Mold-Blown Glass Arcaded Beakers from Masada

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Abstract

Fragments of unique mold-blown glass beakers displaying well-defined, low-relief architectural niches or recesses devoid of standing figures were recovered by the 1963–1965 Yigael Yadin Masada Expedition of the Hebrew University of Jerusalem and the Israel Exploration Society. The fragments were found in Building VII, in Casemate 1266, and in its adjacent Dump 1275. The beakers are tall and narrow; their rim and lower body are cylindrical; their middle is divided into eight straight panels of equal width, joined at an angle of 45 degrees. Each panel is bounded on either side by a sectioned column, smooth on the bottom and fluted at the top, standing on a double-torus (Attic) base and capped with an ionic capital. The sunken rectangular niche between the columns is angular on top and curved at the bottom; it is framed by a narrow ridge inside a wide, oblong groove. Triangular pediments with a raised spheroid in their center straddle some of the capitals. An undulating garland of raised dots encircles the beaker above the pediments and below the rim. This vessel has no published equivalents and is dated, by technique and context, to the second half of the 1st century CE. Are the Masada Arcaded Beakers a local product?

Keywords: Masada Jewish Rebels and refugees; Roman garrisons; vessel glass; mold-blown glass; funerary art and architecture; Roman funerary shrines or altars.

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1. Introduction

The excavations of Masada have recovered a very large corpus of glass objects, almost all dated to the 1st century CE. It is yet to be thoroughly researched and fully published. Significant studies include Barag's (1991) cursory inventory of the Masada vessel glass from the Early Roman period; Jackson-Tal's (2016) study of the glassware from Roman Camp F; and the present author's unpublished doctoral dissertation on the 1st to early 2nd-century glassware from well-dated Masada contexts (Max 2012), as well as two articles: one on the Masada early crown-glass windows (Max 2020) and the other on the Masada enameled cups (Max 2021). The glass find encompasses many 1st-century CE hot-forming and cold-working production techniques; the mold-blown vessels of the 1st century are well represented. Particularly relevant to our study are fragments of three rare mold-blown Mythological Beakers displaying human figures standing in four column-bounded niches around the vessel; only 69 have been documented worldwide (Weinberg 1972; Wight 1990; 1991; 1994).

This paper discusses unparalleled mold-blown beakers exhibiting eight well-articulated arcaded niches without any figures, perhaps depicting a small shrine or a colonnade. Following a short summary of the early history of the site and an introduction to this unique beaker form, as well as a short discussion of its production technique, I analyze the architectural motif and attempt to determine the vessels' origin by comparison with published arcaded specimens in glass and other media. I cautiously suggest an affiliation with 1st-century CE funerary art, particularly from Jerusalem.

2. The Early History of the Occupation of Masada

Masada is situated on an escarpment by the Dead Sea. It was designed and rebuilt as a palatial fortress by Herod the Great from 37 to 4 BCE. Between 6 and 66 CE, it was intermittently occupied by Garrison I, a succession of Roman auxiliary units. From 66 to 73/74 CE, it was inhabited by Jewish Rebels and refugees during the Great Revolt against Rome; most of the glass from the site is assigned to this short period. In the spring of 73/74 CE, the Roman Legio X Fretensis, under the command of Lucius Flavius Silva, reclaimed Masada from the Rebels. That force was quartered in some of the eight siege camps it had built around the mount during the winter; the largest, Camp F, west of the mount, was its central command post (Fig. 1).

Fig. 1. View of Masada from the northwest; note Camp F at bottom right (Public domain, Wikipedia).

The main Roman force departed for Caesarea soon after the fall of Masada, leaving behind a small contingent, Garrison II, in Camp F2 (a walled-off segment of the main camp) and in several makeshift rooms on the northern part of the summit. During their stay, the soldiers of Garrison II apparently scoured the site for loot, thereby disturbing earlier layers and leaving a trail of their own detritus. There is no firm evidence of Garrison II's presence after the late 80s. In 106 CE, Trajan assigned Garrison III to Masada to guard the border with the newly constituted Provincia Arabia; it remained in Camp F2 at least until 113 CE when the wars against the Parthians broke out (Aroubas and Goldfus 2008: 1938–1939) and, judging by the numismatic assemblage, on the summit until a little later.

Masada was thoroughly excavated by the 1963–1965 Yigael Yadin Expedition sponsored by the Hebrew University and the Israel Exploration Society. The fragments of the Arcaded Beakers were recovered by that expedition (Fig. 2).

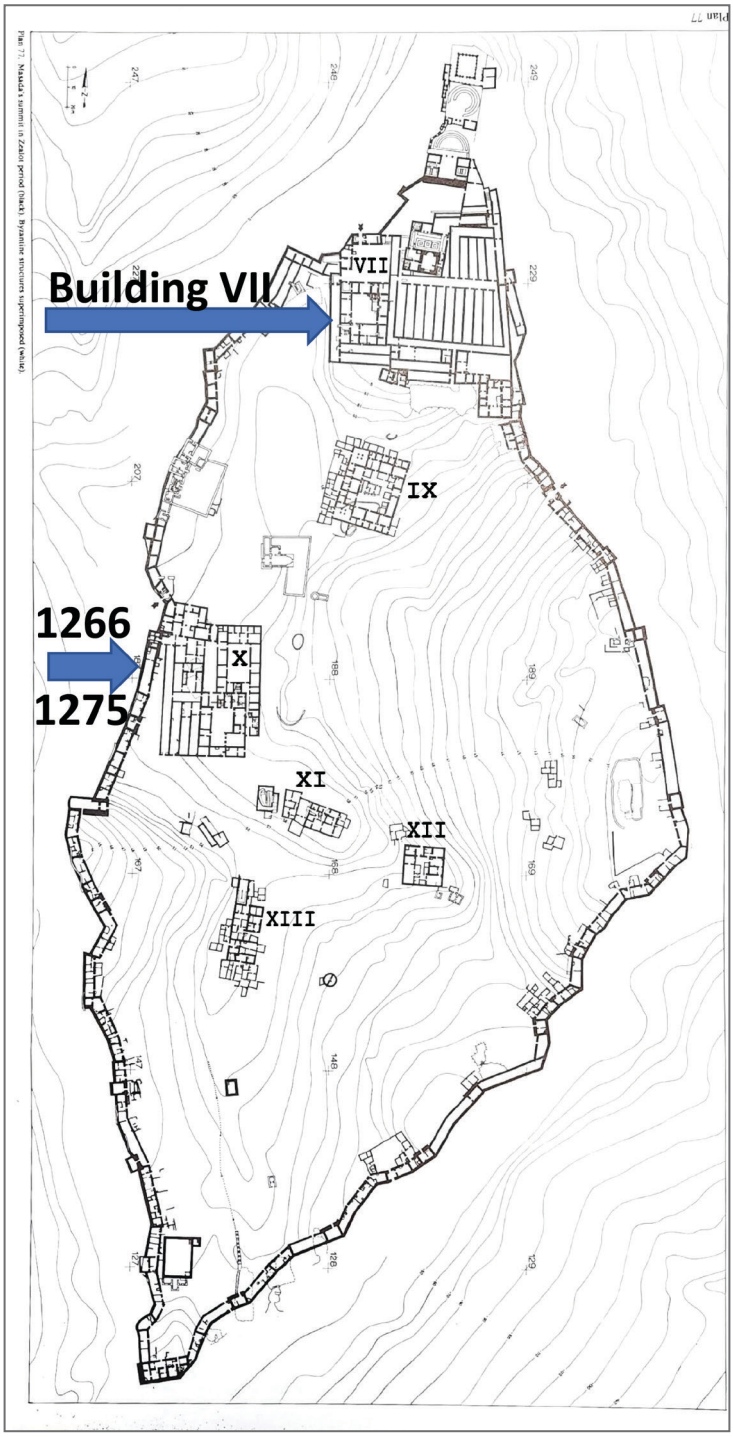

Fig. 2. Map of Masada showing where the Arcaded Beaker fragments were found (after Netzer 1991: Plan 77, adapted by Yael Max).

3. The Find

Thirty mold-blown glass fragments, some joining, embossed with an unusual arcaded architectural motif in low relief, were recovered from the summit of Masada (Fig. 3). Four very small fragments were retrieved from Western Casemate 1266 (Fig. 4), a decidedly Rebel context; its adjacent Dump 1275 produced 14, mostly large, some joining, graphically restorable fragments. Building VII in the north (Fig. 5), whose ceramic and coin finds indicate a mixed presence of Rebel, Garrison II, and Garrison III, yielded 12 fragments, some joining and graphically restorable. The glass is of excellent blue-green fabric with few blemishes. The fragments from Dump 1275 are not corroded, while those from other loci exhibit some dulling, white iridescence, or a thick, non-flaking ochre crust; the ochre crust was primarily observed on the lower body.

4. The Masada Arcaded Beakers

The fragments are estimated to belong to four vessels. Assuming that artifacts were rapidly buried under destruction debris and thus more or less remained where they fell, I employed the rule of thumb that fragments recovered from non-contiguous contexts belong to different vessels. Rooms 168 and 169 of Building VII share a passageway; therefore, the three fragments found in both spaces were registered as one vessel. Concomitantly,

Fig. 3. The Masada Glass Arcaded Beakers: Fragments from all contexts arranged by architectural elements (photo: Yael Max).

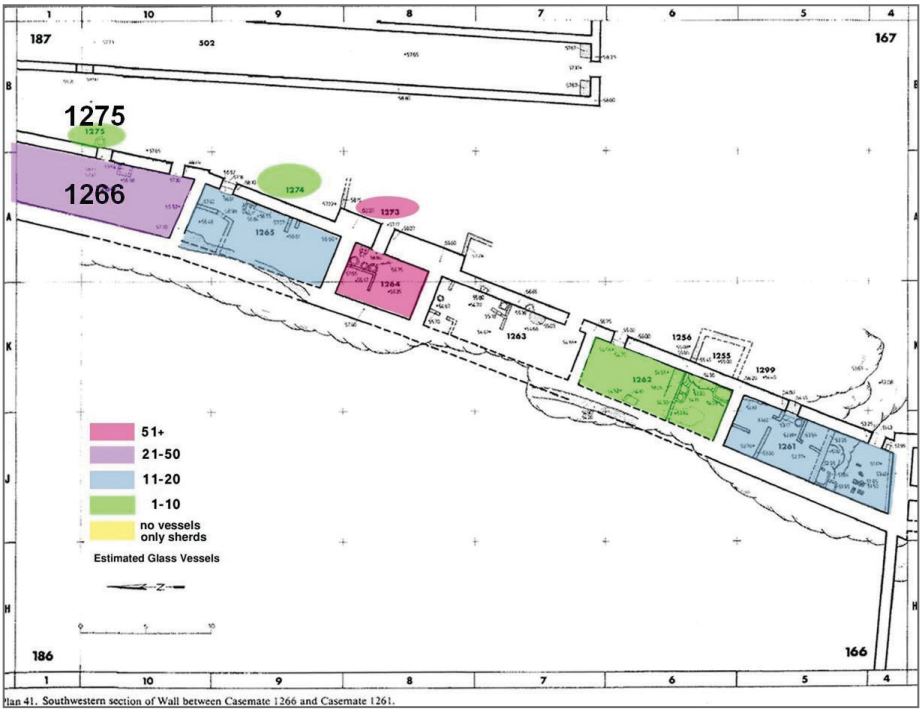

Fig. 4. Casemate 1266 and its nearby Dump 1275, just west of the Western Palace (after Netzer 1991: Plan 41, adapted in Max 2012).

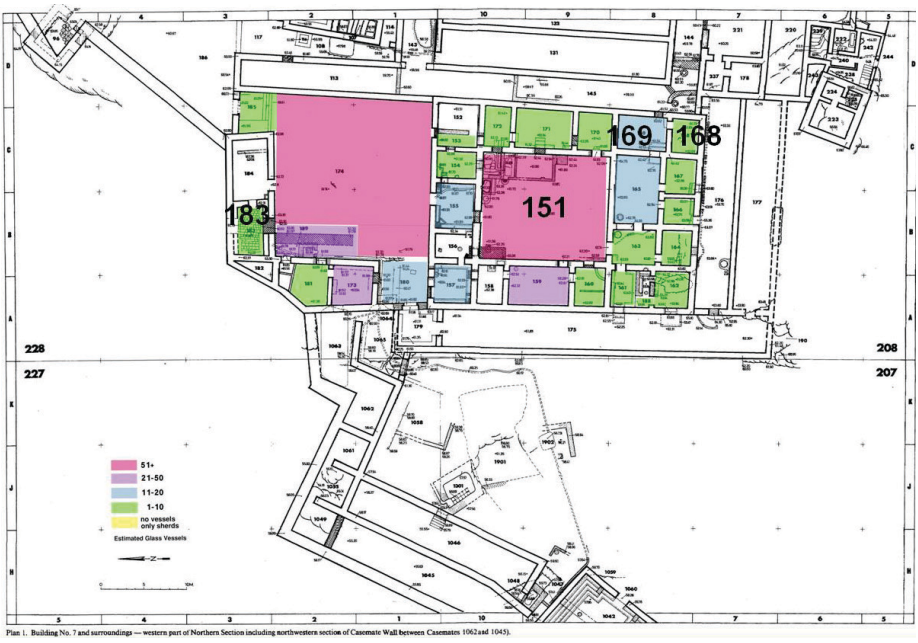

Fig. 5. Building VII: Loci where Arcaded Beaker fragments were found (after Netzer 1991: Plan 1; adapted in Max 2012).

the eight fragments from nearby Courtyard 151 were listed as another vessel because this space could not be accessed directly from any of the other findspots. Similarly, the fragment from the Water Gate (Room 183) constitutes a third vessel, given its distance from the other findspots in the area (Fig. 5). By the same token, the 18 fragments from Casemate 1266 and Dump 1275 are considered one vessel because of the proximity and functionality of their findspots.

Blown into a multipartite mold (see Section 5), the Arcaded Beakers are reminiscent of Mythological Beakers; however, while the latter are quadrangular and accommodate a figure on each panel, the Arcaded Beakers are octagonal and uninhabited. Like the Mythological Beakers, they have a cylindrical upper and a cylindrical-to-truncated-conical lower body, but their mid-body is formed by eight tall, narrow panels, juxtaposed at 45°, each bounded by sectioned columns on either side. These columns are unique to both the Arcaded and the Mythological Beakers from Masada: They are smooth on their bottom third and fluted on the top two thirds; they are set on double-torus (Attic) bases and are capped with ionic capitals. The area between the columns of the Arcaded Beakers accommodates a sunken rectangular niche traced by a narrow ridge inside a wide, oblong groove; this framed pattern is angular on top and curved at the bottom. Triangular gables or pediments, each framing a raised spheroid, straddle some of the capitals. Arches, or lunettes, which are often interspersed with gables in 1st-century CE architecture, were not found. Undulating above the pediments and encircling the beaker is a festoon of raised irregular dots (Fig. 6).

The beaker is approximately 165 mm high and has a slightly in-curved rim (diameter, 75 mm; thickness, 1.6 mm), its edge cracked off and ground smooth. A horizontal wheel-ground abrasion (diameter, 78 mm) circles the convex-curved upper body at its widest point, 6.8 mm below the rim. The garland, at its highest, begins 12.5 mm below the rim, descending to its lowest at 28.5 mm (Fig. 7). The pediment straddling the columns is about 20.6 mm wide at its base and about 13.75 mm high at its apex (Fig. 8). The octagonal mid-body (diameter, 65 mm) is vertical; each panel between the columns is 18 mm wide and 68 mm high (Fig. 9). A prominent horizontal ridge circles the lower body at its widest point, separating the textured vertical mid-body from the smooth lower body, which tapers toward the flat base (diameter, 40 mm; thickness, 4.5 mm). Three raised concentric ridges adorn the bottom (Fig. 10).

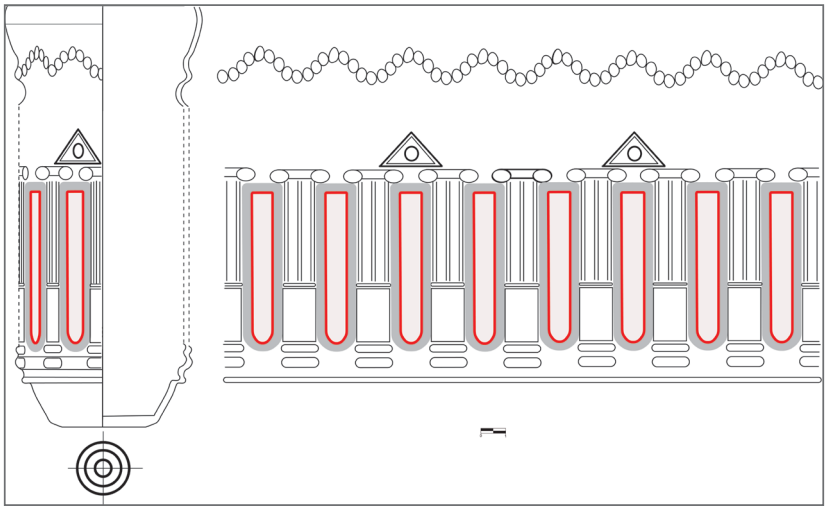

Fig. 6. Schematic color-coded graphic restoration of the Masada Arcaded Beaker (pink = sunken rectangular niche; red = narrow ridge; gray = oblong groove) (illustration: Yael Max).

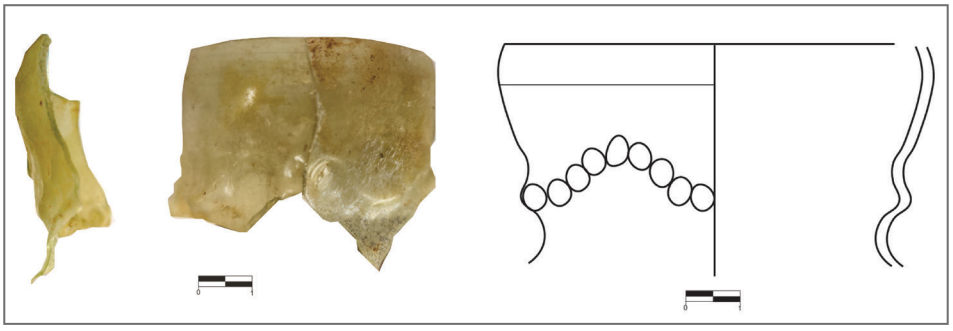

Fig. 7. An Arcaded Beaker rim: Profile and front views closeup photo and drawing (photo and illustration: Yael Max).

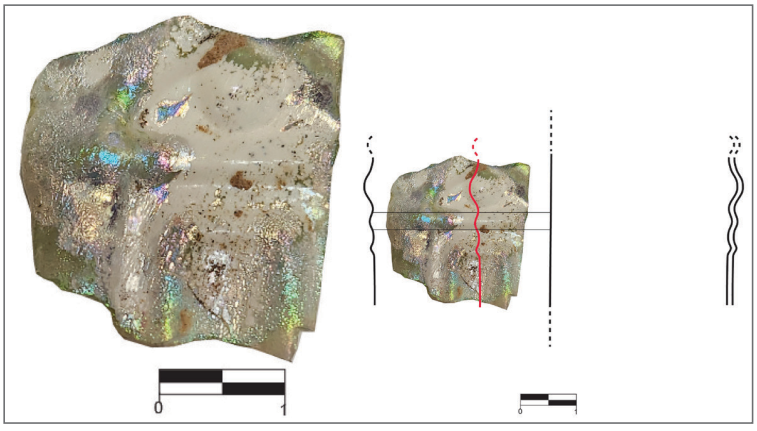

Fig. 8. An Arcaded Beaker pediment: Frontal closeup photo, frontal and profile drawing (the red line indicates the section point of the profile drawing) (photo and illustration: Yael Max).

Fig. 9. An Arcaded Beaker panel: Frontal closeup photo and frontal and profile drawing (the red line indicates the section point of the panel profile drawing; the blue line follows a profile along the mold seam line on the column) (photo and illustration: Yael Max).

Fig. 10. An Arcaded Beaker lower body and base: Profile, frontal, and bottom closeup photos; frontal and profile drawing (photo and illustration: Yael Max).

5. The Mold-Blowing Technique

The mold-blowing technique was initially employed in the 1st century CE to mass-produce elaborately decorated vessels, mainly tableware and small containers for salves and cosmetics, with vegetative, floral, and/or figurative designs (for an instructive short summary, see Israeli and Nenner-Soriano 2023: 364–365). Jennifer Price studied mold-blown decorated glass tableware of the 1st-century CE and dated its production to 25–75 CE (Price 1991: 64); more recent estimates give a somewhat earlier 1st-century CE production date (Lightfoot 2015: 104) and push the period of use of elaborately decorated mold-blown vessels until 80 CE (Foy and Fontaine 2016: 57). After that, in the Early Roman period, the mold-blowing technique was used mainly for the production of utilitarian undecorated storage vessels, such as bottles.

Few fragments of actual 1st-century CE molds were found (van den Dries 2007: 23–26). Experiments have shown that they could best be made of terracotta (fired clay); however, metal, stone, wood, and possibly plaster could have been used as well. The inside surface must have been coated with a buffering material, such as powdered soot, to prevent adhesion. Molds could be of one or up to eight parts, all perfectly fitted and somehow clamped tightly together but easily dismantled for rapid removal (Wight 2014: 50). The raised design was engraved as a mirror image on the inside of the mold panels. As a tool of mass production, the mold helps to shape and decorate the vessel much faster than any other glass-forming method, including free-blowing; furthermore, it can be reused many times to produce identical vessels. The technique in the 1st century CE allowed the use of less glass per vessel, producing very thin walls with the design negatively mirrored on the inside. The multipart molds left seam marks on the glass along the joints; these marks were cleverly concealed by the beakers' architectural designs, such as the column flutes.

The glass for our beakers was gathered at the end of a blowpipe, marvered on a flat surface to give the gather its initial shape, and gently blown into a parison, or bubble, which was then inserted into the narrow opening of the mold. The parison was blown vigorously so that the glass was pushed against the inside of the mold and embossed with its incised pattern. The blown glass was then immediately removed from the mold and placed in an annealing oven to cool slowly. After the vessel had cooled, the rim was cracked off and ground smooth with an implement, such as a small hand-held sandstone.[1] The abraded line on the outer surface of our beakers was cold-worked on a lathe.

The Masada mold-blown Arcaded Beakers appear to have been produced all from the same mold, which consisted of at least three parts. A vertical seam stretching from one of the double-torus bases through the column indicates that at least two mold parts were used to form the beaker's rim-to-mid-body component. A third component is likely to have formed the lower body and base; no vertical seam was observed on these corresponding fragments, suggesting that they were formed by one cup-shaped mold part. The joint between the mid and lower body parts was most likely hidden along the horizontal ridge under the panels.

1 For an informative demonstration of 1st-century CE mold-blowing techniques by Mark Taylor and David Hill, see https://youtu.be/jaODucearU8

6. Glass Beakers with Arcaded Motifs

The Masada Arcaded Beakers are unparalleled in 1st-century CE Roman mold-blown glass. Their closest kin is a mold-blown light green rim fragment from an unstratified context in Area A of the Jewish Quarter of Jerusalem. It has a cracked-off, unfinished, slightly in-curved rim and appears to have had an arcaded design consisting of a swag attached to the top of an arched ridge (Gorin-Rosen 2003: 375, 383, 399, Pl. 15.8:G 90). Gorin-Rosen proposed that it depicted "a variety of floral patterns, geometric designs, and other themes" (Gorin-Rosen 2003: 383) and that it dates from the late 1st century CE.

The term *arcaded* has been used in glass research to describe mold-blown beakers with close-set, elongated oval ribs or indents and free-blown beakers with applied "arcaded" trails. Some examples from the Early Roman period include,

- Samothrace, Greece: A 1st-century CE mold-blown fragmentary beaker features a "flaring rim and a series of long, narrow ovals or, possibly *arcades*, molded on the body" (Dusenbery 1998: 1079, Nos. XS-520, S178-9, my emphasis).
- Augst-Kaiseraugst, Switzerland: Rare late 1st–early 2nd-century CE decolorized, thick-walled cylindrical or conical beakers. While not mold-blown, they are decorated with framed *long ovals* (Rütti 1991: 264, Taf. 52:1215,1216).
- Augst-Kaiseraugst, Switzerland: Late 1st-century CE beakers blown into a single mold with "*arcaded* ribs" (Rütti 1991: 264, Taf. 52:1217–1219, my emphasis).
- Vindonissa, Switzerland: Free-blown mid-1st-century CE beakers on a ring base display freestanding or joined tooled *arcaded* ribs (Berger 1960: 47–48, Taf. 7:110–112).
- Jerusalem, the Jewish Quarter, The Palatial Mansion: A fragment of a rare, clear, colorless beaker was apparently first blown into a mold and then cold-worked. The beaker, as graphically restored, appears prismatic but has an "elongated cylindrical body… decorated with a pattern on *five or more sides* consisting of protruding double-lined corners and sunken walls between them. The surface of the vessel was sharpened with additional polishing" (Gorin-Rosen 2023: 326, my emphasis). It is attributed to 1st-century CE workshops in the Roman western provinces (Gorin-Rosen 2023: 326–237, G 82).

- Jerusalem, the Jewish Quarter, The Palatial Mansion: Body fragments of two tall mold-blown conical beakers featuring a stylized *arcaded* pattern of double vertical lines around the wide sides and a dotted pattern on the narrow sides, are dated until 70 CE (Israeli and Nenner-Soriano 2023: 369, MBG7, MBG8 and parallels from western Roman sites therein). A fragment from an identical beaker was retrieved from the palatial fortress of Herodium; it was found with mixed materials of the two revolts (66–135 CE) (Jackson-Tal et al. 2021: 528–530, Fig. 8:42).

7. Mold Blown Glass Containers with Arcaded Motifs

Arcaded architectural motifs are found on glass mold-blown containers already in the first half of the 1st century CE. One of the pioneers of the mold-blowing technique, Ennion of Sidon (on the western shores of Lebanon), produced remarkable cups, jugs, and other vessels bearing his name, many of which were retrieved intact from burials in the eastern and the western Roman Empire. A 143 mm-high blue mold-blown hexagonal amphoriskos, currently in the collection of the Metropolitan Museum of Art (MMA), bears a Greek inscription "Ennion made it" (MMA 81.10.22). This specimen is a rare example of his work featuring an architectural motif (Fig. 11). Its mid-body is divided into equal elongated trapezoidal panels, separated by ribs and topped, on the shoulders, by lunettes. Each panel is filled with Dionysiac symbols. The amphoriskos's shape and iconography are reminiscent of Roman funerary shrines or altars (Lehrer 1979: 9). It was excavated in Tomb 24 in Potamia, near Golgoi, Cyprus in 1876 (Lightfoot 2014: 84–85, No. 9). A fragment of an identical vessel, but of decolorized glass, was recovered from a residential context, the Palatial Mansion in the Jewish Quarter of Jerusalem (Israel Antiquities Authority [IAA] 1982-1106) (Lightfoot 2014: 86, No. 10; Nenner and Israeli 2023: 367–368, MBG 3).

Another glass vessel attributed to a workshop in Sidon and stylistically influenced by Ennion is a 79 mm-high octagonal opaque white box (pyxis) with a round lid (MMA 17.194.238; Fig. 12). The eight panels, inhabited by four repeated floral or geometric elements, are separated by raised vertical ribs: one without any top; one topped by a triangular pediment, and two topped by arches. Similar boxes were recovered in Europe from burials (Lightfoot 2014: 130–131, No. 37).

Fig. 11. A blue amphoriskos signed by Ennion featuring an architectural motif and Dionysian funerary iconography, The Metropolitan Museum of Art, New York, 81.10.22 (Public domain, the Metropolitan Museum of Art).

Fig. 12. A small octagonal cosmetic box (pyxis) with a lid dated the first half of the 1st century CE, the Metropolitan Museum of Art, New York, 17.194.238 (Public domain, the Metropolitan Museum of Art).

Some of the earliest mold-blown glass vessels, dating from the first quarter of the 1st century CE, are very small Syro-Palestinian scented oil bottles blown into a two-part mold. They are most frequently hexagonal, in high relief, with rectangular panels separated by vertical ribs or stylized columns, often topped by a gable or arch and framing designs of vessels, fruits, masks, garlands, or birds (Stern 1995: 74–86, Nos. 15-47). These, too, were often found intact in burials in eastern and western Mediterranean sites (Fig. 13).

8. Discussion

As mentioned above, the Arcaded Beakers from Masada were found in and around the western casemate wall and in Building VII. They most likely derive from the Rebel occupation of 66–73/74 CE. This is particularly evident in the western casemate wall, where many assemblages, including those from Casemate 1266 and Dump 1275, are readily dated by their associated finds to this period. Matters become a little murkier in Building VII, however. Alongside finds consistent with the Rebel occupation, Courtyard 151 also produced later ceramics, reaching as far as the early 2nd century CE. Items postdating the rebellion were also recovered in Room 183 to the north, including two coins dated 112/113 and 115 CE and bag-shaped storage jars dated to 73/74–115 CE. Although the mold-blown glass beakers, generally dated by their technique to the last quarter of the 1st century CE, could definitely be assigned to the Rebel period. However, under these

Fig. 13. Mold-blown hexagonal bottles (height 7.6 cm), the Metropolitan Museum of Art, New York, 06.1035.1, 15.43.165, 06.1035.1 (Public domain, the Metropolitan Museum of Art).

circumstances, it would be prudent to admit that they could have derived from Garrison II but are very likely residual in contexts showing Garrison III intervention.

The architectural motifs of Masada's Arcaded Beakers may also hint at their date and origin. The beakers' octagonal morphology may represent a round structure or an in-line colonnade. Focusing on 1st-century CE Jerusalem, pediments are absent from the city's columned buildings, most notably the Royal Portico on the Temple Mount (Peleg-Barkat 2017). On the other hand, they are quite conspicuous in monumental 1st-century CE rock-hewn tombs in the area, which may have been influenced by the architecture of the Temple Mount, perhaps even designed by Herod's own retired artisans (Peleg 2007: 184). Indeed, a recurring feature in Jerusalem's necropolis in the Valley of Jehoshaphat is the columned façade, which has early antecedents. The mausoleum of Zecharia is a case in point. It was built in the 2nd half of the 1st century BCE (Peleg 2007: 187); it is still standing today and was very likely visible in the 1st century CE. It has a pyramidal roof above closely spaced Attic columns with ionic capitals and double-torus bases framing sunken niches, a pattern highly reminiscent of the one observed on the Arcaded Beakers (Fig. 14).

Fig. 14. The mausoleum of Zecharia in Nahal Kidron, Jerusalem (photo: Rémi Jouan, public domain, Wikimedia Common).

Another example is the entrance to the 1st-century CE Talpiyot Tomb A in East Talpiyot, Jerusalem. It features a pediment with a stylized wreath at its center (Kloner 1996; Kloner and Gibson 2013). This wreath occupies the same position as the raised dot on the pediments of the Arcaded Beakers.

The front and back of a 1st-century CE stone ossuary (Fig. 15) from the eastern slope of Mount Scopus, Jerusalem, are carved with an ornate six-pillared arcaded façade with a pedimented central doorway, most likely inspired by the monumental tombs in the necropolis of Jerusalem (Kloner 1984: 123). However, unlike the beakers, floral ornaments fill the niches of the front panel. The left panel displays a tomb entrance doorway, its gable adorned with a central sunken disc surrounding a raised spheroid, the same motif observed on the Arcaded Beakers. It constitutes a stylized wreath, a heroic motif that appears in local funerary architecture and Roman funerary art.

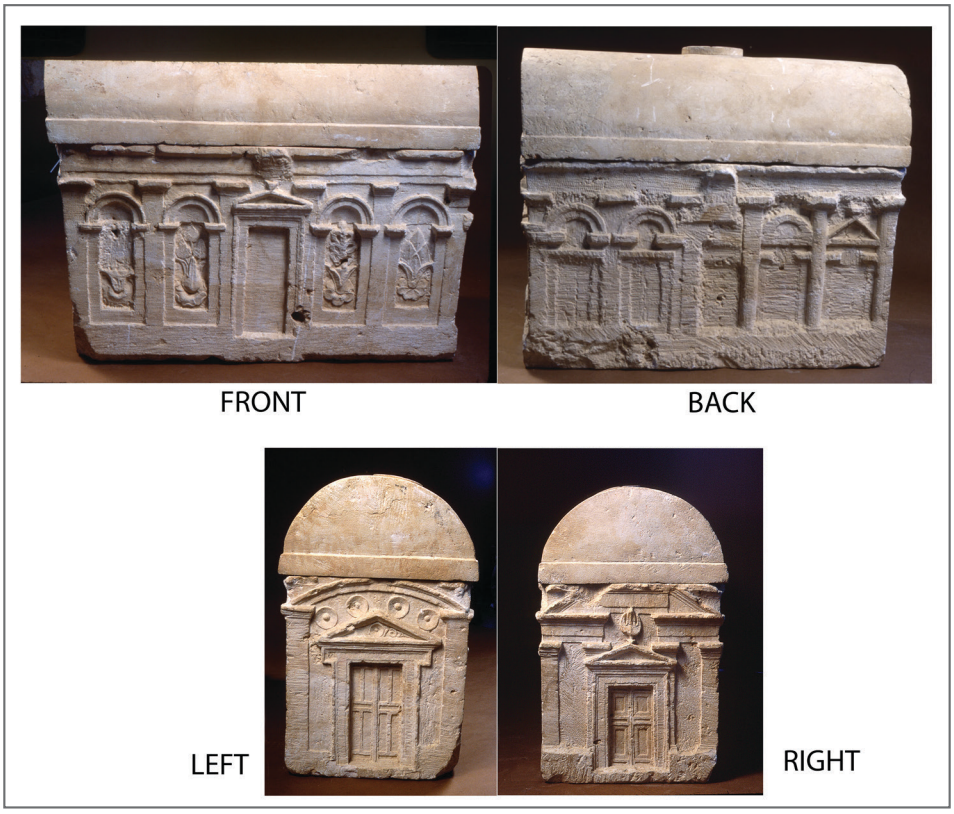

Fig. 15. Stone ossuary from Jerusalem with arcaded façades, IAA 74.1508 (Courtesy of the Israel Antiquities Authority).

In 1st-century CE Rome, tall, flat-topped funerary altars commemorating the deceased or housing their ashes often had a decorative fronton (pediment) above the front panel. Sometimes, the columns on either side of the panel framed portraits, epitaphs, laurel wreaths, or fruit swags (garlands); a stylized wreath and a garland also appear on the Masada Arcaded Beakers.

9. Conclusions

Are the 1st-century CE mold-blown Arcaded Beakers from Masada a local product? The theme of these beakers might have been inspired by Roman and/or Jewish funerary art and architecture, especially in Jerusalem. This beaker appears to have had a limited market and has so far been found only in Masada. The ornate architectural motif, devoid of human figures, may have had a special appeal to Jews, who are prohibited from making graven images. The recovery of these beakers from Casemate 1266 and Dump 1275 could conclusively assign them to the Jewish Rebels, dating them to no later than 73/74 CE. The beakers may have been brought to the site by refugees from Jerusalem, where similar contemporaneous mold-blown specimens with different arcaded motifs were found in Jewish contexts destroyed in 70 CE. However, since some fragments were also found in contexts disturbed by the Romans in Building VII, one cannot discount their possible association with the Roman soldiers, especially Garrison II, and their importation from somewhere abroad.

Acknowledgments

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References

Aroubas, B. and Goldfus, H. 2008. The Roman Siege Works. Pp. 1937–1940 in *The New Encyclopedia of Archaeological Excavations in the Holy Land (NEAEHL)*, Vol. 5, ed. E. Stern. Jerusalem: Israel Exploration Society and Biblical Archaeology Society.

Barag, D. 1991. The Contribution of Masada to the History of Early Roman Glass. Pp. 137–140 in *Roman Glass: Two Centuries of Art and Invention*, ed. M. Newby and K. Painter. Occasional Papers 13. London: The Society of Antiquaries of London.

Berger, L. 1960. *Römische Gläser aus Vindonissa*. Veröffentlichungen der Gesellschaft Pro Vindonissa, V. 4. Basel: Birkhäuser Verlag.

Cool, H.E.M. and Price, J. 1991. *Roman Vessel Glass from Excavations in Colchester, 1971–1985*. Colchester Archaeological Report 8. Colchester: Colchester Archaeological Trust.

Dries, F. M. A. van den. 2007. Some Notes on Roman Mold Material and the Technique of Molding for Glassblowing. *Journal of Glass Studies* 49: 23–38.

Dusenbery, E. 1998. Samothrace, the Necropoleis: Catalogue of Objects by Categories, XIX: Glass. Pp. 1059–1157 in *Samothrace: Excavations Conducted by the Institute of Fine Arts of New York University*, Volume 11, ed. K. Lehman and P. Williams Lehman. Bollinger Series LX. Princeton: Princeton University Press.

Foy, D. and Fontaine, S. 2016. Verres a decor mythologique du 1er siecle: Les attestations du midi de la Gaule. *Journal of Glass Studies* 58: 57–68.

Gorin-Rosen, Y. 2003. Glass Vessels from Area A. Pp. 364–400 in *Jewish Quarter Excavations in the Old City of Jerusalem, Conducted by Nahman Avigad, 1969–1982*, Vol. 2: *The Finds from Areas A, W and X-2, Final Report*, ed. H. Geva. Jerusalem: Israel Exploration Society.

Gorin-Rosen, Y. and Israeli, Y. 2023. Early Roman Glass Vessels from Areas F-2, P and P-2. Pp. 308-339 in *Jewish Quarter Excavations in the Old City of Jerusalem, Conducted by Nahman Avigad, 1969–1982*, Vol. 9: *Small Finds: The Palatial Mansion (Areas F-2, P and P-2), Final Report*, ed. H. Geva. Jerusalem: Israel Exploration Society.

Israeli, Y. and Nenner-Soriano, R. 2023. Selection of Mold-Blown Glass Vessels and Vessels of the Ennion Workshop from the Jewish Quarter. Pp. 363–376 in *Jewish Quarter Excavations in the Old City of Jerusalem, Conducted by Nahman Avigad, 1969–1982*, Vol. 9: *Small Finds: The Palatial Mansion (Areas F-2, P and P-2), Final Report*, ed. H. Geva. Jerusalem: Israel Exploration Society.

Jackson-Tal, R. E. 2016. The Glass from the 1995 Excavations in Camp F at Masada: The Use of Luxury and Common Early Roman Glass in Military Context. *Levant* 48 63–78.

Jackson-Tal, R., E., Chachy, R., Kalman, Y., Netzer, E., Foerster, G., and Porat, R. 2021. Between Rulers and Rebels: The Glass Finds from the Mountain Palace-Fortress at Herodium. *Liber Annuus* 71: 511–544.

Kloner, A. 1984. A Splendid Ossuary from Jerusalem Bearing a Monumental Façade Motif. *Qadmoniot* 68: 121–23 [in Hebrew] http://www.jstor.org/stable/23676049.

Kloner, A. 1996. A Tomb with Inscribed Ossuaries in East Talpiyot, Jerusalem. *'Atiqot* 29: 15–22. http://www.jstor.org/stable/23458370.

Kloner, A. and Gibson, S. 2013. The Talpiot Tomb Reconsidered: The Archaeological Facts. Pp. 29-75 in James Charlesworth (ed.), *The Tomb of Jesus and His Family? Exploring Ancient Jewish Tombs Near Jerusalem's Walls*. Grand Rapids: Eerdmans.

Lehrer, G. 1979. *Ennion: A First Century Glassmaker*. [In English and Hebrew.] Exh. cat. Tel Aviv: Eretz Israel Museum.

Lightfoot, C. S. 2014. Ennion and the History of Ancient Glass. Pp. 15–47, 70-141 in *Ennion: Master of Roman Glass* ed. C. S. Lightfoot. New York: The Metropolitan Museum of Glass.

Lightfoot, C. S. 2015. Ennion, Master of Roman Glass: Further Thoughts. *Metropolitan Museum Journal* 50: 102–113. https://www.jstor.org/stable/26455353.

Max, Y. 2012. Glass Vessels from the Masada Excavations from Selected Contexts Dated End of First Century BCE to Beginning of Second Century CE. Ph.D. dissertation, The Hebrew University.

Max, Y. 2020. Crown Glass Windows from Masada. *The Journal of Glass Studies* 62: 23–40.

Max, Y. 2021. The Enameled Cups from Masada. *The Journal of Glass Studies* 63: 11–31.

Netzer, E. 1991. *Masada: The Yigael Yadin Excavation, 1963–1965, Final Reports*, Vol. 3: *The Buildings, Stratigraphy and Architecture*. Jerusalem: Israel Exploration Society.

Peleg, O. 2007. Artists and their Works at the Necropolis of Second Temple Period Jerusalem. *Eretz-Israel* 28: 184–192 (Hebrew with an English Abstract).

Peleg-Barkat, O. 2017. *The Temple Mount Excavations in Jerusalem 1968–1978 Directed by Benjamin Mazar, Final Reports,* Volume V: *Herodian Architectural Decoration and King Herod's Royal Portico*. Qedem 57. Jerusalem: Institute of Archaeology, the Hebrew University of Jerusalem.

Price, J. 1991. Decorated Mould-Blown Glass Tablewares in the First Century A.D. Pp. 56–75 in *Roman Glass: Two Centuries of Art and Invention*, ed. M. Newby and K. Painter. Occasional Papers 13. London: The Society of Antiquaries of London.

Rütti, B. 1991. *Die Römischen Gläser aus Augst und Kaiseraugust*. Forschungen in Augst 13. Augst: Römermuseum.

Stern, E. M. 1995. *Roman Mold-Blown Glass: The First Through Sixth Centuries*. Rome: "L'Erma" di Bretschneider in association with the Toledo Museum of Art.

Weinberg, G. D. 1972. Mold-Blown Beakers with Mythological Scenes. *Journal of Glass Studies* 14: 26–47.

Wight, K. B. 1990. Mythological Beakers: Questions of Provenance and Production. Pp. 71–76 in *Annales du 11e Congrès de l'Association Internationale d'Histoire du Verre*. Amsterdam: A.I.H.V.

Wight, K. B. 1991. Mythological Beakers and Roman Glass Production in the First Century A. D. Ph.D. dissertation, University of California.

Wight, K. B. 1994. Mythological Beakers: A Re-examination. *Journal of Glass Studies* 36: 24–55.

Wight, K. B. 2014. The Mold-Blowing Process. Pp. 49–55 in *Ennion: Master of Roman Glass* ed. C. S. Lightfoot. New York: The Metropolitan Museum of Glass.