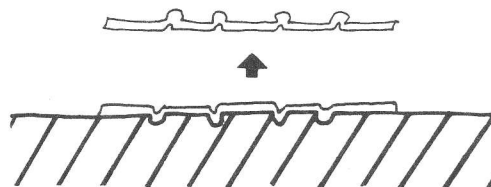
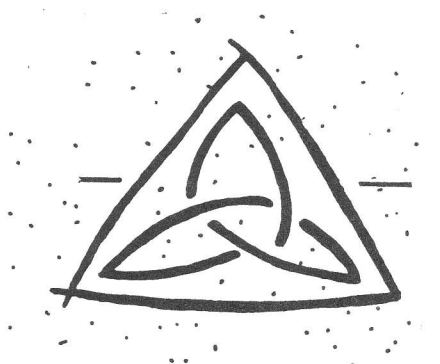
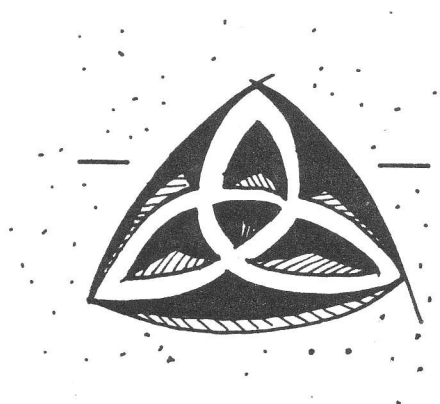


Preliminary observations
on the manufacture of
relief backplates in
Hiberno-Saxon filigree work

by Uaininn O'Meachra



Abstract

Different techniques used to produce the relief effect on filigree backplate foils are discussed. More examination of these foils to identify the type of die is urged, as typical foil profiles can be tied in with different dies. No related dies survive; motif-pieces might be an alternative.

Preliminary observations on the manufacture of relief backplates in Hiberno-Saxon filigree work.

Uaininn O'Meachra

Introduction

Most discussions on relief-decorated metal foils in Irish, Pictish and Hiberno-Saxon metalwork refer only to the technique of Pressblechs (free-standing embossed or repoussé foils).

There is however a second use for relief foils, especially for gold foils, in that metalwork, namely as backings to filigree wires or granules. (n.1)

Recognized techniques

Examination by the British Museum Research Laboratory of the Ardagh chalice revealed relief foils supporting the filigree there (Organ 1973: 238-271, 246). R.B.K. Stevenson (1968: 28-29; 1974: 23-25) recorded similar features in his detailed studies of the technology of the brooches from Westness, Dunbeath, Hunterston and "Tara". M. Ryan and R. ÓFloinn (see Ryan 1980; ed. 1983a) have exposed such foils on objects in the recently discovered Derrynaflan hoard.

These foil backplates are as a rule c.0.1mm thick (similar to those used in Pressblech but much thicker than those under insets and studs). This difference in thickness might call for different techniques in the production of the relief

Six different methods or techniques can be identified for achieving the relief effect found on Hiberno-Saxon backplate foils:

TECHNIQUE 1: Repoussé produced by pressing out the motif from the back of the foil and then pressing down a groove from the front on either side of the motif bands to emphasize the relief. This produces a characteristic, humped profile in background fields (Fig. 1). (n.2)

TECHNIQUE 2: Simple embossing (technique 2a) or repoussé (technique 2b) without touching-up from the front (Figs. 2, 4). (n.3)

TECHNIQUE 3: Hollow platform using an embossed foil which is cut in openwork to produce hollow vertical walls on which the motif stands (Figs. 3, 5). (n.4)

TECHNIQUE 4: A contrasting embossed (technique 4a) or repoussé (technique 4b) motif in the free grounds around the filigree strands (Figs. 6-8). This is Organ's texturing (1973: 258 (- It is possible

that in some cases this texturing is caused by the method of insertion of the foils and should be understood there as surface damage -).

"TECHNIQUE" 5: A false-relief effect created by the weight of the filigree wires granules depressing the backplate behind the filigree.

"TECHNIQUE" 6: A special relief effect employing flat backplates does not concern us here but one example can be given: the animal pattern central on the pinhead of the "Tara" brooch (panel W22, in Whitfield's (1976) numbering system) lies on a flat (undecorated?) backplate; high relief being achieved by placing the filigree on top of a strip of foil set on edge (Henry 1965:95 and pl.40; Stevenson 1974; NíCheallaigh (now Whitfield) 1964:41-43 and her catalogue p.47)

Fig 1. Diagram of schematic section showing the principle of a filigree panel executed in technique 1. Arrows indicate direction of pressure tooling: first from the back of the foil (solid arrow) then from the front of the foil (dotted arrow). 1, tray; 2, filigree. (Based on textual description in Stevenson 1974:24).

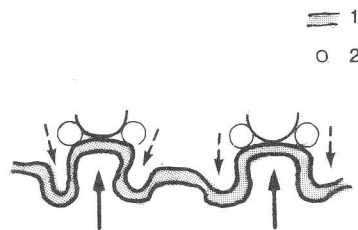


Fig 2. Diagram of schematic section showing the principle of a filigree panel executed in technique 2a and b.

- a) if repoussé
- b) if embossed.

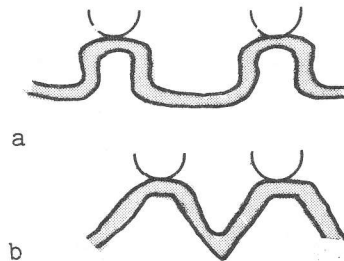
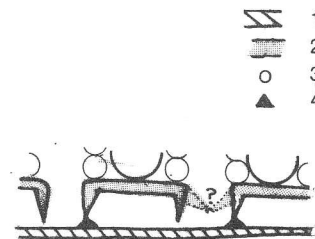
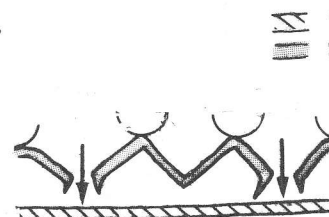


Fig 3. Two diagrams of schematic sections showing the principle of filigree panels executed in technique 3.

- a) based on description of the Hunterston brooch in Stevenson 1974:250. 1, gold foil backing tray; 2, raised hollow gold foil platform; 3, filigree; 4, possible solder.



- b) based on description of the Ardagh chalice in Organ 1973:256-7, figs. 39-43; note Organ's fig. 40 shows the back of the panel in his fig. 42 not, as stated, of the panel in his fig. 39). Here the background is apparently clipped and punched through to widen the open space, from the front of the foil (arrows). 1, backing tray of gilt copper; 2, raised hollow gold foil platform with sharp impression on inside from the chipcarved patric.



TECHNIQUE 1

Technique 1 occurs on the Hunterston brooch (Stevenson 1974: 24, pl. XIV:B); possibly the Lagore (brooch?) mount (Hencken 1950: fig.23, pl.14:2) the Westness brooch? (examination of photographs of the Westness foils suggest that the technique used here might be touching-up from the front only? - see below).

Stevenson considered that the Hunterston foils executed in technique 1 were repoussé hand tooled (Fig. 1). The photograph with which Stevenson illustrates a technique 1 foil (1974:pl. XIV:B) shows a band of remarkable evenness for hand tooling. Is it possible that technique 1 is embossed? (though not with a chip-carved pattern as the band edges are apparently perpendicular not sloping), with later hand tooling from the front as touching up?

On the "Tara" brooch, the animal patterns which occur on the hoop and on the terminal plates (panels W20, W21) are of a complex relief, perhaps caused both by embossing from the back of the foil and by hand tooling for emphasis from the front

TECHNIQUE 2

Technique 2 occurs on the Westness and "Tara" brooches (Stevenson 1968:25, 29), the brooch from Kilmainham (Ryan ed. 1983b; Cone ed. no. 42) the Derrynaflan chalice (Ryan 1983a:38).

On the "Tara" brooch pinhead (cf. Cone ed. 1977:pl. 32) the majority of the backplates could have been produced by pressure of a tool (cf. the raised dotted background to the figure-of-eight motifs). But one foil, containing a simple geometric motif (panel W), might be executed over a chipcarved pattern. The typical triangular cuts of the chipcarved background show up distinctly in raised relief.

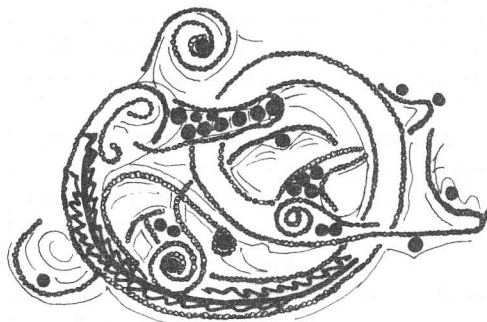
To the naked eye all of the backplates on the Westness brooch seem flat, but examination of photographs (taken by and kindly supplied by N. Whitfield, cf. n.1) of one of the terminal plate foils, front and back, taken before the loose plate was re-affixed to the brooch, indicates a shallow relief pattern. Interpretation is unclear, but it seems possible that this is embossed, though the weight of the filigree has left its impression on the foil which complicates analysis. (Fig. 4).

However, it seems possible that a patirix was used to emboss this foil on account of the very sharp edges on the back of the foil (e.g. at the background space between the hindlegs) and pattern lines that do not correspond to the filigree motif in detail (e.g. forepaw on left of neck). The hatching features on the body and jaw are more similar to rounded hatching between a double contour than to the reverse side of the double row of filigree beading, and the hindpaw in the foil has a double ball and claw but in the filigree has only a single ball and claw (though as Whitfield has pointed out (pers. comm.) if the second

ball were a filigree granule, this might have fallen off leaving no trace) (Fig. 4:b, c). I am therefore in disagreement with Stevenson, who considered that this foil was tooled from the back.

Fig 4. Suggested evidence for technique 2b on the Westness brooch. Based on photographs of the front and back of the foil.

a) the filigree motif (black; note that except for the snout and hips, the filigree is formed of a beaded wire not separate granules), with traces of embossed? pattern showing underneath



a



b

b) provisional reconstruction of possible patirix used to produce the embossed pattern. Based on reading of photographs of front and back of foil. Note the differences to the motif in Fig. 4c.



c

c) the filigree animal abstracted. Compare with Fig. 4b.

TECHNIQUE 3

Technique 3 occurs on the Ardagh chalice (Organ 1973:256, figs. 39-40), on the "Tara" brooch (Stevenson 1974: 25 n.13), on the Hunterston brooch (Stevenson 1974:25 pl. XII:B), the Dunbeath brooch (Stevenson 1968:28-29), the Derrynaflan paten (Ryan 1980:3, fig. 4. 1983a:18).

Stevenson (1968: 28; 1974: 29) considered this to be related to the technique W. Holmqvist observed on the Scandinavian gold collars of the 4th-6th centuries AD: "the method there is first to lay the

figures, cut out in gold, on the smooth gold sheet, and then to emphasise these figures by means of gold filigree wires soldered on" (Holmqvist 1955:45). B. Arrhenius (1982:8) has however now shown that the figures on these collars are solid gold cutouts not hollow platforms, and she suggests that the use of such carved solid plates rather than relief foil might be diagnostic for the Nordic area.

It would be practical for a patrix to have been employed on all the technique 3 foils, since the embossed edge of each motif strand would be relatively sharp and would assist the bending-down of the background walls.

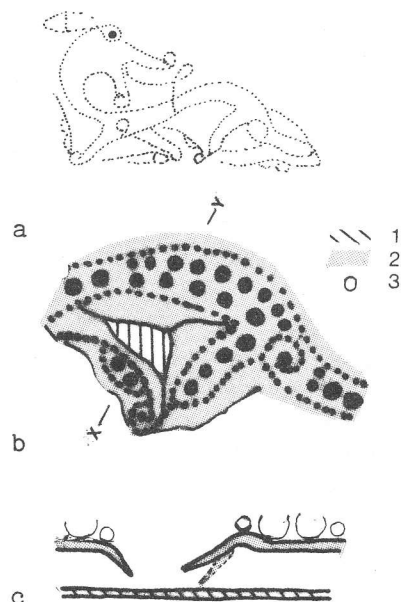
On the Dunbeath brooch terminal's central field where the foil is slightly damaged by crushing, the possible stages in cutting the quadruped animal-embossed backplate foil platform in order to produce

Fig. 5. Diagram showing the principle of construction of a detail of technique 3 as observed on the Dunbeath brooch, showing how this could have been embossed on a chipcarved panel. Based on photograph in Stevenson 1974:pl. 20,B)

a) the whole panel

b) detail at the triangular background area between hindleg and body. 1, tray showing through the pierced backplate; 2, backplate wall with clipped corners; 3, filigree.

c) schematic section through same at x-y, with reconstructed possible original angle of wall (dotted). 1-3, as for Fig. 5b.



the openwork effect might be reconstructed as follows. First a central triangular area of the background might be cut away. Then the corners of the remaining background field might be nicked to produce side walls by bending down each background space (Fig. 5). It would be practical if this cutting was made while the die was still in position beneath the foil, to assist cutting without destroying the relief or pulling the pattern out of shape which must be easy on such a thin foil. Apparently the foils were also cut by punching through the background where these areas are small and cut completely away for large background areas. Both these methods occur on the Ardagh chalice (Fig. 3) and Derrynaflan paten (Ryan 1983a: c.pls. 10-12).

If my idea here is correct, it would presume the use of a patrix and in the case of the Dunbeath brooch foil and the Ardagh chalice foil,

one that was chipcarved to produce correspondingly sloping walls. Some of the chalice foil backplates have perpendicular walls as is also the case with the Hunterston brooch foils. Such would need to have been made on a pattern with perpendicular walls, unless adjustment of these walls was possible after embossing (a delicate operation but not impossible using e.g. a tweezers). Against the use of a patrix for such relief foils, is the fact that such a die would take far more time to make than repoussé work on each foil. This extra work would only repay the craftsman if a number of identical foils were required and more than one foil was to be produced from the one die. Perhaps the availability of gold could also govern the need for dies rather than repoussé work, as mistakes might be less likely with a die than with freehand repoussé tooling directly onto the precious metal (cf. further below).

The results of the extensive examination of the Ardagh chalice though published in detail (Organ 1973), omit much essential information necessary for this discussion on dies. However that examination did establish the use of a patrix die to emboss the girdle filigree backplates: "the sharp edges of the die against which the gold sheet was pressed can be discerned here along the lengths of the hollows" (Organ 1973:256, fig. 40). Unfortunately we are not told if these back-plates use the same die in contrast to his discussion on the silver Pressblech panels). Discussion is also lacking on the other filigree panels on the chalice as to whether these too show evidence of being embossed or are worked in repoussé, and whether those panels carrying the same motif are identical, and thus from the same die. Organ's reference (1973:266) to the girdle panels having individual characteristics suggests that they are not identical: however, comparison of the relevant panels from my own examination of photographs (e.g. Henry 1965: pl. 39; Organ 1973:fig. 69) suggests that the relief patterns are perhaps identical, the apparent differences in the panels being caused by differing application of the filigree details.

Examination of photographs of the back of the Ardagh chalice foil animals suggest that these were embossed with a blank outline only, as no evidence for jaw hatching or other head detail shows up on the reverse of the foil. These foils also show toolslips and the sketched outline of the motif prior to carving presumably impressed onto the foil from the die? Full publication of the British Museum Research Laboratory examination of this chalice should clarify this point.

The technique 3 foils on the Hunterston brooch, where there is apparent repetition of motif, differ in detail such as the mirroring of the motif or position of the foil along the brooch outline. This means that no two could have been made off the same dies. If indeed dies have been used at all on these Hunterston foils, then we would have further evidence of Anglo-Saxon influence on this brooch (which Stevenson (1974: 30) deemed apparent in other features, considering the brooch to have been executed in N. England by a craftsman in close contact with Anglo-Saxon traditions). Pressblechs are a common feature of Anglo-Saxon metalwork during this period. If dies have been used on

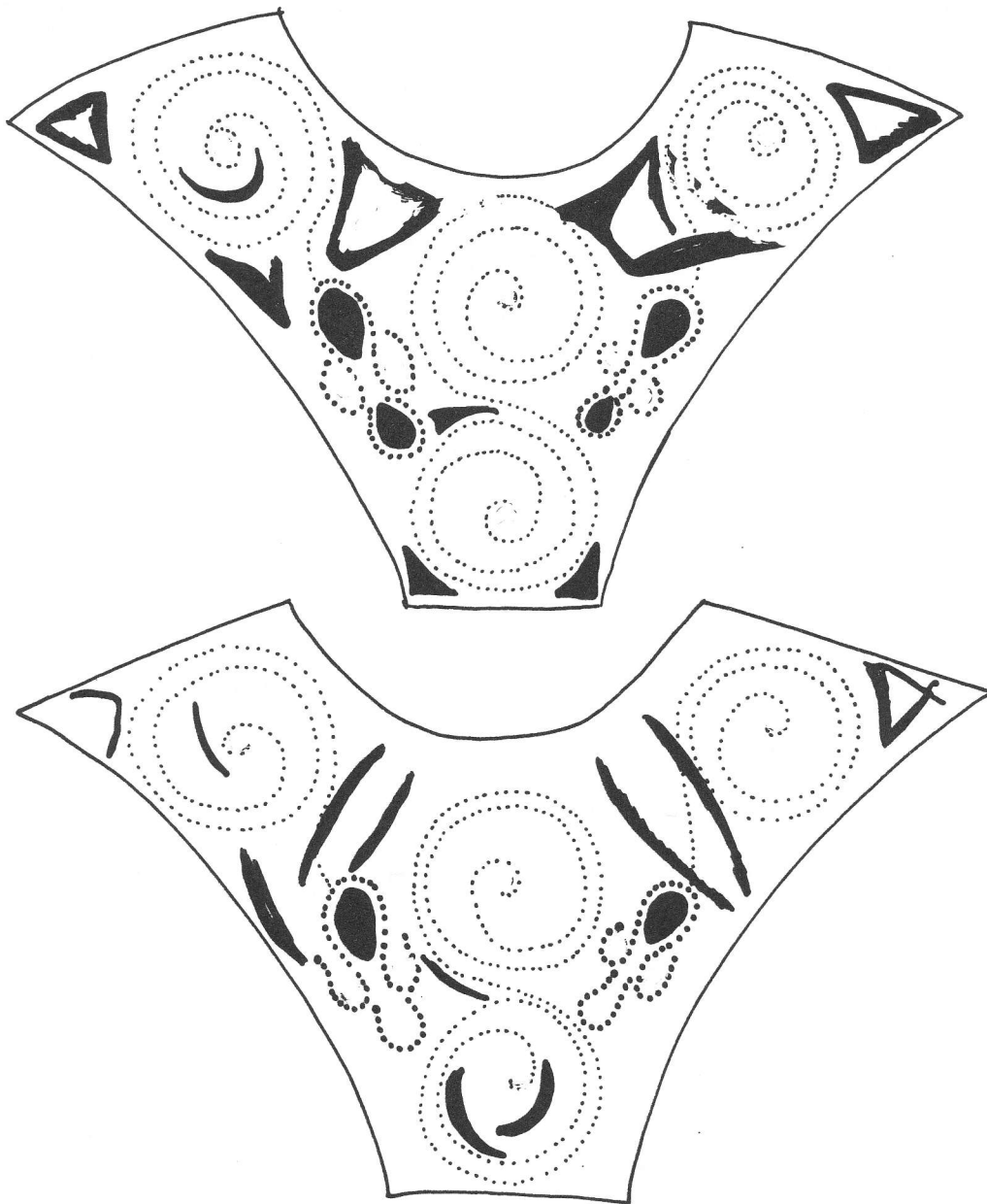


Fig 6. Traces of technique 4 on the Ardagh chalice roundel snake panels:
 a) roundel between the letters "L" and "I", panel on R beside letter "I". Juxtaposition of the foil relief (shaded) and the filigree pattern (dotted). Note the concordance at snake heads and some spiral curves but also additional pattern on the free grounds. Based on colour photographs in Cone ed. 1977:pl.33, as also on examination of the chalice itself.
 b) roundel on opposite side of chalice. Based on NMI colour slide 73, Henry 1965:colour pl.D, and examination of the chalice itself.

foils where no two patterns are identical, then we may have evidence for archaicism of an Anglo-Saxon trained craftsman adhering to an inherited tradition no longer practical for his present work; an adaption to borrowed methods more suited to a form of mass-production, since the preferred fashion employed individually produced patterns.

TECHNIQUE 4

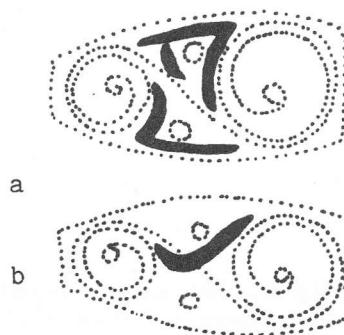
Technique 4 occurs on the Ardagh chalice, and the brooches from Cavan, Roscrea and (Kilmainham?) (Henry 1965; Cone ed. 1977: nos. 41, 46, 42; Ryan ed. 1983b: nos. 55, 62).

The use of an additional contrasting motif around the filigree motif occurring on the Ardagh chalice roundels has been described as foil "faced with a decorative surface" or "...textured surface. The method of fabrication (of which) has not been discovered" (Organ 1973:258).

I have attempted to follow the pattern of the foil on two panels from these roundels, and their relation to the filigree patterns is shown in Fig. 6. Note the concordance with certain details, such as the heads, but differences at background areas. Unfortunately too little of this relief pattern shows through on the surface of the foils and the panel is not discussed in terms of motif-reading by Organ. Comparison of the four different panels on each roundel containing the same filigree motif, shows slight differences in the backplate motifs of each, suggesting that they do not come from the one die. My own examination of the chalice itself was not conclusive on this point, nor on whether these are embossed or repoussé.

The S-spiral patterns on the Ardagh chalice are also interesting in that one panel on the roundel between the letters "Y" and "I", shows a tendril-shape which does not appear in the filigree (Fig. 7a). A second panel shows a simple curve also not followed in the filigree (Fig. 7:b). The other panels appear to be flat. Is it possible that this texturing is caused by the method of insertion of the foils and should be understood as surface damage?

Fig. 7. Interpretation of technique 4 on two panels on the same Ardagh chalice roundel as in Fig. 6b, showing additional motif-lines (shaded), beside the filigree motif (dotted). a Based on sources as for Fig. 6b.
a) additional tendril form
b) additional spiral arm

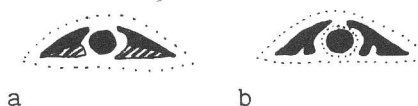


It would seem that these foils serve the same function as do foils beneath studs and glass settings, i.e. to enhance the "glitter" effect. This baroque/polychrome taste is evidenced not only in the use of patterned foils beneath studs but also in the juxtaposition of silver and gold, millefiore and coloured glass settings, and in the

varied relief of the carvings on the chalice.

Further and perhaps more definite examples of technique 4 occur on the brooches from Cavan and Roscrea, less clearly on that from Kilmainham. Here few of the foils are stamped since the impression tends to be irregular and rounded. It is more likely that these are tooled from the back and then touched-up from the front where relevant and that the technique is closely dependant on the fact that these foils are lying over paste which when soft easily takes up the impression of the filigree from the weight of the wires which could produce some of the humped backgrounds showing between the filigree wires. However, some patterns can be traced. One is the split leaf form on the Roscrea brooch (Fig. 8). On the Cavan brooch possible traces of tendril-like links join the raised areas on which the circles of filigree lie and it seems unlikely that these originally held filigree trails as what remain are not spirals but isolated rings.

Fig 8. Details of technique 4 on the Roscrea brooch. Based on museum examination.



TECHNIQUE 5

Technique 5. The filigree on the Westness brooch interlaced snake panel seems to lie in a hollow which could be either drawn into the foil from the front of the foil or less likely pressed off an intaglio die (though Whitfield informs me that off her examination of the foil, she considers that this panel is on a flat backplate). The hollow is perhaps best explained as due to the pressure of the filigree wires.

Conclusions

Were some of the foils in relief-techniques 1, 2, 3 and 4 in fact produced by embossing and what dies survive in the archaeological record for Hiberno-Saxon work? In all cases reviewed here a patrix, or die in positive relief, would have been used, though a matrix could be used for rougher patterns on other foils.

In Scandinavian contexts some dies for similar foils have been found. These dies are without exception patrices and in metal (cast copper-alloy) and the foils are in either silver or gold (see generally in Oldeberg 1966, and latest in Duczko 1985). At Hedeby, copper-alloy models interpreted as patrices for filigree backplates have been found (Capelle 1971; 1975) and a copper-alloy patrix for the gold backplates for Viking-period box brooches has been found on Gotland (Thunmark-Nylén 1983: 186, fig. 3).

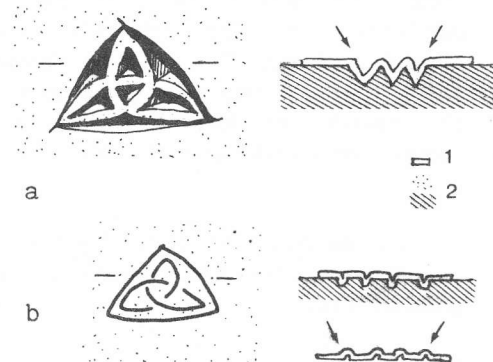
I have been unable to identify any dies in Hiberno-Saxon work related to that discussed here, and thus wonder if motif-piece patterns (cf. O'Meadhra 1979) - providing these be of suitable dimensions and quality of finish - could have produced the required relief? Either

bone or stone motif-pieces could have served since no significant pressure was required: it is important to observe that these filigree backplate foils are always of gold, and not silver; gold is the softer metal and requires different qualities in a stamp to silver. Examination of foil relief would show if motif-pieces with relief band patterns were used, as these never stand proud of the surrounding piece. The impressed field surround would retain the relief of the piece and be of equal height to the upper surface of the pattern strands (Fig. 9a). Motif-pieces with incised linear patterns could have served as matrixes (cf. O'Kelly 1965: 184), providing general motif shape, perhaps as in

Fig 9. Typical relief of impressed foil if a motif-piece pattern is used. 1, foil; 2, motif-piece.

Arrows indicate the area showing the diagnostic relief of the foil edge relative to the pattern strand surface.

- a) pattern executed in band form
b) pattern executed in linear form



techniques 2 and 4; resulting foils would retain the irregular impression of the tooled matrix groove, perhaps resembling repoussé tooling, and would have a characteristic relief where the pattern would stand proud of the flat background (Fig. 9b). Use of repoussé can be identified by the unevenness of the groove, and a matrix die by the sharper image being on the front of the foil. A matrix die in the round or in semi-relief produces an image that stands proud of the surrounding edge of the foil.

Further study might be directed to these problems. The long promised publication of the full results of the British Museum Research Laboratory examinations of the "Tara" brooch and Ardagh chalice, during cleaning in the mid-20th century, would also greatly assist understanding the techniques used, since it is necessary to have access to the backs of foils to be certain of their manufacture method. (n.1)

Notes

1. The present article stems from my work on the function of motif-pieces, while on Stockholm University doctoral student travel scholarships in the late 70's to museums in London and Dublin. I am most grateful to Professor Birgit Arrhenius for allowing me to publish my observations here in advance of more thorough research. At that time, to the best of my knowledge such a categorization of how these backplates were made had not been attempted before, and I still feel it is important to draw the attention of others working in this field

to these problems, while access to the backs of the foils is available and true cross-sections can be made, showing the relation of the pattern strands to their backgrounds and field-surrounds.

Filigree techniques in Hiberno-Saxon metalwork have been studied by Niamh Whitfield (cf. Ní Cheallaigh 1964, her MA thesis for University College Dublin) and are the subject of her PhD thesis for University College London on filigree-bearing penannular brooches. For a preliminary publication see Whitfield 1986. The recent discovery of the Derrynaflan hoard of decorated church plate has refocused research on early goldsmith's products into including detailed analyses of technology, under Michael Ryan, Keeper, National Museum of Ireland. Whitfield has freely shared with me her detailed knowledge on this technology and facilitated our joint microscopic examination in 1982 with Ryan of some of the material here treated, when my earlier observations could be tested. I am also grateful to the director of the National Museum, Breandain Óríordáin, for access to these delicate objects, and to Leslie Webster, Department of Medieval and Later Antiquities, British Museum, and W. A. Oddy, British Museum Research Laboratory, for facilitating my work on these techniques. Responsibility for the ideas put forward is mine and their preliminary nature is here stressed. My debt to the pioneering publications of Organ and Stevenson goes without saying.

2. "The trays of these snake panels are not flat but repoussé, having the design of the filigree in relief. After being pressed out from behind to about 0.3 mm high, this relief was sharpened up by pressure from the front along the outline, which suggests that a die had not been used" (Stevenson 1974:24).
3. "The panels which carry the filigree provide only a simple repoussé background for the animals in the case of the 'Tara' and Westness brooches, and on the latter this is for guidance rather than relief." Stevenson 1968:29).
4. "Sharper relief against a flatter background"..."was accomplished by embossing the design on a separate sheet, then cutting away its background leaving links to the border, thus shaping narrow vertical-sided hollow ridges to carry single wires, as well as broader spaces for the bodies. The edges of this 0.5 mm high cut-out, the beast and the border all in one, were then soldered onto its tray - occasionally leaving gaps which help to distinguish the tray carrying such a hollow platform from the one that is just repoussé ". On the trays: "Each panel consists of a base-plate of sheet gold cut to shape <the shape of the panel> The edge has normally been turned up and probably down again like a hem, to form a tray to fit closely into its compartment. A single beaded wire, about 0.4 mm high, is soldered as a border along the top of each side." (Stevenson 1974: 23, 25).

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