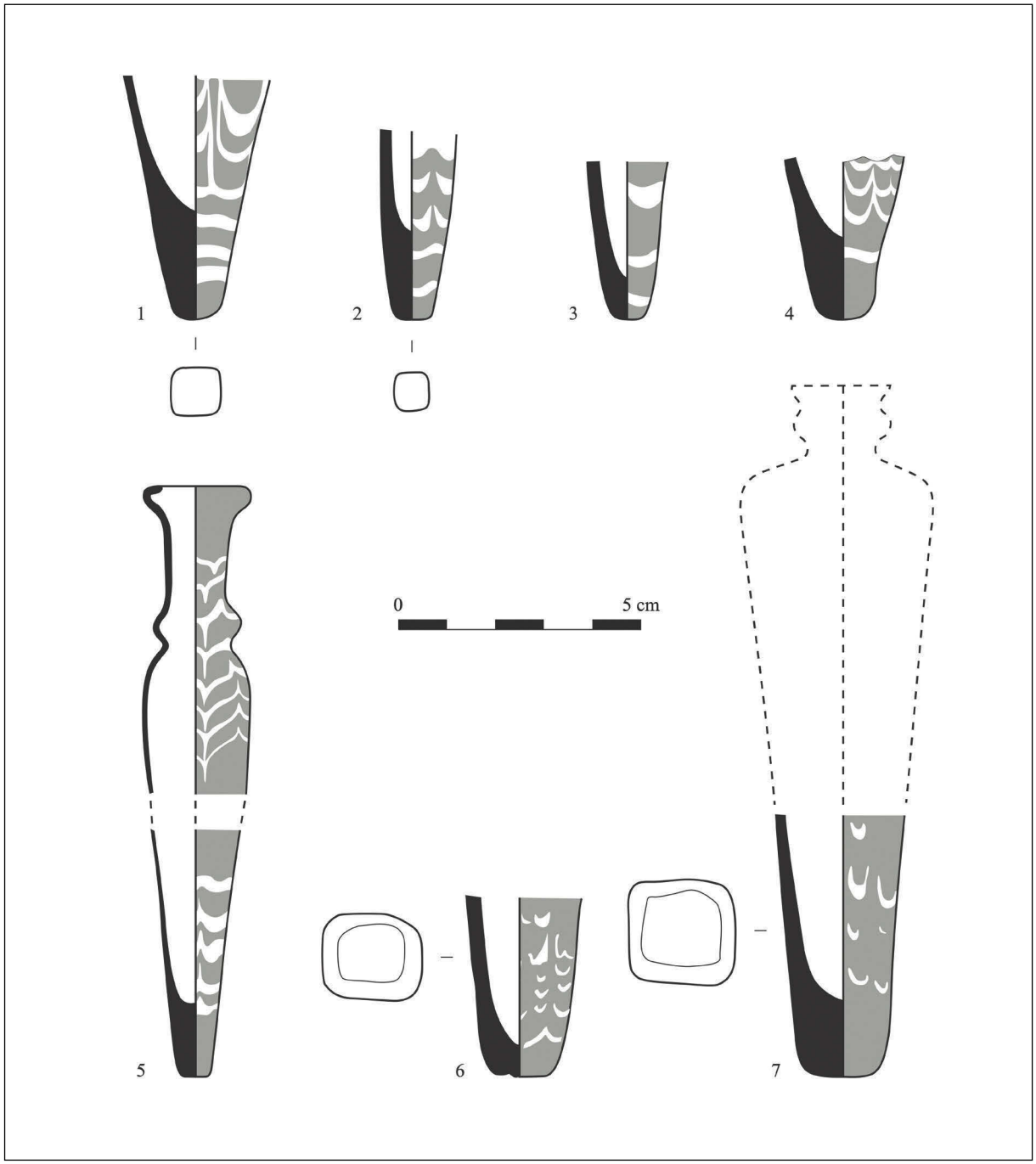

Fig. 9: Glass flasks with marvered decoration (drawing after: 1. Morrison 1991, fig. 147, no. 89; 2. Whitcomb 1983, fig. 2nn; 3. *idem*, fig. 2pp; 4. Brosh 2012, pl. 15.2, no. G37; 5. Brosh 2016, fig. 5, no. 15; 6. Foy 2015, fig. 236, no. 197; 7. *idem*, fig. 236, no.198).

Such containers with a square body and an elongated tapered base showing white spiral marvering are also reported from Fustat[73], from the 14th-19th centuries port of Al-Tur[74] (Sinai), and as far as the 9th-11th centuries Sumatran port of Barus[75] (Indonesia) or the northern coast of Madagascar, particularly from the necropolis of Vohemar[76]. Purple marvered glass predominated in Syria, whereas blue and green were favoured in Egypt and in the Indian Ocean exports[77]. Widespread in the Middle East and Africa, these decorated flasks reached their peak in the 12th and 13th centuries[78], and maybe well into the 14th century[79].

Square-base flasks come in a wide variety of forms and decorations: more or less slender shape, neck with or without bulge, etc. Besides plain ware and marvered and combed decoration, they were also gilded[80], engraved[81], adorned with applied decoration[82], or ribbed[83], which was achieved by blowing in a dip mold. These vessels were used for a very long time and are therefore difficult to date accurately, not to mention the fact that they were copied to produce local low-priced glass vessels. For instance, two small V-shaped containers from Tel-Erani (Israel), initially dated between the 7th and 15th centuries, were eventually attributed to a much later period, between the 15th and 17th centuries[84]. As for the vessels decorated in marvering technique, they are typical of the glass industry of the 12th-14th centuries[85] and perhaps slightly later in the 15th century[86].

The comparative study of vessel shapes and the dating evidence assembled so far have not enabled us to assign a precise dating to the Damboya plain ware flask. Indeed, this object has parallels on numerous sites with a large scope of possible dates ranging from the 9th to the 14th century[87]. While such a broad dating is undeniably hardly satisfactory, it should be noted that the most accurate parallels suggest a 12th-14th centuries date, that is to say during the Ayyubid (1171-1250) or Mamluk (1250-1517) period in Egypt. However, a date as early as the 9th or 10th century cannot be excluded, as some authors proposed an early date for these "spearhead" flasks[88] which are reminiscent of Early Islamic forms. The truncated cone shape was even adopted in the case of "molar flasks", which were very popular in the 9th and 10th centuries[89].

Production site

As regards provenance, it is commonly assumed that the great majority of glass vessels found in the Middle Nile valley were imported, most of it from Egypt[90]. The Fayum and Lower Egypt were indeed home to glass workshops as were, to a lesser extent, Middle Egypt and the Red Sea shores. The most important of these centres was the city of Fustat (Cairo), which reached its greatest prosperity between the 8th and 11th centuries.

No workshop has yet been discovered in the Middle Nile valley, which makes it unlikely that glass was blown in medieval Sudan[91]. Nevertheless, some authors have argued that local production cannot be totally ruled out due to the occasional discovery of lumps of raw glass. Indeed, a large block of unworked green glass was found in a workshop area at Debeira[92]. At Meinarti and Kulubnarti, the excavations brought to light respectively three lumps of

73 Shindo 1993, 301, fig. 3, no. 18.
74 *Idem*, 302-303, fig. 7.
75 Guillot et al. 2003, 259, fig. 43.
76 See for example: Musée du Quai Branly, Paris, 71.1947.80.16 (grey glass with black trail marvered decoration, place of production unknown, possibly 13th-16th centuries) or 71.1965.4.92 (dark glass with white trail marvered decoration, place of production and dating unknown).
77 Carboni, Whitehouse 2001, 139.
78 Whitehouse 2010, cat. 970-973; Foy 2015, 328-329.
79 Brosh 2016, 358.
80 See for example: Victoria and Albert Museum, London, C.174-1963, purple glass with gilding, Egypt (?), 10th-12th centuries.
81 See for example: Metropolitan Museum of Art, New York, 30.95.32, blue glass, Egypt (?), 10th century; The Corning Museum of Glass, Corning, 53.1.69, blue glass, Egypt, 10th century (Whitehouse 2010, cat. 219).
82 The Corning Museum of Glass, Corning, 50.1.24, pale green glass, provenance unknown, 11-12th centuries (Whitehouse 2010, cat. 921).
83 See for example: Carboni 2001, 242, cat. 3.29a; Foy 2015, fig. 234, no. 162; The Corning Museum of Glass, Corning, 53.1.87 and 53.1.86 (Whitehouse 2010, cat. 788 and 792).
84 Brosh 1993, 290-291, figs. 5-7.
85 Whitcomb 1983, 103 ; Allan 1995, 23-24.
86 Brosh 1993, 290.
87 The Bir Umm Fawakhir fragment seems to be an exception to this general rule, but the building where it was found was heavily looted and its dating is therefore unreliable.
88 See for example: Carboni 2001, 242, cat. 3.29a; Scanlon, Pinder-Wilson 2001, 69, 72, fig. 35j-l; Whitehouse 2010, cat. 675, 676, 678, 693. It is, however, worth mentioning that some of these objects were either surface finds or purchased from antiquities collectors, and are thus disconnected from any securely dated archaeological context.
89 See for example this blue glass "molar flask" with four pointed toes and a square cross-section: Scanlon, Pinder-Wilson 2011, 98, pl. 42z.
90 Harden 1978, 83; Adams 1996, 115; 2002, 78.
91 Ward 1998, 83; Welsby 2002, 196.
92 Harden 1978, 89.

blue, olive-green and brown glass[93] and small lumps of glass slag[94]. Further to the south, unworked fragments of deep-blue glass are reported from Soba[95]. Finally, at Old Dongola, a piece of pure green glass was discovered together with a few pieces of glass by-products of a very low quality. The context of these finds (next to the palace building B.1 in the southwestern part of the fortified citadel) was dated to the first half of the 7th century. The presence of wasters provides evidence of glassmaking taking place at the capital of Makuria, in the palace area, by means of raw glass brought from foreign (Egyptian?) workshops and later reworked by local craftsmen[96]. Nevertheless, there is some general evidence for this material rather being intended for bead production, whereas glass objects were being imported[97].

It has sometimes been suggested that some of these imports originated in the Levant or Iran, although it is difficult to distinguish between these different origins[98]. Fortunately, chemical analyses have increased in recent years, making it possible to determine the composition and the origin of the raw material. Against all expectations, recent analysis of glass samples from Soba showed that they were mainly related to the plant ash-soda-lime-silica glass produced in the Middle East (likely modern-day Iran and Iraq)[99]. Soba's intense long-distance connections are further corroborated by the glass bead evidence, with raw materials from Eastern Mediterranean, Indian and, above all, Middle Eastern origin[100].

Use and trade routes

Small containers are common in Islamic glassware and were usually used for highly valued products such as perfumes, oils, scented balms, ointments and resins or other kind of cosmetics. Flared bottles with a pointed convex base and an elongated neck were more specifically intended for kohl, or eye-paint. Kohl tubes and bottles are known since ancient times, but this truncated cone shape – called *mukhula* in Arabic – is a very distinctive Islamic form. Kohl was applied with a small stick of metal, wood or ivory, as evidenced by the discovery of an intact kohl bottle from a 14th-15th centuries stratum with remains of kohl residue at El-Tur, in the Sinai Peninsula. A copper rod discovered nearby was used as a stick to extract the product from the small bottle and to apply it on the eyelids[101]. Other medieval glass bottles excavated in the Levant also bore traces of kohl powder[102]. Their small convex base indicates that they could not be stored in an upright position but were likely placed horizontally or on a stand. A few toilet bottles were even found in their own protective basketwork, as in grave T. 324 at Naqlun where two glass bottles were deposited in the deceased's coffin with a Coptic codex and a pen case with two *kalamoi*[103].

Object EF-103-004 is not so important in itself but its presence nevertheless demonstrates the economic strength of Islamic trade in East Africa. It also raises questions about how this flask made it to Damboya and came to be found in a small medieval community of the Shendi reach. Its presence outside the capital of the kingdom of Alodia, which was probably the main trading centre in the region, echoes that of valuable objects and prestige goods in the Middle Nile valley, such as Islamic or Chinese ceramics and glazed wares[104], textiles[105], fine garments[106], etc. Written evidence – mainly from the fortress of Qasr Ibrim – further supports the import of such commodities, together with spices, military equipment and horses[107]. Regrettably, the climatic conditions prevailing in central Sudan did not enable organic material to be preserved as in Lower Nubia, which does not mean that items not recognizable in the archaeological record did not penetrate further south.

Small bottles and cosmetic flasks were among the most commonly traded goods in the Islamic world, as they represented high value products and were easily packed and transported. Although glass can be considered a luxury item particularly in the

93 British Museum, London, OA+. 13078-13080, ca. 850-1100.
94 Adams, Adams 1998, 10. According to the authors, the possibility that this glass slag is the remains of broken glass vessels thrown into the fire or residues from making beads should not be excluded, especially as all glass fragments at Kulubnarti appear to be of Egyptian origin.
95 Ward 1998, 83.
96 Godlewski 2004, 199; 2013, 133.
97 Ward 1998, 83; Adams 2002, 78.
98 Morrison 1991, 258.
99 Then-Obłuska, Dussubieux 2023c.
100 Then-Obłuska, Dussubieux 2023a; 2023b.
101 Shindo 1993, 302-304, figs. 7-9; Satoh et al. 1994.
102 Brosh 1993, 290, 293, fig. 1.
103 Godlewski 2003, fig. 4.
104 See for example: Welsby, Daniels 1991, 246 (Islamic glazed ware and Chinese porcelain from Soba); Edwards, Fuller 2005, 26, fig. 9 (Syrian glazed jar from Umm Melyekta).
105 Adams 1996, 163-168, pl. 45; 2010, 69-72.
106 Millet 1967, 60 (Mamluk silk and clothes from Jebel Adda); Crowfoot 1977 (fine wool, cotton, silk and linen garments from a bishop's burial at Qasr Ibrim).
107 Khan 2024, 195-203.

case of decorated objects, these small containers were probably not being shipped for themselves, but rather for their contents: perfumes, cosmetics, pharmaceuticals, perfumed water or oil, etc. Upon arrival in the Middle Nile Valley, these goods were part of a trading system based upon barter, as the use of coinage was not common. They were therefore exchanged for materials or commodities like grain, salt, cattle, camels, ivory, ostrich eggs, gold dust and perhaps slaves.

At Soba, the presence of merchants as well as that of a permanent Muslim population is documented by Arab authors such as Ibn Sulaym al-Uswani (10th century, later quoted by al-Maqrizi) and al-Idrisi[108] (12th century), from whom we also know that the kingdom of Alodia traded with Egypt[109]. As Derek Welsby has pointed out, the southernmost Nubian kingdom may indeed have been a favourable trading area for Muslims, unlike the neighbouring kingdom of Makuria which, under the terms of the treaty signed with the Egyptian Arabs, pursued an extremely restrictive policy against Muslim communities[110].

Yet, the routes through which the products of glassmaking industry in contemporary Egypt or Middle East arrived within the kingdom of Alodia remain difficult to assess. Two main itineraries can be conceived: the Nile river and the Red Sea. The first one derives from Nubian-Egyptian interactions in Lower Nubia for which we have archaeological evidence[111] and descriptions on parchments and papyri. The second would be related to the Islamic expansion along the Red Sea and Indian Ocean coasts, but is at present poorly documented. Inland, archaeological evidence of the routes taken by the Islamic trade towards the Middle Nile valley is scarce, and all information on this matter is derived from literary sources. Some medieval routes are known, such as the one linking Egypt to the region of the fifth cataract, or the one between modern-day Berber and the Red Sea ports of Suakin, Badi and Dahlak[112]. However, the fact that Nubian sites have produced Indian glass and Chinese tableware points to the existence of trade contacts with the Red Sea region. Recent archaeological work has also provided new evidence of trade centres and way stations for caravans travelling in the Atbai desert[113].

With the exception of Suakin, whose development came later, only intermittent work has been carried out on the Sudanese Red Sea ports. Among them, the best known is perhaps that of Aydhab: first mentioned in the 9th century, it was occupied until the 15th century. According to travellers such as al-Ya'qubi, Nasir Khusraw or Ibn Jubayr, it was one of the busiest ports in the world, with ships arriving and departing for the Hejaz, Abyssinia, Yemen, India and Zanzibar[114]. Goods travelled from the port to the cities of Aswan and Qus through the Wadi Allaqi, from where they were shipped down the Nile. Like Quseir el-Qadim, it was also one of the main ports of embarkation for Muslim pilgrims bound for Mecca. Limited excavations and surveys were conducted at the site but surface finds include Chinese celadon and blue and white porcelain[115].

Final remarks

The study of the glass flask from Damboya has enabled some instructive comparisons to be made. Despite its uncertain provenance and dating, the wide distribution of this type of vessel in the Nile valley, Asia and the Indian Ocean suggests that they were a valued commodity. The Damboya glass flask was acquired through long-distance trade, probably with Egypt or the Near East, although it is not possible to provide a more certain provenance or to specify the routes it took. This trade mainly involved prestige goods and highly valued items such as Islamic glazed tableware, Chinese porcelain and luxury textiles and outfits. Glass was considered a luxury item as well, particularly in the case of decorated wares, but small bottles and flasks were prized above all for the perfumes and oils they contained. The container thus became a utilitarian piece whose content was more important and undoubtedly more precious.

The conclusion emerging from the above evidence is that the kingdom of Alodia and its region, like the other Nubian kingdoms, was well connected to centres of glass production in the medieval period thanks to the trade established in the Red Sea and Indian Ocean. In this context, Arab merchants' control of African ports on the Red Sea enabled the circulation of goods to and from Africa, India and China.

108 Vantini 1975, 613.
109 *Idem*, 274.
110 Welsby 2002, 213.
111 Nile river trade relations between Nubia and Egypt are manifest in the light of the material excavated at sites such as Qasr Ibrim and Meinarti.
112 Vantini 1975, 608.
113 Cooper 2021.
114 Vantini 1975, 78, 236, 294.
115 Harden 1961, 70. For a summary of past archaeological research at the renowned, but yet little-known port of Aydhab, see Peacock, Peacock 2008.

The flask found at Damboya is characteristic of the material found on medieval trading routes and of the repertoire of shapes shared throughout the Islamic world. Its discovery in a tomb from this period is therefore not surprising, since it was one of the most popular vessels of the Ayyubid-Mamluk period[116].

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116 Brosh 2012, 403.

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Zusammenfassung

Bei Ausgrabungen in der meroitischen Stätte Damboya wurde eine große mittelalterliche Nekropole freigelegt. Neben persönlichem Schmuck wurde in einem der Gräber ein Glasgefäß gefunden, ein höchst ungewöhnliches Objekt für Bestattungen dieser Zeit im zentralen Sudan. Obwohl es nicht wieder zusammengesetzt werden konnte, wurde es als Kosmetikflasche identifiziert, von der ähnliche Exemplare im mittleren Niltal, in Ägypten, im Nahen Osten, in Südarabien und an der Ostküste Afrikas gefunden wurden. Diese Parallelen deuten darauf hin, dass diese Flasche während der Herrschaft der Ayyubiden bzw. Mamluken hergestellt wurde, obwohl ein Datum ab dem 9. Jahrhundert nicht auszuschließen ist. Von dort gelangte sie in das mittelalterliche Königreich Alodia als Teil eines Fernhandelsnetzes, das sich bis zum Roten Meer und zum Indischen Ozean erstreckte.