SOMA 2004

Symposium on Mediterranean Archaeology

Proceedings of the eighth annual meeting of postgraduate researchers

School of Classics, Trinity College Dublin. 20-22 February 2004

Edited by

Jo Day, Cybelle Greenlaw, Heinrich Hall, Amanda Kelly, Lidia Matassa, Killian McAleese, Emma Saunders and Deirdre Stritch

BAR International Series 1514
2006

This title published by

Archaeopress
Publishers of British Archaeological Reports
Gordon House
276 Banbury Road
Oxford OX2 7ED
England
bar@archaeopress.com
www.archaeopress.com

BAR S1514

SOMA 2004: Symposium on Mediterranean Archaeology. Proceedings of the eighth annual meeting of postgraduate researchers, School of Classics, Trinity College Dublin. 20-22 February 2004

ISBN 1 84171 947 1

Printed in England by The Basingstoke Press

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Disentangling Material Cultures: Late Roman and Sasanian Facet Cut Glassware in Late Antiquity

Hallie Meredith-Goymour

Outlining the Question

The history of late Roman and Sasanian relations was a divisive one characterised by periodic invasions interspersed with periods of general animosity. The Sasanian dynasty lasted from the first quarter of the third century AD to the Islamic Conquest *c.* 651 AD. Constantinople, the capital of the later Roman Empire and Ctesiphon, the capital of the Sasanian Empire, were in relative proximity to one another. The frontier zone between the eastern late Roman Empire and the western Sasanian Empire was fought over throughout late antiquity. The Sasanian Empire had its eastern limits around Bactria in modern Afghanistan, and it was within northern Sasanian territory that the so-called Silk Road from China split, creating two principal routes to the Sasanian and late Roman capital cities, respectively. This route is arguably the way in which high value goods were traded long distances overland, to and from the Far East. Since overland trade via the Silk Road crossed Sasanian territory, sometimes with goods en route to the Roman east, excavations of the frontier zones have the potential to uncover a wealth of evidence concerning traded luxury items such as facet cut glassware.

Sasanian merchants provided the long-distance link for trade in luxury objects between the later Roman Empire and the Far East. As a case in point, whilst glass making has been known since *c.* 1500 BC, glass blowing was developed by the Romans between 50 BC–50 AD, out of a western Asiatic glass making tradition (Israeli 1991: 46-55). According to Chinese sources, knowledge of the craft of glass making was not made available to China until Soghdian merchants on the north-eastern periphery of Sasanian territory 'sold Roman techniques of glass-making to the emperor of China' in the fifth century AD (Brown 1971: 162). Therefore, any *blown* faceted glass found in China before they could produce it locally was necessarily imported from the late Roman and Sasanian west, the result of long-distance trade (eg. Fig. 1).

Faceted glass was the most laborious form of glassware produced by Sasanians. Roman craftsmen were producing a more intricate and highly crafted type of engraving,

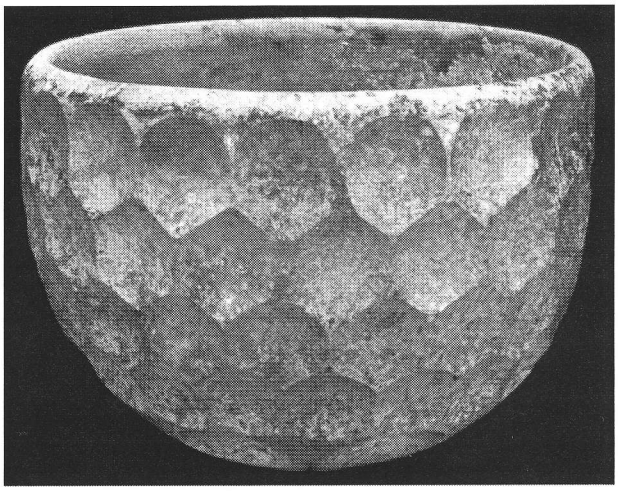

Figure 1
Sasanian facet cut glass bowl. Corning Museum of Glass (60.1.3), Amlash, Iran (?), fourth to sixth century (?), height: 89 mm, diameter: 130 mm (Whitehouse 1993: 264, Fig. 113)

known as *open-work vessels, cage cups* or *diatreta*, which are found almost exclusively within the Roman Empire. This form of fourth century glassware has never been found in Sasanian Persia. This distribution pattern may be the result of retrieval bias in Sasanian Persia, or it may represent differences between Roman and Sasanian tastes and preferences. Alternatively, it may suggest ongoing trade restrictions placed upon luxury glass imports or exports between the Roman and Sasanian Empires.

The production of facet cut glassware is of special interest as it overlaps cultural boundaries. Faceted glass can potentially contribute to our understanding of possible trade restrictions between later Romans and Sasanians, or, alternatively, concurrent well-established trade relations with the Far East. Based on studies involving the circulation of other types of luxury vessels, especially Sasanian silver royal hunting plate, the limited evidence suggests a history of general foreign influence but with very restricted trade between these two particular neighbouring empires (Harper 1988: 154).

Situated in modern Syria, Palmyra was a town on a caravan route that lay within the contested frontier zone, several days journey from the Sasanian capital near modern Baghdad. A tomb discovered in Palmyra included a carved stone statue holding a faceted bowl (Fukai 1968: fig. 8). Although there is no way of knowing for certain whether the material represented in stone is glass, similar glass vessels have been found in excavations in Syria, for example, at Dura Europos (Clairmont 1963: 56-80). This type of funerary sculpture demonstrates the high status attributed in antiquity to facet cut vessels, most likely of glass. Facet cut glass vessels were manufactured contemporaneously in the Sasanian and Roman Empires, and the faceted vessel depicted may have been either Roman or Sasanian. The central question addressed is to what extent can Sasanian and Roman luxury facet cut glassware be differentiated?

The artefacts considered here provide a brief survey of Roman and Sasanian faceted glass vessels in order to establish some of the salient cultural differences in production. The discussion omits other forms of glassware unique to Roman manufacture. The approach discussed here has been developed as an attempt to distinguish between glass vessels produced using a similar technique to achieve somewhat different effects: faceted glass vessels produced by late Roman and Sasanian craftsmen. Subsequently, two dissimilar pairs are discussed in order to demonstrate the utility of this approach. The aim is to determine to what extent the criteria presented could serve as a tool with which to differentiate between Roman and Sasanian facet cut glass vessels, independent of archaeological context.

Criteria for Differentiating Facet Cut Glass Vessels

Facets are essentially one or more smooth, planar faces which comprise a depression on the exterior surface of a glass vessel (Figs. 1-2). *Facets in relief* consist of a depression on the outer surface of a shallow circular projection, and are less commonly found (Fig. 3). A single facet is one of the small cut and polished faces on a surface that produces a glittering effect in light (Simpson 1992: 386). Facets are found adorning glass vessel shapes such as tubes, conical vessels, amphora-like forms, small *unguentaria*, as well as other forms. Within the late Roman and Sasanian Empires, facets frequently decorated wide-necked glass vessels that were typically palm-sized, making the glass easy to hold, even when wet.

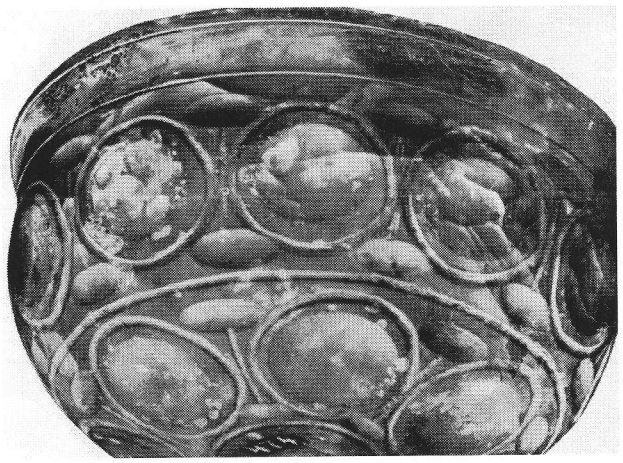

Figure 2
Roman facet cut glass bowl. Römisch-Germanisches Museum (474), Cologne, third century, height: 65 mm
(Clairmont 1963: pl. XXXVII)

Figure 3
Facet cut glass bowl. Treasury of San Marco (67), unknown provenance, colourless, transparent glass of uncertain date with eleventh century silver-gilt mount, height: 80 mm, diameter: 270 mm
(Grabar 1971: 75-6, pl. LXIII)

The criteria which, when taken together, could serve to differentiate late Roman from Sasanian facet cut glass derive from three overlapping aspects of production: glass making, glass working and decoration. It is important to note that *glass making* and *glass working,* are two separate stages in glass production. Whereas *glass making* refers to the aspects of production which affected the composition of glass as a raw material, *glass working* is the physical manipulation or shaping of glass using hot or cold-working techniques. Glass working refers to consistent culturally-based practices, irrespective of decoration. Decoration refers to the pattern which adorns the surface of a glass vessel. Each of the characteristics represents a single aspect of production. It is only when considered in conjunction with one another that cultural differences in production can be discerned.

Glass Making

Glass produced by Sasanian and late Roman craftsmen was made by melting a mixture of soda, lime and silica in varying proportions (Brill 1988: 264-9; Brill 2001: 25-9). Lead-rich glasses were relatively uncommon outside of the Far East. Ingots and other transportable forms of raw glass have been found or suggested from throughout the late Roman Empire and possibly in Sasanian sites in central and southern Iraq (Negro Ponzi Mancini 1984: 35-6; Simpson *pers. comm.* February 2004). Thus, scientific analyses of the composition of glass produced in different periods and cultures do *not* necessarily identify the place of production. However, scientific analyses which establish the quantities and proportions of chemicals found in glassware are furthering our knowledge of chronological and cultural differences in *glass making* practices.

Roman glass was naturally a pale bluish-green colour. According to Pliny the Elder, writing in the mid-first century AD, Romans preferred colourless, transparent glass because of its similarity to rock crystal (Pliny *HN* 36.198-9). In order to obtain clear glass, blue-green glass was intentionally decolourised. This was achieved by the addition of specific quantities of chemical agents during the process of glass making.

Sasanians did not exhibit any such predilection for clear glass. No known Sasanian glassware is colourless or intentionally decolourised. Although such an established trend could certainly indicate cultural preference, it raises a related question concerning trade: could this indicate an inability of the Sasanians to acquire the decolourant? Most faceted Sasanian glassware appears pale in colour, commonly green, yellow, amber, or brown (Negro Ponzi Mancini 1984: 36; Simpson 1992: 372). Since not all Roman glass was decolourised, coloured glass could be either Roman or Sasanian; however when faceted glass is found that is colourless, it is one characteristic that may be taken to indicate Roman rather than Sasanian manufacture. Ideally, however, this should be tested through compositional analysis and typological comparison.

It is not always possible to determine the original treatment of the surface beneath layers of weathered and decaying glass. As summarised by Newton and Davison, *Weathering* refers to the '[c]hanges on the surface of glass (caused by exposure to adverse conditions), which appear as dulling, frosting, iridescence or decomposition' (1997: 283), while *Iridescence* is 'the rainbow-like play of different colours, changing according to the angle of view' (1997: 280), caused by the diffraction of light from several layers that have air trapped between them. Iridescent layers flake off, because the glass is decomposing. Therefore, iridescence is a visual indication that the surface layers are coming apart.

Weathering can have a serious effect upon the interpretation of an assemblage. The proportions used in the composition of glass are crucial in determining its rate of deterioration. Factors contributing to a weathered layer on a glass surface include composition, time since burial, and environmental conditions (Freestone 2001: 615-25). In a pilot study carried out by the British Museum, it was provisionally determined that Sasanian glassware decayed, or weathered, around ten times faster than Roman glassware, establishing a useful diagnostic tool for differentiation (Freestone 2001: 619).

Glass Working

When the surface of the glass is not obscured by weathering, the uniformity of layout and relative facet diameter in some Sasanian and late Roman faceted glass vessels is evidence of mould-blowing (Fig. 1). *Mould-blown glass* is glass that is freeblown directly into a mould when in a malleable, molten state. An inflated glass bubble takes the shape of the negative-space pattern, typically on the walls and base of a mould. With limited further inflation and shaping, the integrity of the pattern from the mould is retained (Negro Ponzi Mancini 1984: 35). After mould-blown glass had cooled, the outer surface of the glass vessel would then have been engraved using cold-working techniques to further define the facets.

This method of production involves both cold and hot-working glass techniques, which has widespread implications for trade. This sequence of production was a process that involved both craftsmen, who were skilled glass blowers, and glass engravers. This may have required trade at various levels of production or a division of specialised labour in a producing centre. It is primarily through this kind of indirect evidence found in the finished products that archaeologists can establish a clearer picture of late antique workshop production and trade.

Relative to their late Roman counterparts, the wall thickness of Sasanian glassware was typically thicker in proportion to the vessel as a whole. Measurements taken of a representative sample reveal that, whereas Roman facetted vessels have approximate wall thicknesses of between 1.5 and 3 mm, Sasanian facetted vessels have approximate wall thicknesses of between 4 to 6 mm. This consistent difference in relative wall thickness strengthens the argument for identification by typical characteristics exhibited in production within cultural traditions.

Decoration

No typology has been established for late Roman faceted glass vessels. However, continuity in decoration is a useful way of characterising some distinctly Roman aspects of facet production in glassware (Ekholm 1963: 29-37). Both late Roman and Sasanian types have faceted decoration, which exclusively adorns the exterior surface of the vessel. This patterning continues on the lower walls and underside of the base. When facet patterns are not adjacent, producing a honeycomb effect, facets are generally arranged in horizontal bands.

Unlike Sasanian artefacts, late Roman facet cut vessels usually contain one to two bordered, but otherwise plain, upper registers (Figs. 2 and 5). Such plain upper bands may have continued to be included due to ongoing use of traditional production techniques. As part of a related overall division of space, the late Roman decorative scheme divided the exterior surface into segments, each with similar patterning, but usually differentiated from one another. The Sasanian facet patterns generally extended across the entire surface of the vessel (Figs. 1 and 6). Concave depressions are most typically adjacent, as in the honeycomb pattern, or arranged horizontally in discontinuous rows (Harada 1962: pl. III, fig. 6; Jiayao 1984: 3 and 7, figs. 3 and 11).

In general, late Roman patterns appear more varied in terms of their composition and placement. Whereas facets decorating late Roman glassware are commonly mixed with other kinds of repeated engraving (Fig. 2), this is not

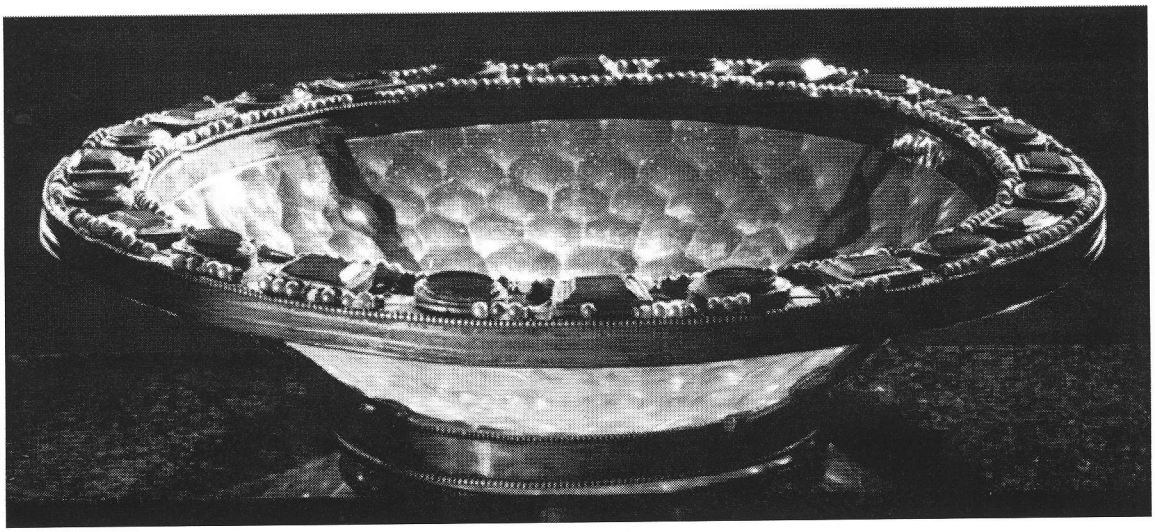

Figure 4.1

Facet cut glass bowl. Treasury of San Marco (93), unknown provenance, greenish glass of uncertain date with tenth to eleventh century silver-gilt, stone and pearl mount, height: 60 mm, diameter: 170 mm (Grabar 1971: 73, pl. LX).

often the case in Sasanian faceted vessels. (A noteworthy exception are the vessels from the early Sasanian site of Choche; see Negro Ponzi Mancini 1984: 40, fig. 4, nos. 1, 2, 4, 5, 10-13). If different shapes were utilised as Sasanian facets, the overall patterning was generally a mixture of ordered faceted shapes.

At Sasanian Choche, several varied combinations of facets and lines were found dating to the mid to late fourth century AD. According to Negro Ponzi Mancini , such locally produced faceted glass decoration included 'rows of isolated oval facets, rows of slice facets between bands of engraved lines, alternating rows of oval and slice facets with or without intermediate strips of engraved lines and occasionally rows of facets alternating with various elements, such as oblique lines' (1984: 35-6). In general, the greatest degree of variation in decorative patterning appears to have occurred in the use of facets in the form of concave depressions. Other later types of circular Sasanian facets are known, some of which are discussed by Fukai (for *facets in relief*, see Fukai 1977: 43-6; von Saldern 1963: pl. 4, fig. 7; *for double circular facets*, see Fukai 1977: 46-8; see von Saldern 1963: pl. 5, figs. 11-12).

Applying this Approach

Two groups of vessels will be considered here. The first group consists of two glass bowls, part of a problematic set of material from the Treasury of San Marco, Venice (Figs. 3, 4.1–4.2). The glass itself is most likely from late antiquity; however, the Byzantine metal additions (*mounts*) are from around the tenth or eleventh centuries. This kind of Byzantine re-use has led to ongoing debates regarding the cultures that produced the original vessels. Since there is no evidence of decay resulting from a chemical reaction to soil conditions, neither object appears to have been buried. The second group comprises two similar, narrow-necked glass vessels (Figs. 5 and 6). The criteria outlined earlier will be applied to the question: are these vessels late Roman or Sasanian?

The first bowl is described as colourless and transparent (Buckton 1984: 191). Therefore, it would have been decolourised, indicating non-Sasanian glass making. It is decorated with facets in relief, consisting of projecting circles combined with small conical protrusions, and has a ring base (Fig. 3). The projecting facets on the bowl appear similar in form to a type of Sasanian facet discussed by Fukai, chronologically later than the honeycomb pattern. Just visible below the inscribed metal addition is the lower limit of a horizontal line. The upper limit of the interior of the glass rim is visible. The metal band roughly follows the contour of the original rim, hindering measurement of the thickness of glass at the lip. The exterior metal band covers a wide, plain horizontal border mirroring one aspect of late Roman decoration, although the vessel as a whole does not adhere to any decorative scheme typical of late Roman or Sasanian faceted glass vessels.

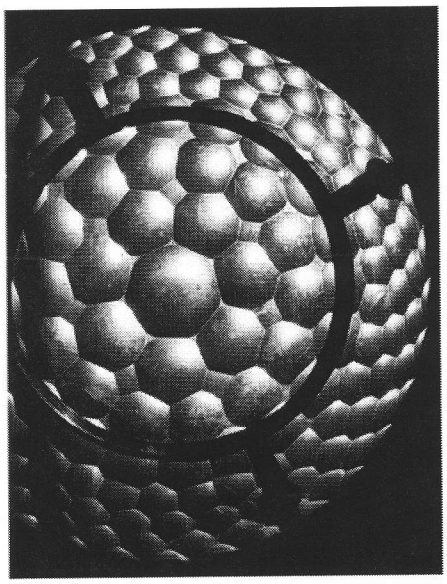

Figure 4.2

Detail, base of *fig. 4.1* (Buckton 1984: 197, fig. 26b)

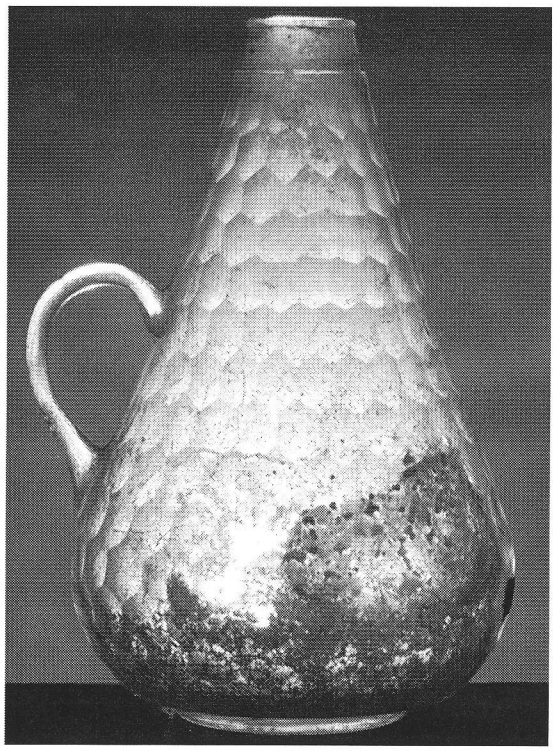

FIGURE 5
FACET CUT GLASS JUG. BRITISH MUSEUM (GR1856.12-26.1203), UNKNOWN PROVENANCE, DECOLOURISED GLASS *C.* 50-100, HEIGHT: 120 MM, UPPER DIAMETER: 77 MM (HARDEN, *ET AL.* 1987: 193, FIG. 103)

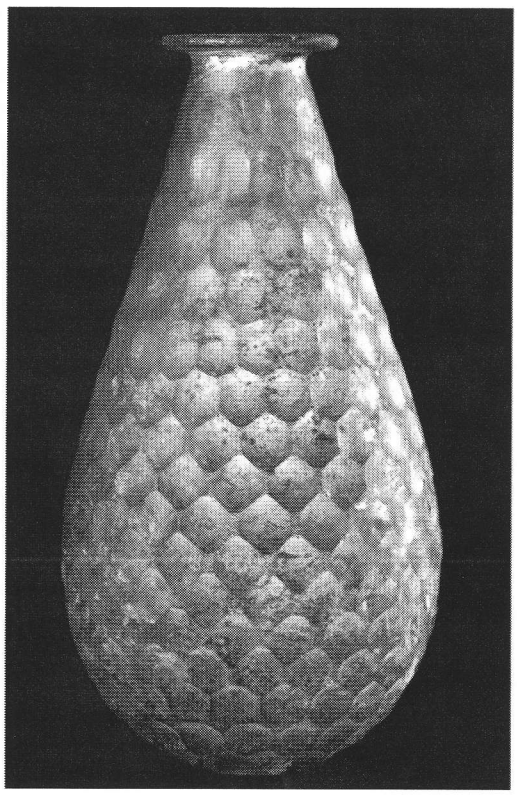

FIGURE 6
FACET CUT GLASS VESSEL. CORNING MUSEUM OF GLASS (62.1.4), UNKNOWN PROVENANCE, TRANSPARENT PALE YELLOWISH BROWN GLASS, FOURTH TO SIXTH CENTURY (?), HEIGHT: 202 MM (WHITEHOUSE 1993: 257, FIG. 105).

The second bowl has been described as greenish (Buckton 1984: 195) and is decorated with honeycomb facets (Figs. 4.1–4.2). It has a metal addition serving as a ring base, a wide, bejewelled metal rim, and four metal straps connecting them. The five-sided facets extend to the upper limit of the exterior of the glass rim, which is visible only from below. As in Sasanian honeycomb faceted glassware (*c.f.* Figs. 1 and 6), there is no upper border, neither does it appear that the glass vessel originally had a ring base. This is similar to early Sasanian artefacts from fourth century Choche (Negro Ponzi Mancini 1984: 40, fig. 4, no. 7). However, as seen most clearly on the detail of the base, squares are interspersed between the rows of facets (Fig. 4.2). The presence of the squares in the decorative programme found on the base is not characteristic of Sasanian faceted glass bases (eg. Fukai 1968: figs. 2, 6, 10, 12, 14 and 18; Fukai 1977: figs. 21, 32, 33, 36, 37, 42-4). The facets on the underside of the base are adjacent, but the triangular shapes typically found between circular facets surrounding the central base facet are entirely absent.

Omitting discussion concerning the nature or function of the Byzantine metal additions, the movement or the acquisition of these vessels, solely on the basis of the criteria already outlined, the diagnostic features of the first bowl suggest late Roman origin. Based on stylistic considerations, the second bowl may be earlier than the first. The extension of the facets to the rim of the second bowl suggests Sasanian manufacture. Although described as 'greenish', the glass is extremely pale in colour and is arguably decolourised. Scientific analysis could reveal decolourisation by the addition of manganese, strongly suggesting Roman manufacture. Since no such tests have been performed, and wall thickness measurements remain unavailable, the attribution of the second bowl is still in question. This analysis, therefore, suggests that: (1) if the glass was decolourised, then this bowl is most likely late Roman; (2) however, if the glass was not decolourised, then based primarily on aspects of decoration, this bowl is more likely of Sasanian origin.

The second group consists of two narrow-necked, conical vessels (Figs. 5 and 6) which in several respects appear similar. Independently from the approach discussed, one vessel has been assumed to be Roman, the other Sasanian (Harden, *et al.* 1987: xi; Whitehouse 1993: 257). These identifications are in keeping with the evaluation resulting from the approach to disentangling material cultures put forward. Despite the fact that both glass vessels employ the continuous honeycomb pattern across the outer surface, and are similarly shaped, colour and division of space aid in the attribution of these pieces. Whereas the Sasanian vessel has no delineated band below the lip (Fig. 6), the Roman vessel has a wide, plain border just below the rim (Fig. 5). Both vessels have a central, faceted disc at the centre of the base. Most likely serving different functions, the Roman vessel has a sparsely decorated applied handle. The Sasanian vessel has a hole pierced in the base, created after production, the function of which is unknown.

Although difficult to tell from the effects of decay and the colours visible today, the Roman vessel was intentionally decolourised (Harden, *et al.* 1987: 193). The Sasanian vessel was not decolourised. Thus, the identifications of Roman for the manufacture of the former, and Sasanian for the latter are in agreement with the application of the proposed criteria.

It can be difficult to determine whether glassware of a similar technique is late Roman or Sasanian. The difficulty can be further exacerbated by the absence of scientific analyses concerning glass composition. However, late antique faceted glassware can potentially be distinguished in a number of ways. Although similar in chemical composition, late Roman and Sasanian glassware differ in decolourisation of glass and rate of decay. Relative wall thicknesses typically differ. Lastly, unlike Sasanian faceted glass, the late Roman equivalent more commonly mixes circular facets with other patterns of engraving, and almost always has a plain border below the lip, or a similar framing device.

Conclusions

Faceted glass vessels were made and widely circulated throughout late Roman territory, Sasanian Persia, the Caucasus and the Far East. The archaeological evidence demonstrates that both Sasanian and late Roman artisans were producing a similar type of decorated vessel, often both hot and cold-worked according to their culturally-based practices and tastes.

Early Sasanian glass artisans could look back to over a century of faceted glass production by their glass producing neighbours in the eastern Roman Empire. However, the aesthetic of the facet inherited from the west developed into a distinctly Sasanian tradition. Importantly, the culture-specific late antique forms created contemporaneously by late Roman and Sasanian glass craftsmen display a similar development from early Roman faceted glassware by expanding the decoration to the underside of the vessel. This may further illustrate the idea that Sasanians appropriated a late Roman facet cutting practice.

The extent to which both late Roman and Sasanian faceted glassware developed in divergent ways is more difficult to determine when one considers the possibility of imitation. However, as proposed here, there are key diagnostic features which considered together have the potential to differentiate late Roman from Sasanian faceted glassware.

The value of such a culturally distinguishable method of identification is two-fold. Firstly, such studies may aid in the identification of glass exported from either the Roman or the Sasanian Empire, independent of final depositional context. Secondly, when systematically applied, the identification of glassware as either Sasanian or late Roman can function as another tool with which to disentangle intercultural activity at complex frontier sites.

Acknowledgements

I would like to thank Lincoln College, Oxford's Graduates' Research Fund for their kind support, Dr. Gasparotto of the Treasury of San Marco, Marlia Mango, St. John Simpson, the anonymous reader and Dan Meredith-Goymour for their comments. Any errors or omissions are those of the author entirely.

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