Technology as Active Material Culture: The Quoit-brooch Style

By PETER INKER

THE collection of metalwork from early Anglo-Saxon contexts considered to represent the Quoitbrooch Style is here assessed in terms of the technology and techniques involved in its production. The punchmarks in particular are subjected to detailed analysis. A close relationship between especially the belt fittings and late-Roman metalwork from Britain and the Continent is confirmed, while punchmark links are discovered between formally diverse Quoit-brooch-style artefacts. The technical consistency of the group and its association with late-Roman workmanship appear to be its strongest unifying characteristics. Technology can thus be argued to have been a significant and active component in the material culture of early post-Roman Britain/England.

The body of material known conventionally as representing the 'Quoitbrooch Style' is a unique assortment of metalwork. Relationships within this group are subtle, confusing and often contradictory. The attractive and frequently lavish appearance of the collection has guaranteed it a mention in most modern studies of the 5th century in southern England, although what it signifies, as we shall see, is far from clear. Particular details of the surface decoration of the metalwork led to the group being recognized as a style and given a collective title, the Quoit-brooch Style, after 'the most important type of object it appears on'. Over the last 80 years of study into this collection, new forms of Quoit-brooch-style metalwork have been defined and diverse interpretations of the style and its ethnic origins have been proposed. Today, despite the work of the last century, the Quoit-brooch-style metalwork still eludes classification, seemingly reflecting the diverse and complicated nature of proto-Anglo-Saxon society in the 5th century.

Whilst the Quoit-brooch Style is accepted as a formal art-style, exclusively art-historical approaches have failed to 'explain' the Quoit-brooch Style. The weakness of such approaches is that they have attempted to study only the decorative elements of the metalwork at the expense of its typological and technological creation and development. It is not coincidental that the style is not named after any of its decorative elements, but rather after a form of artefact it appears on. Whilst Hawkes's comment that the Quoit-brooch Style can be identified 'at a glance' is for the most part still true, there is no formal set of essential artistic features that are diagnostic of the Quoit-brooch Style. The

E. Bakka, 'On the Beginnings of Salin's Style 1 in England', Bergens Museums Årb. (1958), 9.
 S. C. Hawkes, 'The Jutish Style A', Archaeologia, 98 (1961), 29-74 at p. 40.

connectedness of the group resides rather in a series of characteristics that link the group through a chain of correspondences. These similarities tend in fact to be derived from technical methodology rather than from some special artistic motif. It is the aim of this paper to define these technological factors in a more formal way and in so doing to redefine the grounds for evaluating the Quoit-brooch Style.

In our understanding of the production of any metalwork, the notions of technology and technique are key in defining the overall context of the production of an artefact. In this paper the term technology refers to the system of operations and equipment by which a society provides its members with those things they need or desire, and as such is a socially imbedded concept. The suggestion that 'technology externalises, in that it gives physical substance to human means' is useful here.³ In contrast, technique is the specific method of utilizing technology to produce a particular thing with reference to an individual's experience and expectation. Technique is far more flexible than technology and whilst technique is readily adaptable in a climate of technological change, both are defined socially and culturally. We are familiar with the concept of art-style as a socially constructed structure of meanings and that material culture can be read as 'text'.⁴ In this paper it will be proposed that technology and technique likewise result from social behaviour and are active indicators of social meaning, albeit of a less conscious kind.

THE BACKGROUND TO THE STUDY

In past studies of art-styles on metalwork there has been a more or less generally held assumption that the style of the art is actively conditioned by social rules. Implicit in the notion of art-style is the concept of the style having a canon which is defined by some unnamed authority, whether explicitly or not, and which is actively concerned in the carrying of meaning. In contrast, the technology of the artefact is considered as functional, the carrier of style and therefore implicitly passive. As mentioned above, it can be argued that structures of social behaviour can be read from art-style as text, as meaningful symbols. In this regard the technology that mediates these styles and the techniques by which they are realized are often seen as arbitrary or purely functional, and art-style is thus elevated above its technology. In an extreme and simple form, a brooch may be regarded as merely holding cloth together and its shape as developed from its functional usage over time, whereas the decoration on the brooch is contextually created and is a socially meaningful statement. Likewise the technologies with which people in the past made things are often seen as interesting in themselves but of little value in understanding the wider social context. Technology in historical periods is often unthinkingly seen from a positivist perspective, in terms of its continual development towards contemporary technologies. The conception of a unilinear process of historical technological development and the arbitrariness with which this

P. M. Graves-Brown, 'Fearful symmetry', World Archaeol., 27 (1) (1995), 88–99, at p. 95.
 I. Hodder, Reading the Past: Current Approaches to Interpretation in Archaeology (Cambridge, 1986).

development comes about contrasts sharply with the cognitive study of technologies in pre-historic periods.

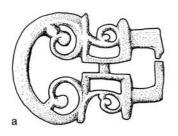
To academics studying historical periods, technology is seen as a science and is often left to be described by material scientists, whilst art history belongs to the humanities and is therefore the domain of the archaeologist. This split between art and technology has been traced to the cleavage between artist and artisan during the Industrial Revolution.5 Before this point the fissure was less clear-cut and the dichotomy was certainly unknown during the Anglo-Saxon period. It is important to reinvigorate our concept of the artisan as artist, and of technique as style. To do so is to reinvest technology with meaning and to avoid the sterile, positivist approach of technological determinism. Anthropology has recently begun to develop the concept of technology as an active social construct in the production of material culture. It is developing approaches in which technological use can be seen as formed around social behaviour and filled with social meaning. Technology is seen as a series of choices that are actively defined by social context. A recent example of this technological approach has led to the development of understanding of Gallic metalwork before and after the Roman Conquest, successfully concluding that new socio-technological systems were developed in response to the introduction of brass into the culture. It is with the ability of technological study to define a connection between social and technical development in mind that we can examine the development of the Quoit-brooch Style within a context of socially dynamic systems of behaviour. As I will seek to show, this is most appropriate for the study of the Quoit-brooch Style, a style that is more meaningfully defined by technology and technique than simply by decorative character.

THE TECHNICAL ANALYSIS

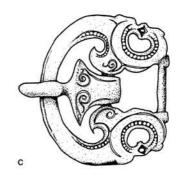
For this study a formal analysis was prepared to provide a set of data that could be used to examine how great a role technology played in creating the Quoitbrooch Style. This section will review the technical approach, initially with a typological assessment of the technology of the Quoit-brooch Style, followed by an examination of the principal decorative techniques. In collecting together the material to be studied, I have accepted the art-historical basis of the Quoit-brooch Style as a valid grouping for the initial examination. A caveat was applied, in that whilst objects may look alike, only analysis of the technology of production, its method and technique, can either confirm or disprove a close association. A selection of other Roman and Anglo-Saxon material was also studied to provide comparative data. All of the objects in the study were initially visually studied, then silicon rubber casts were made of the decorative details and subsequently examined under a scanning electron microscope.

Most of the group of the Quoit-brooch-style metalwork can be categorized either as brooches or as belt equipment, although there is also a small number of

Graves-Brown, op. cit. in note 3, 93.
 E. G. Hamilton, Technology and Social Change in Belgic Gaul: Copper Working at the Titelberg, Luxembourg, 125 B.C.— A.D. 300 (Philadelphia, 1996).







Twin-loop buckles: a. Bromham, Wilts.; b. Bifrons, Kent; c. Highdown, E. Sussex. Scale 1:1.

miscellaneous objects which are hard to define strictly. There are five main types of belt equipment: twin-loop buckles, fixed-plate buckles, chip-carved-style belt sets, miscellaneous belt fittings and D-shaped fittings. The brooches fall into three categories: quoit brooches, disc brooches and penannular brooches. Finally in the miscellaneous section are the pendants, a mount (possibly from a sword), and a decorated plate from Faversham. Typologically it is probable that the belt equipment represents the earliest forms. The attribution of some of the belt buckles to the Roman period seems to support this, although we must not overlook the possibility that the Quoit-brooch Style was a later revival of a Roman heritage as opposed to its contiguous development. Similarly, the lack of a cohesive understanding of the origin of the quoit-brooch form and of the typology of belt buckles, or the typology of the wide penannular-brooch form, all serve to obscure matters further.

THE BELT EQUIPMENT

Twin-loop buckles (Fig. 1)

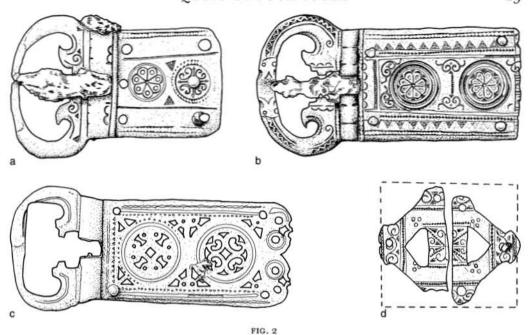
Typologically, the earliest belt-buckle forms are the two double-hinged buckles from Bifrons and Highdown grave 26 which make up Hawkes and Dunning's type IIC.7 Whilst there are no exact parallels to these buckles, typologically earlier Roman buckles with separate tongue- and plate-bars are fairly common both along the Continental Limes and in Britain and seem to have been manufactured using the same techniques.8 The beading on both the buckles is produced with the same engraved and punched technique as on Roman buckles.9 The animals and the spirals on both buckles are predominantly created from ring or crescent punchmarks in a similar technique to that on the type-1 buckles.

⁷ S. C. Hawkes and G. C. Dunning, 'Soldiers and Settlers in Britain, fourth to fifth century: with a catalogue of animal-ornamented buckles and related belt-fittings', Medieval Archaeol., 5 (1961), 1-70.

8 See J. von Oldenstein, 'Zur Ausrüstung römischer Auxiliareinheiten', Bericht der Römisch-Germanischen Kommission,

^{57 (1976),} Taf. 76.

9 Discussed in more detail in P. Inker, The Quoit-Brooch Style: an Analysis of the Punchmarks used and their



Fixed-plate buckles: a. Bishopstone, E. Sussex; b. Orpington, Gr. London, grave 51; c. Mitcham, Gr. London; d. Alfriston, E. Sussex, A/17. Scale 1:1.

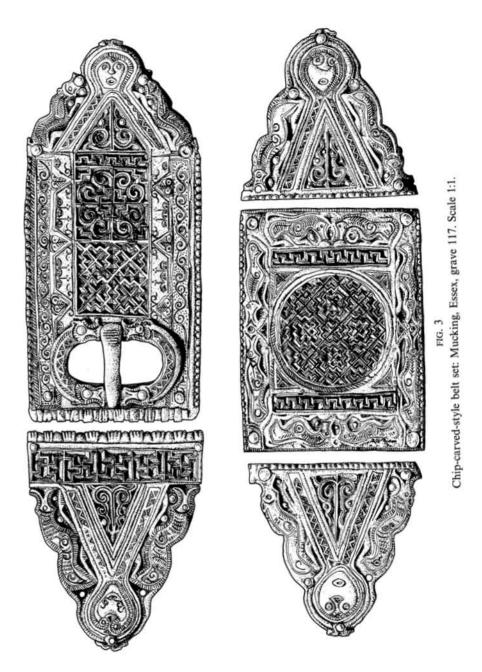
Fixed-plate buckles (Fig. 2)

The next group of buckles is made up of the Bishopstone, Mitcham and Orpington silver inlaid fixed plate buckles. This style of buckle is typical of the late 4th and early 5th century and probably marks a simplification of the casting process, a development also seen with Hawkes and Dunning's type-IIB buckles. The belt plates from Alfriston graves A and 17 may be cut down from a fixed-plate buckle, as their technique of decoration and pellet-in-triangle punchmarks indicate. Other buckles of this type without silver inlay come from Frilford, Amiens and northern France. Whilst these buckles are typologically similar to the Quoit-brooch-style buckles they do not have any of the Quoit-brooch-style techniques of pellet-in-triangle punchmarks or silver inlay, and it is credible that this type of buckle could have been made on both sides of the Channel. The punchmark techniques used on the Quoit-brooch-style fixed-plate buckles are the same as the twin-loop buckles, utilizing punched crescents and rings to make spirals and animals.

Chip-carved-style belt sets (Figs. 3-5)

The links to northern France identified with the fixed-plate buckles are also evident with the chip-carved-style belt sets. In this regard the belt set from Misèry

¹⁰ B. Ager, 'A late Roman buckle- or belt-plate in the British Museum, said to be from northern France', Medieval Archaeol., 40 (1996), 206–11.





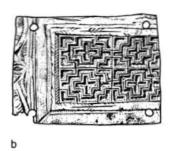




FIG. 4

Shallow chip-carved-style belt plates: a. Bishopstone, Bucks.; b. Howletts, Kent, grave 5; c. Howletts, Kent, grave 28. Scale 1:1

provides us with the Gallic counterpart to the silver plate, pellet-in-triangle punchmark and carved animal techniques found on Quoit-brooch-style pieces.
This region is also well known for its multi-part chip-carved-style belt sets, of which the Mucking grave 117 example is a copy in shallow chip-carving. We may also be able to add to this a recent find from Meonstoke and the Bishopstone (Bucks.), Howletts grave 5 and grave 28 plates which, like the Mucking set, have shallow chip-carving, originally enhanced with punchmarking and silver inlay.

The final group of belt sets seem to mimic later 5th-century buckles of a kind more exclusively found in Anglo-Saxon cemeteries. The set from Alfriston grave 17 is in a shallow chip-carved form, although the buckle is of a kidney shape, punchmarked in a similar pattern to the silver-inlaid iron buckles from Frankish/Merovingian Gaul. A similar piece from Morningthorpe has been attributed to the Quoit-brooch Style. The Highdown 34 example is manufactured in a similar way to the two belt buckles above with two separate straps of metal connecting the buckle to the plate/belt (Fig. 5b). The Highdown buckle is rectangular with a heart-shaped plate, similar to an Anglo-Saxon example from Bifrons grave 29 and imitates Frankish examples such as the garnet-inlaid example from Haillot grave xvi. 13

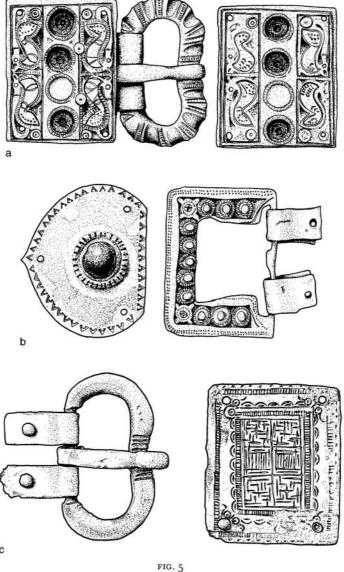
Other belt fittings (Fig. 6)

This group is made up of strap-ends from Chessell Down, Pewsey and Bifrons. Until recently the only parallel to the Chessell Down piece was the blank strap-end from Croydon. A new find from Pewsey, Wilts., mirrors the Chessell Down piece. The cross-hatched effect on the Chessell Down piece is similar to that on Hawkes's type-IB Roman buckles, as are the beaded outside edges of all the Quoit-broochstyle strap-ends. It is notable that the basic shape of Quoit-brooch-style strap-ends is a version of the type-IB buckles, namely a long strap of metal, decorated with punched and engraved lozenges, with its outside edges decorated with beading and

¹¹ V. I. Evison, The Fifth Century Invasions South of the Thames (London, 1965), 55-77, fig. 2.

¹² Ager, op. cit. in note 10, 208.

¹³ Evison op. cit. in note 11, fig. 7.4.



Shallow chip-carved-style belt sets: a. Alfristron, E. Sussex, grave 17; b. Highdown, E. Sussex, grave 34; c. Morningthorpe, Norfolk. Scale 1:11.

having two outward-facing horse heads at its top end. ¹⁴ Punch-decorated horse's heads of this type also occur on the chip-carved-style belt slide from Highdown grave 12. Whilst the technique of drilling and filing the mouths on the horse's heads on this object is typically Quoit-brooch-style, typologically it is very similar to the

¹⁴ Type-1B buckles are thought to have been worn on a shoulder strap, thus presenting a similar profile to the double horseheads on the Quoit-brooch-style strap-ends (Fig. 6).

belt slides in Continental chip-carved sets. 15 The Bifrons strap-end is more often matched in Anglo-Saxon graves, although its bull's-eye punchmarks are similar to those on type-IB belt buckles. 16 The two-piece construction of this object is typical of Anglo-Saxon lancet-shaped strap-ends of this type, whereas the Roman and Frankish types are single-piece castings with split ends for strap-attachment. 17 An interesting comparative piece comes from Great Chesterford, the construction of which is exactly the same as the Bifrons strap-end (without the punchmarks) and has been described as 'a rare example of an intermediate stage between Quoitbrooch style and style I'.18

D-shaped fittings (Fig. 7)

The D-shaped tubular fitting from Croydon is similar to the recent find of a less elaborate mount from Bowcombe Down, I.o.W. (Fig. 7). Single short tubes with cast decoration and without loops appear in Anglo-Saxon graves either individually or as part of a set such as at Chatham Lines. 19 Examples of Roman belt attachments are found on the *Limes* at Saalburg and a derivative from these Roman types, discovered in the same context as the tubes above (tumulus vi at Chatham Lines), re-inforces the connection of the Roman examples with the more elaborate Quoit-brooch-style versions.²⁰

THE BROOCHES

Disc brooches (Fig. 8)

The disc brooch is a common form in the Roman repertoire, and its use continued in English contexts throughout the Anglo-Saxon period. The disc brooch from Faversham continues the style of Roman brooches set with coloured stones and the Roman nature of this technique of cabochon setting has been commented on before.²¹ This type of setting was not used on the Faversham brooch; rather the stone is held under a riveted collar, and it is likely that this technique was also used on the Higham brooch. The clasp of the Faversham brooch is unique, although the use of a bar for a free running pin is similar to that on the Alfriston grave 43 penannular brooch. The clasp is attached by means of rivets which are punched with dots, in a similar way to Ager's type DI quoitbrooches.

Penannular brooches (Fig. 9)

The Quoit-brooch-style penannular brooches are unlike those typically found in either Roman or Anglo-Saxon contexts, although they show some similarities

H. Bullinger, Spätantike Gürtelbeschläge: Typen, Herstellung, Trageweise und Datierung (Brugge, 1969), esp. Taf. xvIII.1.
 Hawkes and Dunning, op. cit. in note 7, esp. figs. 14b and 15.
 Cf. the strap-end from Haillot, Belgium, grave 11, dated by Böhme to his Stufe III (now middle third of the 5th century): H.-W. Böhme, Germanische Grabfunde des 4. bis 5. Jahrhunderts zwischen unterer Elbe und Loire, 2 vols. (Munich,

^{1974), 83} and Taf. 91, 3.

18 V. I. Evison, An Anglo-Saxon Cemetery at Great Chesterford, Essex (CBA Res. Rep. 91, York, 1994), 20.

19 Evison op. cit. in note 11, figs. 23e-f and 24e; A. MacGregor and E. Bolick, A Summary Catalogue of the Anglo-Saxon Collections: Non-Ferrous Metals (BAR Brit. Ser. 230, Oxford, 1993), 164, fig. 25.12

20 See von Oldenstein, op. cit. in note 8, Taf. 73; MacGregor and Bolick, op. cit. in note 19, 214, fig. 36.16.

21 Hawkes, op. cit. in note 2, 59; Evison op. cit. in note 11, 49.

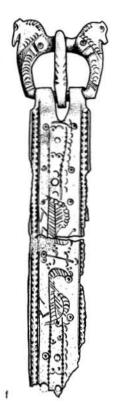














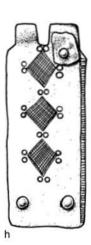
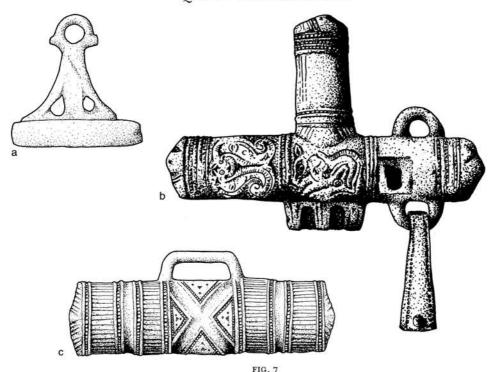
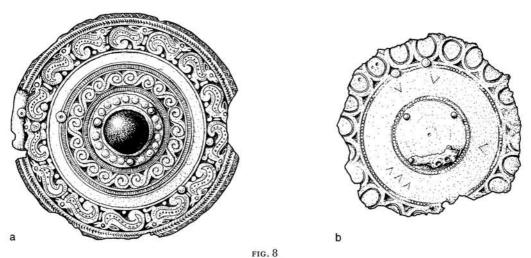


FIG. 6

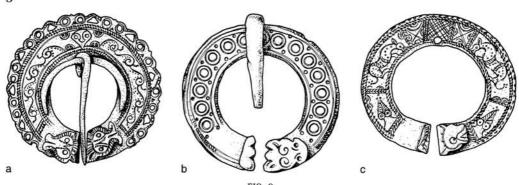
a. Strap-end: Bifrons, Kent; b. strap-end: Great Chesterfield, Essex; c. strap-end: Chessell Down, I.o.W.; d. strap-end: Pewsey, Wilts.; e. belt slide: Highdown, E. Sussex, grave 12; f. type-IB buckle: Stanwick, Yorks.; g. type-IB buckle: Cirencester, Glos.; h. type-IB buckle: Popham, Hants. Scale 1:1.



D-shaped fittings: a. Saalburg; b. Croydon, Gr. London; c. Bowcombe Down, I.o.W. Scale 1:1.



Disc brooches: a. Faversham, Kent; b. Higham, Kent. Scale 1:1.



Penannular brooches: a. Alfriston, E. Sussex, grave 43; b. Horton Kirby, Kent; c. Lyminge, Kent, grave 10.

with both Scandinavian wide-banded and late-Roman penannular brooches.²² At the moment, the lack of any direct predecessor for the Quoit-brooch-style penannular brooches may suggest the development of a new form of late-Roman penannular brooch which also accommodated the wide decorative band of annular Scandinavian forms. The pennanular brooch from Alfriston grave 43 uses the same method of construction with the addition of a loop to carry the pin, as the decorative border would not facilitate the free running action required of a pin. The broad band of the Horton Kirby brooch shows how the Lyminge brooch would have actually worked, prior to the damage sustained to the clasp, through which the pin may also have been lost. The subsequent addition of a hole for the pin to work matches the case of the Bénouville brooch closely, which also lost the use of its original mechanism through wear and tear.

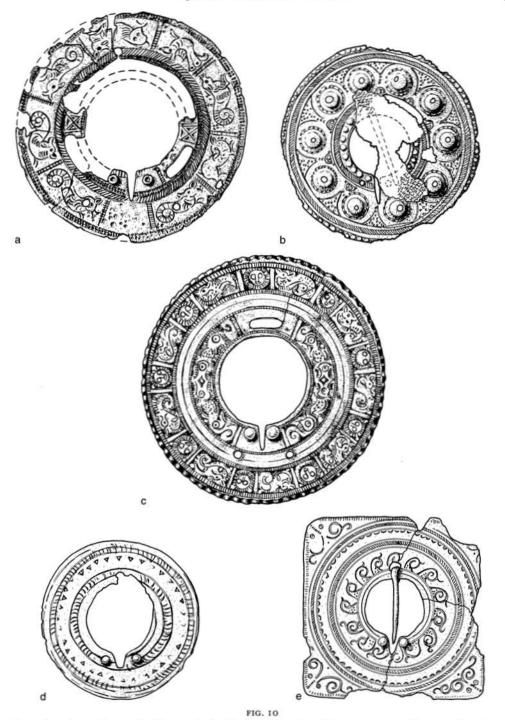
Quoit brooches (Figs. 10-11)

The origins of the quoit brooch are highly problematic, with suggested parallels ranging from Roman Noricum to Scandinavia.²³ What does seem certain is that the Quoit-brooch-style specimens represent the earliest form of the quoit brooch in Anglo-Saxon contexts. The techniques of manufacture found on the brooches from Sarre and Howletts grave 13 are so similar that they indicate manufacture in the same workshop, if not by the same person. The inner rings of both brooches have partially functional decorative penannular bands riveted to them, inviting comparison to the pin workings of the penannular brooches. The edges of both brooches also use a technique of folding the silver back on itself which is a miniature reproduction of the technique used on Roman silver plate such as that from Traprain.24

²² B. Ager, 'The smaller variants of the Anglo-Saxon Quoit brooch', Anglo-Saxon Stud. Archaeol. Hist. 4 (1985), 1-58, esp. pp. 5-8 and figs. 5-6; N. Crummy, The Roman Small Finds from Excavations in Colchester 1971-9 (Colchester, 1983), fig. 16.

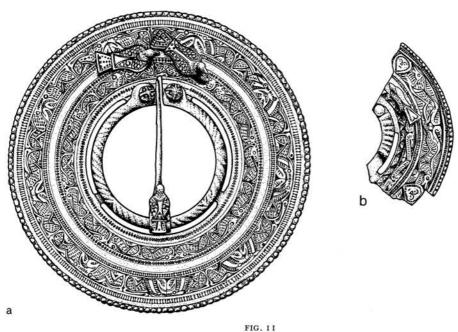
²³ A. Roes, 'Continental quoit-brooches', Antiq. 7, XLV, (1965), 18-21; von Oldenstein, op. cit. in note 8, Taf. 79.

²⁴ A. O. Curle, The Treasure of Traprain: A Scottish Hoard of Roman Silver Plate (Glasgow, 1923), 93.



Quoit brooches: a. Bénouville, Normandy; b. Charlton Plantation, Hants, grave 12; c. Howletts, Kent. Type-D1 quoit brooches: d. Mucking, Essex, grave 637; e. Highdown, E. Sussex, grave 60. Scale 1:1.

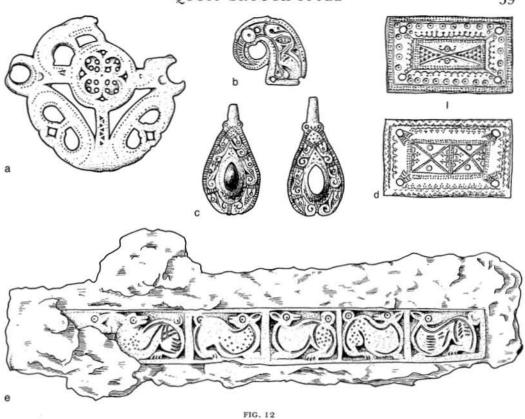
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Quoit brooches: a. Sarre, Kent; b. fragment, Howletts, Kent, grave 13. Scale 1:1.

The other brooch from Howletts, Ager's type c, has the same outer rim as the above but the pin slot is smaller and simplified, much more similar to Ager's type-D1 quoit brooches. Notably, the holes either side of the pin slot are of the same relative dimensions as the ones on the Sarre brooch that carry birds and so probably once held similar animals. Birds such as these are typically found on the ends of late-Roman pins of Cool's group 18.25 The distribution of this group of pins along the northern Kentish coast compares well with the distribution of Quoitbrooch-style brooches with bird fittings. The lack of other Germanic parallels and the difficulty of the technique used to create the edge of the quoit brooches from Sarre and Howletts makes it unlikely that they were copies of late-Roman techniques. Rather they were made by silversmiths trained in the late-Roman workshops of Britain. The copper-alloy brooch from Charlton Plantation is typical of Ager's type c although its slot is off-set to the left of the pin. The dished form of the brooch is more typical of the larger silver quoit brooches whilst the beaded outside edge is repoussé work rather than folded. The brooch from Highdown grave 60 is typologically the same as Ager's type-D1 quoit brooches, although highly elaborated. All of the known examples of Ager's type-DI brooches are much more simply punch-decorated and produced in copper alloy. One exception, the brooch from Mucking grave 637, is unusual in that it is manufactured from silver,

²⁵ H. E. M. Cool, 'Roman metal hair pins from southern Britain', *Archaeol. J.*, 147, (1990), 148–82, at p. 168 and fig. 11.1; B. W. Cunliffe (ed.), *Richborough V* (Oxford, 1968), pl. xLII.168–9.



Miscellaneous quoit-brooch-style objects: a. punch-decorated mount, Watchfield, Oxon.; b. shallow chip-carved mount, Lechlade, Glos., grave 123; c. shallow chip-carved pendants, Bifrons, Kent; d. punch-decorated belt plate, Faversham, Kent; e. shallow chip-carved mount, Kingsworthy, Hants. Scale 1:1.

and this, along with its pellet-in-triangle punchmarks seems to define it more readily as Quoit-brooch-style.

Miscellaneous objects (Fig. 12)

This category includes the pendants from Bifrons which combine a mounted stone with broad band decoration. This band is of no functional value and has been added to facilitate the display of the Quoit-brooch Style. The copper-alloy mount from Kingsworthy was cast in shallow relief and decorated with punchmarks. The Faversham belt plate is highly decorated with punchmarks on both sides but has little else to define it. The openwork pendants, from Bowcombe Down and the more recent find from Watchfield, seem to represent some form of pendant but are similarly lacking in a definitive function, as is the recent find of a small copper-alloy mount depicting a bird with Quoit-brooch-style decoration, from Lechlade.

THE PUNCHMARKS

As can be seen from the summary above, one of the predominant decorative features of the Quoit-brooch-style metalwork is its punchmarks. They are used for both simple geometric decoration and as a way of creating the more complex zoomorphic designs. A technical analysis of the punchmarks provides a useful platform for the technological analysis of art-styles advocated in this paper. Likewise it can also define, in formal terms, the intrinsic relationships within the collection where the analysis of artistic motifs has, in the past, proved all too subjective. In recent years there has been a number of analyses of punchmarks, the most successful using silicone rubber casts, subsequently studied under a scanning electron microscope. 26 It has been noted that the number of punchmarks contained on a piece of metalwork can prove to be too numerous to evaluate without a selective methodology. For example, the number of different punches used on a single Quoit-brooch-style object ranged between a minimum of three to seven. When multiplied by over thirty Quoit-brooch-style objects the volume is simply too large for a single researcher. Casts were therefore taken of a preliminary selection of those punchmarks with clear and distinctive forms, namely the pelletin-triangle, face-mask and multi-part triangle punchmarks. They tend to be used in a repetitive fashion, so it was possible to get a representative cast from most of the objects.

RESULTS OF THE ANALYSIS

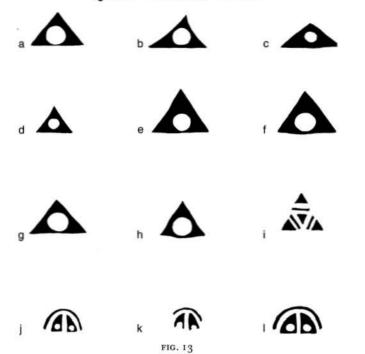
General ring, dot and line punch tools

The collection was initially examined to look for any usage of similar 'tool sets' and the minimum number of tools used on each object. Only two of the objects could be said to have used exactly the same number and type of tools in their manufacture, those being the pendants and strap-end from Bifrons. The analysis also showed that those objects with the triangle-on-line punch technique and triple-dot punchmarks were all beaded, suggesting a distinctive pattern in metalworking technique for some of the objects.

Pellet-in-triangle punchmarks (Fig. 13a-h)

By far the most common distinctively shaped punchmark was the pellet-intriangle. It was observed that the pellet-in-triangle punchmark had two main forms. Type 1 is an isosceles triangle, with the base longer than the other two sides (Fig. 13a). Type 2 is an isosceles triangle in which the third side is shorter and is concave (Fig. 13b). No pellet-in-triangle punchmarks could be said to be exactly alike. Two type-1 punchmarks do have the same outside dimensions, those on the Faversham plate (Fig. 13e) and the belt-set from Highdown grave 34 (Fig. 13f).

²⁶ B. Larsen, 'SEM-identification and documentation of tool marks and surface textures on the Gundestrup Cauldron', 393–410 in J. Black (ed), Recent Advances in Conservation and Analysis of Artefacts (London, 1987); P. R. Lowery, R. D. A. Savage and R. L. Wilkins, 'A technical study of the designs on the British mirror series', Archaeologia, cv (1975), 99–126; C. Mortimer, Decorative Punchmarks on Non-ferrous Artefacts from Barrington Edix Hill Anglo-Saxon Cemetery 1989–91, Cambridgeshire, in their Regional Context (Ancient Monuments Laboratory Rep., 62/96, London, 1996).



Diagrammatic representation of punch-tools used on quoit-broochstyle objects: a. Alfriston, E. Sussex, grave A; b. Bishopstone, E. Sussex; c. Bowcombe Down, I.o.W.; d. Chessell Down, I.o.W.; e. Faversham, Kent; f. Highdown, E. Sussex, grave 34; g. Mucking, Essex, grave 117; h-i. Orpington, Gr. London, grave 51; j. Charlton Plantation, Hants, grave 12; k. Mucking, Essex, grave 117; I. Alfriston, E. Sussex, grave 43, Scale 5:1.

However, the pellet size is different, and whether this reflects two different punch tools or re-drilling of a single punch is unclear at this stage. None of the type-2 punchmarks are the same although they do seem to appear on typologically the earliest pieces. At the time of the study the strap-end from Pewsey was unavailable for casting, but its type-2 punchmarks hold out some hope for another match.

Multi-part triangle punchmark (Fig. 13i)

The multi-part triangle on the belt buckle from Orpington grave 51 proved to be unique in the Quoit-brooch-style collection and also failed to match punchmarks from other metalwork.

Pair of eyes punchmark (Fig. 13j-l)

All of the examples of this punchmark so far have been found on Quoitbrooch-style metalwork, and as such it must be seen as a diagnostic feature of a Quoit-brooch-style workshop. Whilst there were only three examples of this punchmark, two provided a successful match. These were the annular brooch from Charlton plantation and the belt set from Mucking grave 117 (Figs. 13j-k and 14).

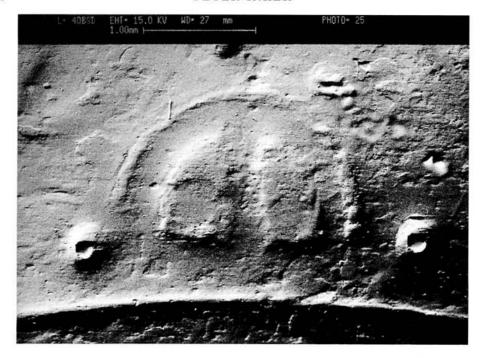




FIG. 14
Scanning electron micrographs of pair of eyes punchmarks: a. Chalton Plantation, Hants, grave 12; b. Mucking, Essex, grave 117. Scale 30:1.

It is important to note that the third punchmark was found to be distinctively larger than the other two and this may have been caused by the punching of this mark into the much softer silver of the penannular brooch from Alfriston grave 43 (Fig. 13l), although the size and shape of the mark makes this unlikely. The difference may indicate that separate workshops produced copper-alloy and silver metalwork.

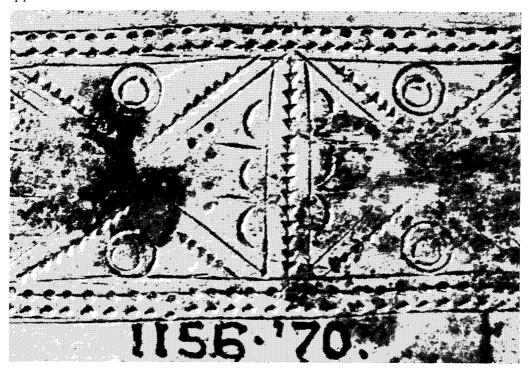
Other punchmarks

As was mentioned above, the study did not set out to examine all of the punchmarks used on the Quoit-brooch-style material, but only those with clear and distinctive features. One punchmark found on the Faversham plate (connected above to the Highdown belt set) was found to contain an anomalous notch in the ring mark left by the punch. This notch was found on a series of punchmarks and could only have been made by a ring-punch with a damaged tip. Exactly the same mark was found on the mount from Kingsworthy grave 50 (Fig. 15).

Punchmarked beading

Along with the decorative punchmarks mentioned above, the Quoit-broochstyle employed a method of double-dot punching in sequence to create the effect of filigree beading in two dimensions. This technique was used extensively on late Romano-British metalwork. On the Quoit-brooch-style metalwork the effect was usually used along the outside edges of the main decorative zones of the design and a range of methods were employed to produce it. The clearest form of this technique of beading was created on the buckles from Bifrons and Highdown, both of late-Roman form. On these buckles two parallel lines were engraved into the surface of the object and these served as construction lines for subsequent punching with a double-pronged punch. Accuracy has to be maintained in this method in order for the visual effect of beading to be achieved. Each punchmark needs to be the same distance from its neighbours. When done correctly, the engraving and punching raise an octagon of metal, which from a distance appears as a circular bead. This technique, examples of which are listed in the appendix, is clearly used on a number of Quoit-brooch-style objects, and I refer to it as deeply punched beading.

Not all of the results of this technique were as clear as those with deeply punched beading. There are examples on the Quoit-brooch-style metalwork that use this technique although the result is confused and lacks enough coherence to be 'read' as a row of beads. The effect seems to be one involving the copying of the technique, but lacking the mental image of the result as well as the use of construction lines. The concept of punching the surface of the object to reveal a bead has been lost and the result of the punchmark now seems to be the punch decoration itself. This second technique I have referred to as double-dot punching and the examples of Quoit-brooch-style metalwork on which it was used are also listed in the appendix. This technique is typical of Ager's type-DI quoit-brooches,



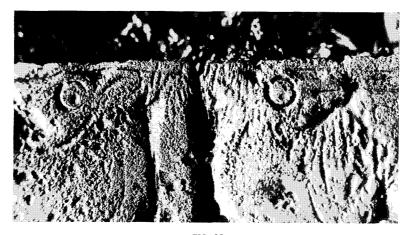


FIG. 15
Notched ring punchmarks: a. Faversham, Kent, belt plate; b. Kingsworthy, Hants, mount. Scale 7:1.

and he has suggested that it was used on all forms of punched metalwork from the mid-5th century. $^{27}\,$

In some cases, the spaces between the double-dot punchmarks are narrow and the concept of raising a bead is lost entirely. In these cases the punchmark is

²⁷ Ager, op. cit. in note 22, 8-10.

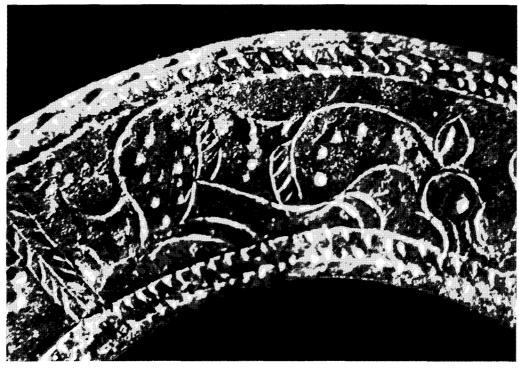


FIG. 16
Elongated double-dot punchmarks, Lyminge, Kent, grave 10. Scale 10:1.

decorative in its own right. Parallel or single construction lines are used in conjunction with this technique although these marks are punched at an angle to the line and are often elongated and connected by a thin line. This type of punchmark is typical of those found on the silver Quoit-brooch-style brooches. These I have referred to as elongated double-dot punchmarks (Fig. 16) and are listed in the appendix. It can be noted that this technique is used on the Sarre and Howletts brooches, although a ring punchmark technique is uniquely employed to create a beaded border in these cases.

Nicked punchmarks (Fig. 17)

Finally, one other punching technique was commonly used to decorate the Quoit-brooch-style metalwork. This used a very short punch tool of either straight or curved section to punch along scribed lines, producing a nicked effect. The use of this tool may partly have been intended to eliminate the time-consuming and technically difficult production of the shaped double-pronged punch tools. This form of punchmark is used alongside other forms of punchmark which produce a circular beaded effect and as such probably does not attempt to reproduce a filigree effect. This technique I have referred to as nicking and the examples are listed in

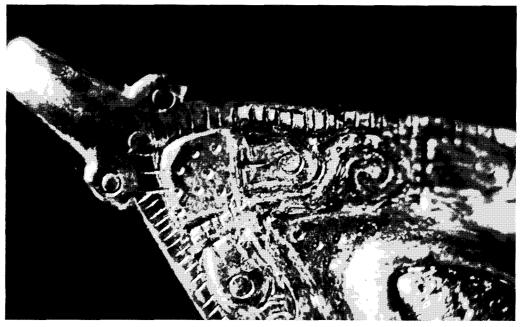


FIG. 17 Nicked punchmarks, Bifrons, Kent, pendant. Scale 10:1.

the appendix. The nicking technique was used on the borders of the Quoit-broochstyle metalwork and on the borders of the animals where it sometimes appears exclusively.

DISCUSSION

The complex derivation of the Quoit-brooch-style metalwork has always been evident in the arguments put forward in published studies. Although Brown was uncertain in establishing the Quoit-brooch Style's 'Roman or Barbaric' origins from the outset, the concept that Roman traditions could still dominate 'when Teutonic animal ornament had already begun to shape its wayward course' still resonates today.²⁸ Indeed, Baldwin Brown's comment is compatible with one of the most recent observations on the Quoit-brooch Style.²⁹ Interestingly Brown did not see the collection as a single art-style, designating most pieces as transitional. This point was elaborated by Aberg who differentiated between the spiralornamented provincial Roman motifs and the animal styles.³⁰ On the other hand,

 ²⁸ G. B. Brown, The Arts in Early England: Early Anglo-Saxon Art and Industry, 4 (Edinburgh, 1915), 564–5.
 ²⁹ L. Webster and P. Brown, The Transformation of the Roman World (London, 1997), 215: A derivative of Late Roman metalwork styles, it seems probable that it is an indigenous continuation of that tradition, produced for mixed successor populations after the withdrawal of Roman rule, and indicative of sustained interaction between Germanic and Romano-British cultures'.

30 N. Åberg, The Anglo-Saxons in England During the Centuries after the Invasion (Uppsala, 1926), 160-1.

Welch argued that the Quoit-brooch Style was principally zoomorphic and questioned the extent to which the non-zoomorphic artefacts might more correctly be considered to be products of late-Roman workshops rather than subsequent Quoit-brooch-style workshops.31 Both Hawkes's and Evison's work on the style focused on a single possible ethnic catalyst for the style and quoted similar material from entirely different contexts as its basis. What these works seem to have done is to confirm the wide range of influence that provincial Roman motifs had on northern European styles in late Antiquity. If we accept, as most scholars do, that metalwork motifs of the 5th century had their origins in late-Roman provincial art, then the route by which such motifs came to be applied to metalwork may be insecure. We must also accept that the Quoit-brooch Style was not simply an artstyle developed on brooches, but one that has a complex range of forms which are not related in any simple way. An attempt has been made by Suzuki to identify a structure to the art-style as a whole and while it has some success in defining rules for individual pieces, these cannot be applied to all the Quoit-brooch-style pieces.³² It is notable that no two animals from different Quoit-brooch-style objects are exactly alike as each employs a different technique in its construction; indeed even on the Sarre brooch similar animals are different in places (again the result of a change in technique). This suggests that methods of investigation other than simple art-historical analysis may be of further use in defining the association of the group of artefacts. In this regard the technology of the artefact and the technique of the decoration must be crucial.

The literature devoted to the Quoit-brooch Style also indicates that there is some confusion between the technology of the Quoit-brooch-style objects, their typological form, and the derivation of the motif used to decorate each object. For instance, both Ager and White disassociated the early forms of belt buckle from the Quoit-brooch Style because of their Roman typology, seeing only the later buckle forms and the brooches as truly Quoit-brooch-style and typologically Germanic, 33 The use of heavily punch-decorated belt sets seems to have become popular with the military on the Continent during the later half of the 4th century. In northern Gaul we see the best examples of the maker's art, and it is also here where we see the development of the elaborate chip-carved and silver-inlaid styles of belt set, where it has been suggested that these belt sets were in continual use into the first half of the 5th century. 34 We can also suppose that the Quoit-brooch-style examples are either a contemporary copy of these or a subsequent development of the technique in Britain. A similar and contemporaneous development in Scandinavia led to the Sösdala Style. 35 The similarities between the Quoit-brooch and Sösdala

³¹ M. Welch, Early Anglo-Saxon Sussex (BAR Brit. Ser., 112 (i), Oxford, 1983), 90.
32 I acknowledge with gratitude the fact that Professor Suzuki kindly made his work available for this study and that it is due for imminent publication. S. Suzuki, The Quoit-brooch Style and Anglo-Saxon Settlement: A Casting and Recasting of Cultural Identity Symbols (unpubl. M.A. thesis, 1998, University of York).

³³ Ager, op. cit. in note 22; R. White, Roman and Celtic Objects from Anglo-Saxon Graves (BAR Brit. Ser., 191, Oxford,

<sup>1988), 60-1.

34</sup> H.-W. Böhme, 'Das Ende der Römerherrschaft in Britannien und die angelsächsische Besiedlung Englands im Jarhundert', Jahrb. Römische-Germanischen Zentralmus., 33 (1986), 469–574.
 U. Lund Hansen, 'Kvarmløsefundet — en analyse af Sösdalastilen og dens forudsætninger', Arb. Nordisk

Oldkyndighed Hist., 1969, 63-102.

Styles have been noted although a brief comparison of the punchmarks used on both discounts any direct connection. This relationship between the Quoit-brooch Style and contemporary Germanic styles was noted previously by Bakka, although he accepted that the direction of influence between the Nydam and Quoit-brooch Styles could have gone in either direction. ³⁶ We should therefore see the outward similarities between the styles as emanating from the same root rather than as evidence for a specific connection between Britain and Scandinavia.

Bakka also made the point that the Quoit-brooch Style is one of essentially two-dimensional punching, engraving and shallow chip-carving, and that this form of decoration has its closest technical parallels in the milieu of late Roman Britain, as we might expect, and not in the deep chip-carved three-dimensional designs found on Gallic and Germanic metalwork. An examination of the finds from Britain reveals a series of pieces of late-Roman metalwork that not only have similar motifs to the Quoit-brooch Style but are also manufactured with the same technology and techniques. For example, the silver bracelets from the Hoxne treasure have carved main elements of the design and punched infill, a technique also found on the Quoit-brooch-style silver brooches. Similarly, the construction of the peacocks on the Hawkes and Dunning type-IB belt buckle from Stanwick uses the same technique of punching shapes into the surface of the copper alloy to build the body and feathers as the Quoit-brooch-style animals on the Lyminge and Bénouville quoit brooches. Whilst the actual designs differ in each of these examples, all are drawn from the Classical repertoire. It could be suggested that what the Quoit-brooch Style represents is a development of earlier Romano-British techniques and it is only the context of the deposition of the Quoit-brooch Style, in Anglo-Saxon grave contexts, that confuses its relationship with late-Roman material.

The wide diversity in appearance of the Quoit-brooch art-style and the lack of any canon of motif suggest that the stylistic homogeneity of the group was of less importance than its general association with pseudo-antique motifs. It has been suggested that the regular copying of late-Roman motifs in the 5th century means that similarity is not enough to show two objects are the product of the same workshop.³⁷ This is supported by the fact that some dissimilar Quoit-brooch-style objects utilize the same techniques of manufacture, such as the Kingsworthy mount and the Faversham belt-plates. There is also a difference in the techniques used on copper-alloy and silver versions of similar objects, and the mixing of silver and copper alloy on many of the Quoit-brooch-style objects may indicate there was some co-working of bronzesmiths with silversmiths, each smith bringing with them a different style and behaviour of working that can be identified on the metalwork, along with a different set of tools. The fact that the identifiably similar punchmarks were only found on objects manufactured from the same materials is notable in this regard. Dissimilarity between the majority of Quoit-brooch-style objects is not unique, as the same lack of correlation is also found in bodies of metalwork such as

Bakka, op. cit. in note 1, 13.
 B. Arrhenius, 'Technical properties as a discriminant in migration period jewellery', 1-19 in L. Webster (ed.),
 Aspects of Production and Style in Dark Age Metalwork (British Museum Occasional Paper, 34, London, 1982), 12.

the Sösdala-style metalwork. This dissimilarity in production can also be traced on different sections of larger and more complex artefacts such as the Gundestrup cauldron.³⁸ Similarly, the production process can dictate the form in which artstyles develop, for instance the use of flanges in the chip-carving style assists cooling and thereby reduces stress on the mould.³⁹ These material-sensitive techniques are used along with the limiting features of the shape and size of the object, and contribute greatly to the creation of motifs on the object. In these terms, the style of an object is not solely dictated by the requirements of artistic tradition and preference, but also by the technology and techniques of its production.

In the case of the Quoit-brooch Style, it is clear that punchmarks were very important in the production of the motifs. Although on some of the pieces punchmarks are dominant and are used to create the style, on other pieces they provide a secondary decorative device to enhance the relief in the chip-carving. Further to this, there is the practice of adding silver and glass inlays, and on these pieces the punchmarks play a more marginal role. In this regard it may be possible to understand the Quoit-brooch Style in terms of its 'constellation', that is the range of imagery, operations and tools that went into its production.⁴⁰ In replicating similar late-Roman motifs to its contemporary Germanic art-styles via a different technique, the Quoit-brooch Style appears anomalous and therefore unique. The lack of any consistent pattern of tool- or motif-usage may indicate that each piece of Quoit-brooch-style material was manufactured individually, and the quantity of production seems to be much smaller than that of either late-Roman or Anglo-Saxon comparative pieces. This suggestion must be tempered with the consideration that the Quoit-brooch-style material we have today may be an unrepresentative sample of what was originally produced. This is supported by an annoying but perhaps important feature of the Quoit-brooch-style finds, which is the lack of a coherent context. Much of the material has been poorly recorded (including the modern finds) and it may be more than co-incidence that its association with the Anglo-Saxon cemeteries is ephemeral, much the same as the Romano-British presence in the 5th century. It is the selective and non-accidental disposal of the Quoit-brooch-style material in a grave context that makes it seem so Anglo-Saxon. This pattern of deposition is mirrored by some forms of 'Celtic' metalwork. For example, the overwhelming majority of evidence for hanging bowls comes from Anglo-Saxon contexts. This similarity with the 'Celtic' material may be more than co-incidental and further support a Romano-British context of production for the Quoit-brooch Style's Romano-British techniques.

Equally problematic in contextual terms is the question of how long the Quoit-brooch Style was in use and why it ceased to be used. The Romano-British form of the belt sets and their Classical motifs place the origin of the Quoit-brooch Style in the early decades of the 5th century. In Grave 17 at Alfriston there is a strong indication of a chronological spread of manufacture and development of the Quoit-brooch Style. In this grave a well-used and re-cycled Quoit-brooch-style

³⁸ Larsen, op. cit. in note 26.

 ³⁹ B. Arrhenius, 'East Scandinavian Style 1 — a review', Medieval Archaeol., 17 (1973), 26–42.
 ⁴⁰ Cf. C. M. Keller and C. Dixon Keller, Cognition and Tool Use: The Blacksmith at Work (Cambridge, 1996), 89–107.

belt plate of typologically late-Roman form was found along with a typologically later belt set also with Quoit-brooch-style decoration. The implication is that there was a significant chronological gap between the pieces. There is nothing to connect the pieces with one another except their shared attribution to the Quoit-brooch Style. This may be supported by the dearth of punchmark correlation within the group as a whole mentioned above, which itself may have been the result of chronological differences. The differing typological forms and techniques of the Quoit-brooch style, combined with the 6th-century associations of some of the pieces, and the re-use, re-cycling and repair of many of the pieces, all suggest a longer period of development and usage of the style than is commonly suggested. 41 It is also notable that the earlier forms of the Quoit-brooch-style metalwork retain their silver inlay, whereas the later pieces have had some of their silver deliberately removed before burial. We may be able to connect this with the suggestion that there was a drop in supply of silver during the later half of the 5th century. 42 If we combine these factors with the introduction of a new typically Germanic art-style (Style I), the decline of identification with the Roman past and the emphasis of a Germanic heritage, it is possible that all the factors for the decline of the Quoitbrooch Style were in place by the end of the 5th century, with the last of the Quoitbrooch-style pieces making their way into grave assemblages during the early 6th century.

In all of the cases set out above we can see that the Quoit-brooch Style was not produced in a vacuum of cultural behaviour. The importance of technology and individual technique in the creation of the style clearly shows that the technology was not passive. The case for the 'active' role of technology in the manufacture of the Quoit-brooch Style would seem therefore much more evident. The appearance of an art-style in the archaeological record would seem to be dictated as much by its technique of manufacture as by its inventory of motifs. The technical differences within the Quoit-brooch-style corpus would also seem to be caused by the wide chronological spread and diverse contextual background to the production and usage of the metalwork in the group.

CONCLUSION

At the beginning of this paper it was suggested that technology is more than simply functional, and should rather be seen as a socially constructed 'style' in its own right. A purely art-historical approach to understanding the Quoit-broochstyle metalwork on its own has failed to develop our understanding of the Quoit-brooch Style in terms beyond that which had been recognized at the beginning of 20th century. It is accepted that the Quoit-brooch Style is the product of mixed sources that utilize provincial Roman motifs and that this is a trend shared with other, contemporary, Continental metalwork. These motifs are heavily influenced

J. Hines, 'Philology, archaeology and the adventus Saxonum vel Anglorum', 17-35 in A. Bammesberger and A. Wollman (eds.), Britain 400-600: Language and History (Heidelberg, 1990).
 D. Leigh, The Square-headed Brooches of Sixth-century Kent (unpubl. Ph.D. thesis, 1980, University of Wales, Cardiff), 180; Hawkes, op. cit. in note 2, 57.

by Roman punchmark techniques and production methods however. In the main the Quoit-brooch Style appears on elaborate or complex versions of existing forms. These forms, none of which are exclusively Germanic in origin, span the entire 5th century. Further to this we must accept that the metalworking techniques of even the most Germanic-looking of the Quoit-brooch-style objects, such as the Sarre brooch, are derived from a Romano-British technology.

The results of this analysis have served to show a divergent trend in the Quoitbrooch-style metalwork, away from any formalization of the style. I would suggest that this is the result of an active technological behaviour over time rather than unconscious reaction to circumstance. The technologies involved in the Quoitbrooch Style are the result of human choice made in a social context and not functionalist. The proposition that the roots of the Quoit-brooch Style, as previously thought, lie within the Roman metalwork of the late 4th century can be supported by the metalwork's technology and technique. The Quoit-brooch Style developed provincial Roman form and motifs in a limited and indigenous way, just as happened with the contemporary but independent Sösdala Style in Scandinavia. The forms of these objects were close to their Roman originals because of their sub-Romano-British context. During the mid-5th century the Quoit-brooch Style was developed through the use of new forms and techniques, during contact with incoming Germanic peoples. Subsequently, the requirement for the silver inlaid, Romanized, and possibly 'Antique' styles of metalwork that the Quoit-brooch Style embodied was superseded by newer Germanic material. The Quoit-brooch Style's range of typological form, technique and lack of punchmark correlation all make it probable that the material is not the product of one workshop, but represents the work of a number of different metalworking traditions over a considerable period within the 5th century.

In the wider sense this conclusion is at odds with the concept of 'Anglo-Saxon' metalworking in the 5th century, and of itinerant smiths in particular. If the Quoitbrooch Style was the product of a localized indigenous workshop or smith we might have expected a more coherent result from the investigation. It is plausible that late Roman metalworkers from differing metalworking backgrounds were patronized by the Romano-British 'tyrants' after the Roman withdrawal. This may go some way in explaining how such a variety of techniques were used in the Quoit-brooch Style. It is easy to understand how these workshops would have been readily adopted by an Anglo-Saxon elite taking control of areas of southern Britain and their manufacturing capabilities. It is also possible that these workshops not only produced metalwork in the Quoit-brooch art-style, but in other art-styles. Indeed it may be the case that the idea of a Quoit-brooch-style workshop is a false one and that it is actually the result of diverse workshops producing the same formulaic 'Antique' style. The prospects for this kind of technological study hold out a promise for connecting similar techniques used on differing typological objects in the future. By defining metalworking techniques across a range of other artefacts, we may be able to gauge the extent to which they are socio-technological entities and how metalworking was developed and controlled in wider terms during the settlement period.

APPENDIX

Quoit-brooch-style objects with deeply punched beading

Alfriston A belt plate, Alfriston 17 belt plate, Bishopstone belt plate, Bishopstone 12 belt plate, Highdown buckle, Highdown 12 strap slide, Orpington 51 belt plate, Pewsey strap-end.

Quoit-brooch-style objects with double-dot punchmarking

Alfriston 43 penannular brooch, Chessell Down strap-end, Faversham belt plate, Highdown 34 belt set, Highdown 60 quoit brooch.

Quoit-brooch-style objects with elongated double-dot punchmarking
Lyminge 10 penannular brooch, Howletts 13 quoit brooch, Sarre quoit brooch.

Quoit-brooch-style objects with nicked punchmarks

Alfriston 17 belt set, Bifrons pendants, Charlton Plantation quoit brooch, Faversham disc brooch, Higham disc brooch, Howletts quoit brooch, Mucking 117 belt set.