RECONSIDERING THE IRON AGE GLASS INLAYS FOUND IN ASSOCIATION WITH CARVED IVORIES

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In the early centuries of the 1st millennium BCE, carved ivories were among the foremost architectural ornaments in western Asiatic palaces. A number of different styles (or schools) of carving are known, among them the North-Syrian, the Phoenician, the Assyrian, and the so-called Intermediate or South-Syrian (Mallowan 1966, 471–598; 1978; Mallowan and Herrmann 1974; Barnett 1975; 1982; Winter 1976; 1981; Herrmann 1992, 22–39). Many of the ivories exhibit great artistic and aesthetic sense along with outstanding workmanship. This is especially true of the Phoenician-style examples – the ones most frequently highlighted by colourful inlays, mostly of glass. Furnishings with ivory inlays were sometimes also ornamented with glass inlays placed directly onto the furniture. This paper will consider various aspects of the glass inlays, with an emphasis on the ‘rosette plaques’ found at Arslan Tash.

Carved ivories have been discovered at Iron Age sites from Persia to Etruria and beyond, but the majority of glass inlays excavated in association with them were found at Nimrud in Assyria (northern Iraq; e.g. Mallowan 1978; Barnett 1975), Arslan Tash in northern Syria (Thureau-Dangin et al. 1931, 89–141), and Samaria in central Palestine (Crowfoot and Crowfoot 1938). The evidence from the Phoenician homeland thus still awaits discovery. Nimrud, incomparably larger than the other two sites, has been a particularly rich source both of carved ivories of different styles and of glass – not only inlays – in the Iron Age (von Saldern 1966), and glass continues to turn up at this site (Curtis et al. 1993, 15–16; Oates and Oates 2001, 240).

The glass inlays are of two main types: monochrome and bichrome. The monochrome vary considerably in shape (even including cylindrical pieces), size and colour. Red opaque glass occurs more frequently than it did in the 2nd millennium BCE. This probably has to do with the fact that just at this time the red colour appears for the first time to have been made with large inclusions of lead oxide (see, for example, Brill and Cahill 1988, especially 19–21). The addition of lead improved the colour formation of the copper in red glass, but the manufacturing process remained complicated and attests to the skills of the glassmakers (for example, Welham et al. 2000). The red opaque glasses:

were definitely made in Mesopotamia (as opposed to Egypt). The lead in those glasses is of an isotopic type... found so far only in Mesopotamian and Iranian glasses, glazes, and metallic artefacts... from some as yet unidentified mining region somewhere in that greater area.

That particular mining region appears to have supplied lead to glassmakers for some 2400 years... from 1500 BC to the ninth–tenth century’ (R.H. Brill, pers. comm.; see also Brill et al. 1993).

(‘It should be noted that there exists a considerable amount of chemical and other research on red glass, which cannot be detailed here.)

While faience was hardly used in association with ivory, much Egyptian Blue has been found. It was used as an inlay by itself and also placed in powdered form under blue glass and inlays of other materials, just as a haematite pigment was placed under red glass. The powdered pigments may have been attached ‘by means of some binder (or adhesive) – perhaps something like gum arabic.’ ‘Chemical and x-ray diffraction analyses have confirmed our microscopic observations that these powders contained haematite (Fe₂O₃) and Egyptian Blue (Cu₂O.CaO.4SiO₂).’ (both quotations R.H. Brill, pers. comm.; see also Barnett 1975, 240; Herrmann 1986, 59). This was done ‘to form nearer edges where the glass did not quite join the ivory walls’ (R.H. Brill pers. comm.). The Egyptian Blue could, of course, also have been used to enhance the colour of translucent blue glass, but the fact that backings were also employed under opaque stone and glass reinforces Brill’s view. The opinion that the ‘bedding’ was needed when the inlays were thin and the ‘cells’ were deeply carved has also been expressed (Plenderleith in Mallowan 1966, 141). The backings, however, were also used in the case of shallow carvings and might also have helped to fasten the inlays to the ivory.

Most of the bichrome inlays are small, blue, roughly square plaques with a six-petalled white rosette motif. In addition there are rarer, larger or round such plaques (Curtis 1999, 61, figs 6–7), and pieces with white motifs other than rosettes (Crowfoot and Crowfoot 1938, frontispiece 2, pl. xxiv), as well as some remarkable painted plaques (Orchard and Brill 1978).

As for the common rosette plaques we distinguish two types. The first is relatively small, mostly 5–7mm. square. The rosette motif traverses the glass and the two sides are identical; the (medium) blue glass is coloured by copper and easily recognized as translucent. Most rosettes of this type were found at Arslan-Tash (Thureau-Dangin et al. 1931, pl. xviii nos 113–17). The second type is larger, around 9–12mm square, and the rosette motif is inlaid into one side only, leaving the second side plain; the glass is coloured by cobalt (without copper) and it is of a darker blue colour than the first type, and less readily apparent as translucent. Most (though far from all) rosette plaques of
this type were found at Nimrud (Curtis 1999, 59–61, figs 1–7, 67–9) as were most of the much smaller number of such plaques found at Samaria. ‘The dark blue coloured glasses have unusually high alumina (Al₂O₃) levels’, presumably ‘associated with the source of the cobalt’ (R.H. Brill, pers. comm.) and have withstood weathering better than glass of other colours.

Most Iron Age western Asiatic ivories fit a 9th to 7th-century BCE timeframe. The Phoenician and other ivories with glass inlays were in the past usually considered a frequent occurrence already in the second half of the 9th century, based on Samaria’s connection to king Ahab and his Phoenician queen Jezebel (in spite of a lack of archaeological linkage: Tappy 2001, 491–5), and on inscriptions relating to other 9th-century rulers (eg Mallowan 1978, 36–7). Over the last decades, however, one discerns a clear trend to regard the glass-inlaid ivories as no earlier than the 8th century BCE (especially the second half), continuing into the 7th (Mallowan and Herrmann 1974, 19, 50–2; Winter 1976, 15–22; Mallowan 1978, 40–1; Barag 1985, 65–6, no. 40; Herrmann 2002, 141), though the possibility of some earlier beginnings is not disregarded.

The stylistic differences between groups of ivories have always been defined as regional. However, quite apart from the fact that one cannot be certain of a shared provenance for glass and ivory, a number of written sources have made it abundantly clear that ivories and ivory-inlaid furniture were widely traded, given as gifts and tribute, and taken as spoils of war; the booty may have also included the artisans themselves, who, of course, could have also migrated of their own volition (Mallowan and Herrmann 1974, 38–9; Oates and Oates 2001, 226–7). Although no glass workshop has been found, there is nonetheless sufficient evidence to conclude that glass was fashioned (and possibly also made) at Nimrud or close by (Mallowan 1966, 209–10). The evidence was summed up by Mooney (1994, 202–3). Glass is, however, likely to have been worked at several centres. The rosettes were almost certainly worked at more than one centre, considering their differences.

Most of the monochrome inlays – including the numerous ones not found in situ – would have been used as inlays in carved ivories (using both champlevé and cloisonné techniques). Both monochrome and bichrome inlays were also found inlaid into other kinds of objects, including some of glass. The relatively few rosettes used thus are quite small and arranged in bands or friezes (Barag 1993). More numerous rosette plaques of the Arslan Tash type with the pattern passing through the glass were set into wide, opaque red glass frames, weathered green; in some cases in turn mounted in bronze cases (Fig. 1). These pieces, were presumably nailed to wooden furniture, in turn adorned with ivory plaques. (This was apparently the case at Arslan Tash, where the ivories had only a few glass inlays or none at all: Thureau-Dangin et al. 1931, 90–1, 138.) The majority of the rosette plaques, including most (possibly all) of the common Nimrud type, lack frames and mounts and their uses are not known (for suggestions see Curtis 1999, 64–6).

Fifty-one rosette plaques from Arslan Tash, all of the type with the motif on both sides, are housed in the Bible Lands Museum, Jerusalem, and I was able to study these pieces. The collection has been partly published (Muscarella 1981, 285, no. 244, pl. xxi; Merhav 1981, no. 117; Bianchi 2002, 172, no. NE-24a). Additional museums with published holdings of rosette plaques from Arslan Tash include the Metropolitan Museum (Grose 1989, 76, fig. 40; our Fig. 1), the Karlsruhe Landesmuseum (Thinne 1973, no. 36; Stern and Schlick-Nolte 1994, 59, fig. 88), and the British Museum (Barag 1985, 72, no. 54). The Louvre and Aleppo museums presumably house additional pieces.

The collection of the Bible Lands Museum includes twelve examples in a wide frame of red opaque glass, weathered green (COLOUR PLATE 9). None of these frames had been cleaned. The remainder of the rosette plaques in this collection lack frames; 18 are otherwise similar to the framed (COLOUR PLATE 10). Twenty-one pieces are strongly weathered into a dull brownish grey, not showing any blue colour and most have lost some of the white petals (COLOUR PLATE 11). Most Arslan Tash-type rosettes depicted so far had their weathered surface layer mechanically removed and show the original blue colour. I found that the cleaned pieces in the Jerusalem collection had been reduced in size by an average of about 1mm. It is therefore not surprising that the rosette plaques do not always fit the frames very well. Presumably, many plaques and frames were, furthermore, initially found separately (Barag 1985, 72, no. 54).

The probability (or certainty) that the plaques in which the rosette pattern traverses the glass were made by the mosaic technique has often been mentioned by glass historians (von Saldern 1966, 630; Barag 1985, 52, 71–2, nos 53–4; Grose 1989, 76, fig. 40; Stern in Stern and Schlick-Nolte 1994, 59; Bianchi 2002, 172, no. NE-24a) and has been adopted by others (Moorey 1994, 200; Curtis 1999, 60). As for the plaques with inlaid recesses, opinions have differed. Von Saldern regards them as ‘cut’ (1966, 632–3) or as ‘scooped out’ (1970, 209) while Barag (1985, 71–2, no. 53) describes a hot-working technique.
My first examination of the Arslan Tash material housed in Jerusalem made me doubt that the mosaic technique had indeed been used (Spaer 2001, 273, n. 2). Many of the pieces had lost some of the white inlay, although the ‘fusing-cum-drawing’ technique of mosaic cane manufacture makes the loss of individual particles relatively rare, even among much weathered pieces. A perusal of published analyses of rosettes from Nimrud (including one piece described as the ‘millefiori type’) made it quite clear that the composition of the ‘white fills’ was in a category of its own; especially striking was the lack, or near lack, of silica (Brill 1999a, 46, nos 3229–30, 3249–52; 1999b, 47–9). I did wonder if two so disparate substances as the white and blue colours were sufficiently compatible to be combined by the mosaic technique.

I asked for and received detailed information from Dr Brill (pers.comm.).

The white fill material in both the dark blue rosette inlays and the lighter blue ‘mosaic’ inlays is especially interesting. Our analyses of the blue glasses show them as typical for the time. As for the white colour, it is certain that it is produced by the presence of calcium antimonate (Ca,Sb$_2$O$_4$) plus CaSb$_2$O$_4$. Our analyses and examinations suggest that a powdered white glass (or perhaps a separately prepared white calcium antimonate pigment) had been used for the white decorative fill. In at least some cases, the fill appears to have been lightly fired into place. Also, in my opinion, the so-called ‘mosaic’ pieces definitely were not manufactured by any sort of ‘millefiori technique’.

Dr Brill’s communication, as well as a further examination of the Bible Lands Museum rosette plaques, strengthened my view that the mosaic technique had not been used. At least one of the rosettes was found with a back side differing from the front (COLOUR PLATE 12). I also had the opportunity to study two dark blue glass rosette inlays from Samaria – of the type with the motif on one side only. One of these misses two petals as well as the central dot, but the rather shallow depressions of the missing petals can be clearly seen. I was surprised to find that the central depression was much deeper, the depth only slightly less than the thickness of this piece (cf. Curtis 1999, fig. 2 right). It seemed that the small round hole had been drilled to exact size.

CONCLUSIONS

Various views have been expressed regarding both the chronology and the provenance of carved ivories and their related glass inlays. Much of the ‘evidence’ is presumptive, and it is doubtful that a review of material published to date could lead to definite conclusions. As Moorey (1994, 202) put it: ‘... many key questions about innovation and diffusion remain wide open’. Concerning the functions of the inlays we are partly informed, but the uses of many of the bichrome inlays remain unknown.

In contrast, it seems that one can be relatively certain about the major aspects of the manufacturing techniques employed in fashioning the glass ornaments. Both the monochrome and bichrome inlays were in most instances initially fashioned by moulding, most of them subsequently finished by abrasion, ensuring a better fit, for example, for the spaces in the ivories or the glass frames. Contrary to what has usually been suggested, the white rosette motif was added to the blue glass plaques, both versions, by cold-working techniques (though some hot-working is likely to have been employed subsequently for fusing purposes). This should not come as a surprise, as partly cold-worked glass is prominent in this period, well exemplified by the finds from Nimrud. One can deduce that the small dot-like centres were drilled with a bow-operated copper drill. Petal-shaped holes or recesses were presumably made by some other version of rotary abrasion; perhaps a small copper wheel attached to a bow-lathe. Subsequently, the empty spaces were filled with a white substance, apparently in powdered form.

The Arslan Tash-type rosette plaques with the rosette motif penetrating the glass were definitively not ‘the forerunners of Greco-Roman mosaic glass’ that they are sometimes said to be. This fact, however, in no way detracts from their appeal, nor should it diminish our esteem for the technical skill and inventiveness of their makers.

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REFERENCES


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