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Re-evaluating the Quoit Brooch Style: Economic and Cultural Transformations in the Fifth Century AD: with an updated catalogue of known QBS artefacts

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Quoit Brooch Style material, produced from the early 5th century onwards, has previously been considered mostly from a stylistic point of view, leaving much scope for further investigation. In addition, the known corpus of material has been much expanded through newly excavated and metal-detected finds. In this article, I bring together the known extant material for the first time, and document important evidence relating to contextual dating, gender associations, manufacture (including new compositional analysis of c 75 objects), repair, and reuse. The article questions previous interpretations of Quoit Brooch Style material relating to Germanic mercenaries and/or post-Romano-British political entities. It interprets the earliest material as part of wider trends elsewhere, in Britain and in Continental northwestern Europe, for the production of material imitating late Roman symbols of power. It presents new evidence for connectivity with Continental Europe via the western Channel route in the 5th century. A detailed investigation of individual artefacts shows that many Quoit Brooch Style objects were reused, sometimes being subjected to extensive repair and modification. This provides new insights into the 5th century metal economy, for instance, acute problems in the availability of new metal objects in southeastern Britain in the middle years of the 5th century. Compositional analysis contributes further to our understanding of metal supply in the 5th century and relationships with the post-Roman West. Insights are provided into wider cultural transformations in the 5th century and the gradual loss of value that occurred for Roman-style objects.

In the very early 5th century, there was a general collapse of production of many types of objects, and a sharp decline in surviving archaeological evidence. The Quoit Brooch Style (QBS), as an exception to this, is extremely important for our understanding of the period. QBS objects were produced from the early 5th century, and occur in 5th and 6th-century burial contexts. Previous scholarship has focused on stylistic questions, especially the origin of the style, proposed to be, variously, Gallo-Roman, Romano-British, Frankish, Anglo-Saxon, or more generically 'Germanic'.²

In recent literature, there appears to be a greater consensus that most QBS material was produced by the surviving Romano-British population in the 5th century, and was derived from Continental late Roman metalwork from northern Gaul. Yet it has also been accepted that some objects in the style are likely to have been worn by Germanic mercenaries, and that it was influenced in its later stages by Scandinavian metalwork, as argued by Ager.³ Production solely in Britain has also been questioned by further new finds of QBS artefacts in northern France (discussed further below).

In this article, firstly, I will explore the evidence provided by an expanded corpus of material. Scholars have documented a substantial number of new QBS objects since the publication of the last major study by Suzuki.⁴ Moreover, the principal publications that exist are selective in the material that they consider. Suzuki focuses on the zoomorphic component to the style; Ager's principal publications deal with the 'smaller variant' quoit brooch forms only.⁵ Inker deals principally with technological aspects.⁶ No-one since Evison has paid attention to the D-sectioned tubes that are, together with quoit brooches, the most frequently occurring object type associated with the style, and these objects have never been the subject of in-depth study.⁷ The last publication including all the known artefacts in the style dates from 1965.⁸ The original corpus included a large proportion of poorly recorded, often antiquarian material. Given new discoveries, from both modern excavations, and Portable Antiquities reporting, it is timely to bring together all the extant material, and to consider what the enhanced corpus can contribute to our overall understanding of the style, and of the 5th century transition period more widely.

Secondly, given the stylistic or technical focus of previous studies,⁹ there is a body of important evidence hitherto neglected. Since publications of the 1960s,¹⁰ grave contexts have only been examined for the 'smaller variant' quoit brooches.¹¹ New research on the dating of Anglo-Saxon material has made possible a re-evaluation of the dating evidence in some cases,¹² especially important given that many QBS objects are curated. Evidence of metal composition, use, repair, and modification has also not been considered in previous scholarship. It has been noted that some grave contexts for QBS artefacts are considerably later than the production date of the objects, and that many of the objects show signs of repair.¹³ This has been considered principally as a problem of dating, however, and evidence of reuse has not received any serious study in its own right. Following my work elsewhere

on reuse and recycling in late to post-Roman Britain,¹⁴ investigating this aspect of QBS metalwork will be an important part of this article. Compositional analysis of objects, which I have been able to undertake for c 75 items using pXRF, also sheds light on questions relating to production, repair and modification and the use of recycled metal.

Following an initial overview of the complete catalogue (Appendix 1), I will focus on the 5th-century material, briefly discussing the dating implications of the new evidence, followed by a more detailed examination of contextual data. I will then consider the evidence for manufacture, reuse, repair and modification of the 5th century material. Finally, I will assess the implications for our wider understanding of the late Roman to early Anglo-Saxon transition period, particularly the metal economy of Britain in the 5th century and the relationship between southeastern Britain and northern France. As we will see, previous interpretations of QBS material, which have been important to wider synthetic narratives of southern Britain in the 5th century, can also be questioned using this new evidence.

CORPUS OVERVIEW

167 QBS objects are included in the catalogue. The most numerous objects are quoit brooches, belt fittings, and D-sectioned tubes. Less common objects include plate brooches (mostly disc-shaped), penannular brooches, various forms of mounts (included unusual hooked plaques), bracelets, and pendants. Fig 1 illustrates typical object types.

Quoit brooches comprise a broad flat annular ring with a notch for the pin. Ager notes that the key difference between quoit brooches and annular brooches is the fastening mechanism, which for the quoit brooch requires a sideways movement of the pin, then lodged against stops of some kind. The slot for the hinge allows for pin movement. Annular brooches do not normally have a notch in the ring, or pin stops. The most important types of quoit brooches for the purposes of this article are those with dates in the 5th century, so Ager's smaller variant form D1, with a notch and pin stops (most c 40 mm in diameter), and the larger version with notch, pin stops, and zoomorphic decoration (diameter 60 mm upwards). Ager's other smaller variant forms are included in the appendix listing for completeness.¹⁵ Distinctive penannular brooches with QBS decoration also occur, which also have a broad flat ring.

Belt fittings include buckles, belt plates, and strap ends, of varied forms. Often the buckle and plate are cast in one piece. I have categorised tubes separately from belt fittings in this article, since, unlike the latter, they do not derive from late Roman Continental belt fittings (further discussed below and in Appendix 1). They are D-sectioned narrow tubes with a flat back and curved front, usually decorated with vertical bands of ribbing in panels, although occasionally undecorated, or featuring other types of decoration including zoomorphic QBS motifs. Most examples have either one or two pointed ends. A few also feature integrally cast suspension loops, lateral tubes, or stud fasteners on the back.

I list QBS objects (and principal references) in Appendix 1, together with reasons for the inclusion or exclusion of various debatable items. As noted by Inker, the QBS is not easily definable and comprises a loose clustering of particular object forms, decorative motifs, layout of decoration (for instance the organization of decoration in alternating plain and decorated panels, or paired zoomorphic motifs in rows), and decorative techniques such as shallow chip-carving, silver inlay and cabochon glass settings.¹⁶ Common motifs include 'winged' ring-and-dot motifs, tendril scrolls, pelleted triangles, 'fir-tree triangles', and zoomorphic motifs. Previous studies note that most of the decorative elements also occur independently on similarly dated material. Attribution to the style thus rests on an assessment of the combination of form, decorative motifs, and techniques of manufacture of each individual item, with reference to a chain of correspondences between different objects. The zoomorphic decoration of the QBS is more distinctive, although it is only the developed style with pairs of complete animals, documented in depth by Suzuki, which is unequivocal.¹⁷ The style also shows chronological development, and so the earliest and latest objects can be dissimilar in form and/or decoration.¹⁸

Features of the style are important to distinguish the objects from various types of Continental late Roman artefacts, but contemporaries will not have recognised the group as a whole as one entity. The developed zoomorphic style (easily recognisable, and with a narrower chronological and geographical range) may have been more meaningful as a category to its users. Since the QBS was first studied, we also have much more evidence relating to the continued production of regionalised belt fittings of late Roman style elsewhere in Britain in the late 4th to early 5th century, principally from metal-detected finds.¹⁹ The presence of Continental late Roman belt fittings of 5th century type in Britain is

also better-documented (see Fig 2 for examples of both Continental and Romano-British types).²⁰ It is therefore debatable to what extent QBS objects should be regarded as a special case among other near-contemporary metalwork styles extant in Britain and northern France (discussed further below).

OVERVIEW OF 5TH CENTURY MATERIAL

Of the 167 items in the catalogue, c 80 % are object types probably produced within the 5th century. These fall principally into four categories, quoit brooches with zoomorphic decoration, smaller variant quoit brooches of Ager's type D1, belt fittings, and D-sectioned tubes, with a scatter of less frequently occurring object types. Previous scholars have dated material stylistically, since for most, context is poorly recorded.²¹ Broadly, stylistic dating was proposed through comparisons with the objects QBS artefacts imitate. Manufacture of QBS belt fittings and strap slides has been suggested to have occurred mostly in the first half of the 5th century (shallow chip-carved examples slightly later, in the middle quarters of the 5th century), QBS brooches and other objects decorated in the developed zoomorphic QBS in the second half of the 5th century.²² QBS belt fittings appear to have a later date range than the regionalised British belt fittings mentioned above, since they do not occur on Roman sites, while other likely early 5th-century late Roman-style belt fittings, such as Hawkes and Dunning type IB (horsehead), have been found in late Roman contexts in Britain. Hawkes made this observation and it is still true more than fifty years later, so it appears unlikely new finds will alter the picture.²³ In the only detailed published catalogue of type IB buckles, Hawkes and Dunning list twelve from Roman sites,²⁴ with more examples having been subsequently recorded.²⁵ Hawkes and Dunning's catalogue also confirms that other insular types, identified by Laycock,²⁶ also occur on Roman sites. One distinctive feature distinguishing QBS belt fittings from other indigenous belt fittings, which also implies a separation in date, is that the former are much more likely to be decorated with silver.²⁷ Some imitative features also suggest a chronological separation from late Roman metalwork. For instance, the crenellated terminals of 'Pewsey' type strap ends (Fig 3a) imitate a type of late Roman Continental belt fitting in which two crenellated parts, perforated longitudinally, slotted together and were held in place by a separate hinge bar (Fig 3b).²⁸ In the case of the Pewsey type strap ends, the crenellated terminal is solid, wholly decorative, and cannot be hinged together with another piece. This stylistic copying, of what

was once a functional feature, implies both chronological drift, and a lack of familiarity with how the original objects were used.

We can add some observations on dating from further stylistic evaluation, especially with regard to object types that have not been subject to much previous attention. Three D-sectioned tubes are now extant which feature zoomorphic QBS ornament,²⁹ and one example (Fig 1c) shows the fully developed form of the style, suggesting that some tubes date to after AD 450 (to be further discussed below).

Since Suzuki's publication, Ager has identified a small number of bracelets decorated in QBS,³⁰ including two from the cemetery of Saint-Marcel in Brittany (France), with suggested dating in the middle quarters of the 5th century from their QBS decoration in general.³¹ Their decorative motifs are best paralleled in northern France, Belgium and the Rhineland. Here, a small group of bracelets exists with the same kinds of border designs. Like QBS bracelets, they are wider than the norm for late Roman bracelets.³² Another feature that some of these share with the Saint-Marcel bracelets is the way that the border frame is set in slightly from the bracelet edge, so the actual edge of the bracelet is plain and undecorated (Fig 4b) (see Appendix 1 for further discussion of other bracelet features and listing of examples). Most of these Continental late Roman bracelets have no context date, however, two examples from Krefeld-Gellep (Germany) were found in grave 1131 dated AD 400–450.³³ Stylistically, then, QBS bracelets appear to be among the earliest in the sequence of objects in the style and follow similar developments in other contemporary bracelet types.

The hooked mounts from the Saint-Marcel cemetery are a new kind of QBS object found so far only at this site. They are square or circular in form with hooks integral to the body of the plaque extending from each corner (Fig 5).³⁴ As Ager notes, they share motifs with both late Roman Continental metalwork and QBS belt fittings,³⁵ and so would appear stylistically to be of a similar date range to many QBS belt fittings, in the first half of the 5th century. See also discussion in Appendix.

Another new French find, from a 4th–6th century cemetery, comprises a penannular brooch from Rennes,³⁶ with animal head terminals similar to those on other QBS penannular brooches. A comparison of these terminals with a pair of animal heads on a Late Roman

Continental strap slide, from Furfooz grave 3 (Belgium),³⁷ makes it clear that this motif has been copied from such metalwork. This perhaps suggests production of QBS penannular brooches from the early 5th century. A further piece of evidence for an early date is the separately attached ring on the brooch from Rennes, which has moulded, beaded decoration of a type that also occurs on 4th century Romano-British bracelets.³⁸

CONTEXTS

CONTEXT DATING

I have gathered and evaluated dating evidence for the older material where possible. Dates given in earlier publications have been re-evaluated taking into account later scholarly research. Harrison and Welch suggest that 5th century dating evidence proposed by Evison is too early, for instance.³⁹ Table A comprises dating evidence for grave contexts containing QBS objects. In many instances, I have dated associated objects with reference to published literature, personal inspection, and available object drawings. Phasing given in the more up-to-date site reports has been included as it stands. Richardson has noted that QBS objects often occur in graves without any other objects, and that these poorly furnished graves are likely to be relatively early, of 5th-century date.⁴⁰ I have followed this approach here, but have listed these graves separately to more definite examples, which contain associated objects of 5th-century date (Table 1). Fig 6 shows trends in the context dating of some of the most commonly occurring object types, namely belt fittings, tubes, Ager's smaller variant quoit brooches of form D1, and bracelets. The chronological sequence proposed by previous scholars, mainly using stylistic dating, appears broadly correct, with belt fittings occurring more often in earlier contexts, and with comparatively few from 6th-century contexts. Quoit brooches of form D1 occur most often in contexts of the late 5th-early 6th centuries and they appear to be later products than belt fittings.⁴¹ Other types of brooches are not well represented in securely dated contexts. Context dates for penannular brooches are later than the date of production suggested through stylistic analysis, further discussed below.

Returning to Fig 6, the data for tubes is somewhat skewed by the large number, eight in total, appearing in a single grave at Chatham Lines (tumulus VI), see Table 1.⁴² The context information does, however, appear to confirm the evidence from stylistic analysis

(of zoomorphic decoration on tubes, see above) that these objects are relatively late in the series, probably mostly produced in the second half of the 5th century, and they are more likely than any other object form to be deposited in the 6th century.

OTHER CONTEXTUAL INFORMATION

It is evident from the data (see numerous examples in Table A) that QBS objects were usually worn at burial, and so formed part of a burial rite in which it was normal to bury the body fully dressed. Such a rite is ubiquitous in Anglo-Saxon England and in the adjacent area of Continental Europe. In the late Roman period it was more common to deposit dress accessories separately in the grave, but graves of very late date, at the end of the 4th and beginning of the 5th century, do often contain items worn at burial.⁴³ Such a rite is not therefore culturally distinctive in the 5th century. Beyond questions of dating and burial practice, contextual information allows us to examine two further topics, namely the function of D-sectioned tubes, and gender associations for QBS objects.

Function of D-sectioned tubes

The function of most QBS objects is well understood, and they were found in normal positions for these dress accessories, e.g. brooches pinned on the shoulders or breast (see Table A for some examples). It is worth examining, however, further information about D-sectioned tubes, neglected to date in the scholarly literature. Evison assumed that tubes were strap slides used on belts.⁴⁴ The width is typically less than c 1.5 cm, usable only on a very narrow strap. They are normally found in graves that also contain buckles (see examples in Table A), but since the latter are common grave finds in this period,⁴⁵ this is not especially significant. Buckles themselves can also be used in other places than on a belt. Most examples in which the position of the tubes was recorded list them as either in, or adjacent to, bag groups at the waist or pelvis area (see examples in Table A).⁴⁶ A few were found without obvious bag group material, mostly at the waist (Table A). Generally, only one occurs per grave, the exceptions being Charlton Plantation (Wiltshire) grave 40, with two found at the side of the waist, and tumulus VI at Chatham Lines where a large number were reportedly found around the waist. Bag groups normally contain an assortment of objects, often including much older items such as Roman coins, and thus the tubes found in this position could represent curated objects. A comparison of context dates with stylistic

evidence (see above), however, suggests that some deposition dates are contemporary to the production of the objects. In some cases, tubes are stated to be near or adjacent to bag groups, rather than being listed as part of putative bag contents. Two contexts in particular confirm that tubes were used with items suspended from the waist (they may have been confused with bag group contents because of this). Firstly, the site report describes a tube from Buckland Dover (Kent) as part of a chatelaine assemblage found at the left pelvis, from the position, strung with two other much shorter tubes, two iron lozenges and an iron strip. It contained textile/leather remains.⁴⁷ Secondly, when I examined a tube from Highdown (West Sussex),⁴⁸ I found it contained two mineralised cords. Almost the complete front surface of this tube is corroded to a group of iron objects (Fig 7). In this corroded mass, several iron suspension loops are visible at one end. This suggests vertical suspension of the assemblage originally, probably from the waist. The cords would then have extended from the bottom of the tube. Some other tubes also show evidence of iron corrosion on the outer surface or ends, and were also, apparently, worn adjacent to iron objects.⁴⁹ Those from Charlton Plantation grave 40, like the chatelaine assemblage from Buckland Dover, were found with an iron lozenge, and that from Alfriston (East Sussex) grave 14 with an iron purse ring (see Table A). The tube from Droxford originally contained a leather strip, which was removed during conservation in the British Museum.⁵⁰ A number of tubes have pointed ends with worn, grooved areas on either side of the point (Fig 8).⁵¹ We can suggest, from the example with mineralised cords extant, that cords were wrapped around the pointed end/s of these tubes, causing this wear pattern. A few tubes have separate cast loops projecting from one side,⁵² for tying cords to, or for object suspension. Unfortunately, none of these has associated grave assemblage details. We can conclude that tubes were not a kind of belt fitting, but were normally worn with items suspended from a belt, perhaps as bag fastening devices. This notably alters the cultural associations of the objects from the previously assumed late Roman, to objects influenced by Germanic culture,⁵³ which correlates with the late 5th century date range established above, a period when Germanic influence was more widespread in southern Britain.

Gender associations

We can consider gender for some artefact types (Fig 9), though gender associations mostly come from artefacts rather than physical anthropology. As Ager has observed, his

smaller variant quoit brooch forms are strongly associated with female graves. They were often worn in a pair at the shoulders in feminine costume.⁵⁴ Belt fittings occur more or less equally in male and female graves, with slight tendency towards male in the earlier graves and female in those of later date ranges (evident from examples in Table A). Grave associations appear to indicate that by the period of burial deposition, the 'Orpington' type of buckle had become associated with women (see Table A). Tubes show a definite association with female graves (although 8 examples come from a single, probably female, grave at Chatham Lines, 14 further examples also come from female graves (Table A documents those in datable graves). The occurrence of tubes in female graves tallies with a possible correlation with bags as noted above, which probably had feminine associations.⁵⁵ Penannular brooches all came from female graves, and positions at burial are quite variable (in addition to those in Table A, the brooch from Riseley (Kent), worn singly on the left shoulder, also came from a female grave).⁵⁶ Bracelets are mostly feminine, though a grave at Mucking containing bracelets (gr. 631) was sexed through physical anthropology as probably male. Other bracelets in this grave, apparently worn at burial, could indicate that the occupant was dressed in feminine costume.

These gender associations correspond to norms from the mid-5th century and later in which belt fittings occur with either sex, and brooches and bracelets are feminine artefact types.⁵⁷ Bracelets are also feminine artefacts in late Roman graves. Late Roman belt fittings (4th to early 5th century) by contrast are a masculine artefact type. The incidence of QBS belt fittings in female graves, rather than solely male ones, as would be expected in the late 4th and early 5th century, is notable. Curation of some of the objects apparently occurred, and so grave deposition may show secondary uses rather than use for the purpose for which they were originally made.⁵⁸ Before we analyse them further, therefore, it is important to consider the evidence for manufacture, repair and reuse.

MANUFACTURE, REUSE AND REPAIR

A large proportion of the earliest QBS objects show some evidence of reuse, or wear to the object implies long use. As discussed in scholarly literature, reuse behaviour is a complex, context-specific phenomenon with a variety of causes.⁵⁹ We have to consider both the value of the object's materials, and the value of the object as an extant item (for instance its normal use within a culture). Recycling of materials was a normal part of life in

antiquity, but became more intensive in particular circumstances. Reuse, or extended use-life, may have occurred because new objects or materials, or access to technology, became scarce (scarcity value), or because extant objects were particularly valued irrespective of the wider availability of material culture of similar forms (culturally, for instance, or because of personal associations that the object may have had). The type of reuse may assist us in elucidating the changing value attributed to the object. Recycling through melting, collection of scrap, or the cutting up of objects (e.g. hacksilver) implies the objects were valued mainly as raw materials. Conversely, careful repairs of an object's extant form shows a continuing value and use for that object in itself, whether practical or sentimental in motivation. The modification of one object type into another can be more various in motive. Sometimes parts of the older object are prominently displayed, used decoratively, and so a continuing value is maintained for the original item. In other instances, modification to a new use makes an object unrecognisable, and it is treated as a material only. The modification of a broken object will also have different implications from the destruction of one that was formerly intact. Scarcity value for objects can arise for a number of reasons. It can occur because of a general shortage of objects or raw materials caused by wider economic problems, or because of local conditions at a particular site (e.g. lack of access to markets). It can also arise from the circumstances of a particular socioeconomic group within a site, for instance the poorest members of a community might have no access to new items, and so might rely on the acquisition of material discarded by others.⁶⁰ In evaluating evidence for reuse in QBS material, therefore, we must consider the various possible contexts for reuse behaviour.

In the immediate post-Roman collapse period, I have previously documented reuse of copper alloy objects without remelting, i.e., by adapting or repairing extant objects such as bracelets and penannular brooches.⁶¹ Given the concurrent political and economic collapse in Britain, I saw this as reuse prompted by scarcity. New objects, and also the technology and materials to make them became difficult to access. The continuing reuse of Roman-style objects also showed an attempt to maintain Romano-British cultural values in a period of disruption and change. By contrast, a study of reuse in Anglo-Saxon brooches found that the earliest dating brooches (late 5th century) had little evidence of repair.⁶²

Late Roman and early Anglo-Saxon scholars have documented the wider circumstances of metals availability and use in the 5th century. They generally accept that shortages of metal were already occurring in the late Roman period in Britain, based on evidence from the composition of 4th century objects, collection and hoarding of scrap, sometimes in proximity to metal working activity, and practices such as the production of hacksilver.⁶³ Compositional studies show that in the late Roman period the use of mixed alloys such as gunmetals was increasing, and that brass was no longer produced (c 4 % of 4th century objects from Britain are made of brass).⁶⁴ This pattern appears to have continued in the 5th century, with copper alloy metal production agreed to be heavily dependent on the recycling of extant Roman objects.⁶⁵ Wider economic collapse would have severely affected metal supply in the early decades of the 5th century.⁶⁶ Opinions vary as to the availability of fresh metal in the early Anglo-Saxon period, although all agree that zinc, and so fresh brass, could not be produced until the later Anglo-Saxon period.⁶⁷ Silver and gold are thought to have been very limited in availability, since objects are rarely made from solid precious materials, and gilding or silver inlay/silvering is used instead.⁶⁸ Fleming states that there is no evidence of fresh copper sourcing, disputed by others who suggest trade contacts with areas of Continental Europe or with the Romano-Celtic areas of southwestern Britain. Based on evidence from analysing tin levels in radio-carbon dated peat deposits in tin-producing areas, mining and production of tin is thought to have continued in southwestern Britain following the Roman collapse, but at low levels.⁶⁹ The presence of tinning on 5th century brooch types, and a very small percentage of objects made from copper only (from compositional analysis), does suggest some availability of freshly smelted metals.⁷⁰ From studies modelling the types of source materials that would result in the compositions extant in early Anglo-Saxon objects, scholars suggest use of fresh bronze together with scrap.⁷¹ Yet careful sorting and selection of scrap by colour could also achieve compositional control.⁷² Whatever the exact process, there is certainly evidence that metalworkers were able to produce particular object types in chosen alloys. This was more frequent in the 5th century than the 6th, although data generally relates to the second half of the 5th century, since earlier 5th-century objects from Britain are very scarce. Baker shows, for instance, that small-long brooches (date range c AD 450–530) are mainly bronze.⁷³ Early forms of cruciform brooches, and those found at Highdown cemetery, predominantly occur in bronze.⁷⁴ Baker also sampled six 'smaller variant' quoit brooches of

6th century date (Ager type D3), half of which were found to be bronze, with the others mixed alloys with more tin than zinc.⁷⁵ Alongside this, many objects, however, are made from very mixed alloys containing copper, tin, zinc, and lead.⁷⁶

COMPOSITIONAL ANALYSIS OF METALS USED FOR QBS OBJECTS

I undertook non-invasive surface analysis of the uncleaned metal surface for 73 objects using a Niton XL3T portable X-ray fluorescence analyser (Appendix 2). Problems with surface analysis can occur due to corrosion products, which mean that the composition of the metal surface may not accurately reflect the object's original composition. In particular, elements such as tin and lead may accumulate at the surface and so be overrepresented in the analysis.⁷⁷ However, if the metal surfaces are in good condition with no oxidation, a good level of accuracy can be obtained.⁷⁸ A study of Bronze Age, Roman and Anglo-Saxon objects from Highdown (one of the most prolific sites as regards QBS objects), comparing surface composition to the bulk alloy, found a good correspondence between the two except for heavily leaded items.⁷⁹ The majority of the QBS objects were well preserved with good metallic surfaces, and so the metal analysis results (details in Appendix 2) are likely to be reliable. Some of the objects analysed, however, showed notable levels of corrosion, with a green oxidised surface (noted in Appendix 2). I took particular care to sample multiple areas on the object surface in these cases, to evaluate problems caused by corrosion products. The overall results are treated qualitatively, as recommended by previous scholars when analysis of uncleaned surfaces by XRF is undertaken,⁸⁰ so categorising the objects within broad alloy types only rather than giving a quantitative compositional breakdown. In the cases where a good metallic surface was preserved, and so a semi-quantitative result is possible, further aspects of composition felt to be significant are noted. A few objects had been previously analysed, and these results and references to them are clearly indicated in Appendix 2.

This work established clear distinctions in use of copper alloys in different types of QBS objects. Bronze or leaded bronze was, almost invariably, used for 'smaller variant' quoit brooches of type D1, mostly made in the Sussex/Hampshire area. The use of this material correlates with the production of other types of 5th-century brooches in bronze from the same area (see above). One of the exceptions, from Riseley in Kent, is made from brass.⁸¹ On close examination, this brooch is the only example of a D1 brooch with a long hinge slot

(more akin to Kentish-produced zoomorphic quoit brooches, which also have long hinge slots), than to the rest of the D1 form, implying manufacture in Kent. The other D1 brooch containing zinc, from Highdown,⁸² is copper/brass, with a very high percentage of copper (92 %). Seven type D1 brooches also have a tinned front surface, confirmed for some examples through metal analysis (Appendix 2). The combined evidence suggests that the workshop responsible for the production of the majority of these brooches had access to fresh metal supplies.

Belt fittings and tubes occur in a wide range of compositions, including bronze, brass, and more mixed alloys, containing significant percentages of both tin and zinc. They are frequently leaded. This range of compositions and frequent presence of quaternary alloys is consistent with the source material predominantly being recycled objects.

Evaluation of objects (in good condition) with stylistically matching pieces showed that the constituent parts were not always made from the same alloy (e.g. the belt set from Alfriston grave 17).⁸³ Use of differing alloys within the components of one belt set more generally cannot be used, therefore, as evidence of the reuse of separate pieces. In a number of cases, brass or a mixed alloy containing zinc was used for the principal part of an object, and bronze was used for areas not on display such as back plates, pin catches, added strips, and the like.⁸⁴ The belt set in Alfriston grave 17 used nearly pure copper for the linking strips attached to the buckle frame. This is evidence of deliberate selection of materials, and perhaps, a lower value for copper and bronze. Brasses and gunmetals may have been valued for their technical properties, or for their appearance. Baker suggests, for instance, that brassy-looking metals were favoured in the early Anglo-Saxon period because of their resemblance to gold.⁸⁵

The (semi-quantitative) analysis of the silver objects showed that their composition does not match that of late Roman silver plate or *siliquae* (Appendix 2). Generally, the silver content is lower, and all but the Sarre brooch contained tin, not found in late Roman silver.⁸⁶ The compositions were more similar to Anglo-Saxon silver square-headed brooches, which do contain tin, or to 5th century Pictish objects.⁸⁷ Very thin silver sheet was used for the silver objects, in most cases 1 mm or less. The objects are probably composed of recycled Roman silver, since this was the main silver source in this period,⁸⁸ but with the addition of copper alloys that lowered the purity of the silver.

REPAIRED AND WORN OBJECTS

Orpington type buckles

Each of the five 'Orpington' type buckles shows signs of long use. Two of them are complete, those from Mitcham (Surrey) and Newport (Hampshire),⁸⁹ and show the typical dimensions of the form, with long narrow plates. Each of these has a rivet hole in each corner, with six other decorative holes drilled at the end of the plate to give the effect of openwork. In both cases, the tongue is missing, and only one rivet survives, in the Mitcham plate. The front and back surfaces of the Newport plate are very worn (from personal inspection).⁹⁰ From the photograph in Suzuki's publication,⁹¹ there is wear to the buckle frame of the Mitcham example at the inner corners, and two points at each inner corner are much thinner than the rest of the frame. From personal inspection, this is also the case for the Frilford buckle (Oxfordshire), which additionally is missing its plate.⁹² The remaining items show both wear and other modifications.

For the Orpington buckle (Kent) (Fig 10a), detailed published descriptions exist, including a drawing of both sides.⁹³ The tongue, of iron, is likely to be a replacement since late Roman belt fittings, from which these items closely derive, usually have a tongue of matching material.⁹⁴ From details of the decoration, visible on personal inspection and in photographs and described in observations by Tester, and Evison, it is clear that the buckle has been cut down. Evison notes that 'the plate has been cut off through the pattern and finished off with faint moulding'.⁹⁵ This is also evident from a comparison of the surviving length with the length of the complete buckles of this form described above. The two rivet holes closest to the buckle frame do not align with the rivet holes at the end of the buckle, and would have been added after cutting it down, together with two strips of metal which have been riveted to the back.⁹⁶

The location of the belt set from grave 12 at Bishopstone (East Sussex) is currently unknown (Fig 10b), however, detailed descriptions and photographs are available.⁹⁷ The tongue has been replaced with an iron one, and the frame of the buckle is worn very thin in the centre. From comparisons with the other extant buckles of the same type, above, the plate has been severely cut down and is now very short. The two rivet holes at the end of the buckle are larger than the surviving original ones next to the buckle frame. Two extra

rivet holes have also been punched through the central decorated panel, which do not appear to be decorative as Evison suggests,⁹⁸ since one hole looks worn out of shape. Welch notes that the buckle is heavily worn.⁹⁹

The grave context of the Mitcham buckle (see Table A), which was complete, suggests deposition within the 5th century, perhaps even its first half. This correlates with stylistic evidence for a date for manufacture for this type of buckle earlier in the sequence, discussed for instance by Inker.¹⁰⁰ Deposition of cut-down examples was late 5th to early 6th, from the context dates currently available (Table A). Both the context dating, and evidence of modification, make it clear that the other buckles in this group had a greatly extended life span.

Other cut-down belt fittings

The belt plate from Howletts (Kent),¹⁰¹ grave 5 (Fig 11) is clearly heavily cut down from a larger plate, with the edges of the plate cutting through the decorative borders of the piece, and new rivet holes added. It was probably originally of the same type as the Mucking belt set from grave 117.¹⁰²

The belt set from Mucking (Essex) grave 823 (Fig 12a),¹⁰³ was originally the same type as that from Pont-de-Buis-lès-Quimerch (France) (Fig 12b),¹⁰⁴ with rectangular plate matching the rectangular buckle, but appears to have been trimmed to a kidney shaped plate so that it looks more like other kidney shaped belt plates, which were current from the mid-to-late 5th century.¹⁰⁵

Penannular brooches

The three penannular brooches from Britain all show evidence of long use,¹⁰⁶ and in each case, the wear patterns are the same, confirming that they have occurred through habitual fastening of the brooch with the pin on the same side, probably by right-handed users. Positioning the brooches with the break in the ring at the bottom, in each case the left-hand terminal is broken off. The right-hand terminal of the brooch from Lyminge (Kent) is also broken off, but from the initial drawing, it appears to have been attached at the time of excavation.¹⁰⁷ For each example, lodging the pin against the terminal has caused the already thin material of the brooch (e.g. Alfriston brooch, 0.76 mm thick) to wear through at

the point of contact, and so a break has occurred. Warhurst notes that the break on the Lyminge brooch is patinated and worn smooth, also visible from personal inspection of the Riseley brooch.¹⁰⁸ Additionally, since in two cases (Rennes and Alfriston) the pin and ring both comprise the same material, the iron pin of the Riseley brooch is probably a repair. This evidence of long use explains the discrepancy, above, between stylistic dates for penannulars (probably early 5th century), and context dates of late 5th to mid-6th century, see Table A.

Other evidence of long use

A number of other items also show significant wear indicating long use.¹⁰⁹ The belt plate from Bishopstone (Bucks)¹¹⁰ would originally have belonged to a set comprising several pieces, as shown by the Pont-de-Buis set (Fig 12b).¹¹¹ The rivet holes at one end are larger than they are at the other, probably from wear. The disc from Bowcombe Down (Hampshire)¹¹² has been trimmed in a straight line, which shows subsequent wear to the edge. Wear to the decoration, and peripheral slots or loops, is also evident. One of the zoomorphic quoit brooches, from Howletts grave 13, may be a hacksilver item.¹¹³

We can split Quoit brooches of type D1, in which the pin survives, evenly into examples with copper alloy pins and those with iron pins. Those with iron pins are found in contexts with a later date range than those with copper alloy pins (see Table A), which could indicate that the pins are replacements for the original copper alloy pins. However, the evidence of surviving pins suggests that 6th-century copper alloy quoit brooches (forms D2 and D3) universally use iron for the pin material.¹¹⁴ Quoit brooches of type D1 were also mostly deposited in good condition. It would therefore appear that the use of iron for brooch pins is a chronological trend and is not evidence of repair.

More extensively modified objects

Alfriston Grave A/17 belt

This object is heavily modified, what was originally a square or nearly square belt plate with geometric and tendril-scroll decoration has been cut into two separate triangular plates, each found in a different grave at Alfriston (Fig 13 shows the example from grave

A).¹¹⁵ One is now missing, but Evison illustrates drawings of both items, and their likely original configuration.¹¹⁶ Each plate was modified in form, cut out in the centre, and what was originally the back was decorated with simpler decoration, consisting of cross-hatched framing borders, and ball-and-triangle stamps at the corners of the inner triangle. We can see from the extant rivets, together with the way the decoration is cut through on one side, that the less decorated side was the front side when the plate was buried.

Evison suggests, from the presence of ball-in-triangle stamps on both sides of the plate, that the craft worker reused a plate from their own workshop.¹¹⁷ The stamp is not identical on both sides, however, being larger on the less decorated side. We can say only that the same stamp design was still current at the time of manufacture, and so there is not likely to have been a long interval of time between production of the two objects. When we compare them with the other belt fittings found in these graves, neither plate seems to belong to these. A similar short triangular plate with a cut-out centre was found in grave 95 at Highdown, although this has not been classified as a QBS item.¹¹⁸ Another comparator is a triangular buckle plate from a mid-to-late 5th century grave at Vron (France) on the channel coast, which has decoration only around the edges of the plate, though in this case the centre is not cut out.¹¹⁹ In the case of the Alfriston items, the dramatic remodelling of the plate (as opposed to trimming the plate down and reusing the extant decoration, as we see in some other QBS belt fittings, above), implies that the original item, with the late Roman connotations of its stamped geometric and tendril decoration, was no longer valued in any way. Apparently, the maker did not have the capacity to melt it down and make a wholly new object. Grave A contained ivory fragments, suggesting the occupant was not impoverished. The dates of the graves (Table A), likely stylistic date of the triangular form of plate, and use of ball-in-triangle stamp on both sides, imply that the whole process took place within the 5th century.

Faversham (Kent) double-sided belt plate

This belt plate (Fig 14),¹²⁰ also appears to be a reused item, since decorating both sides is clearly redundant in a belt plate meant to be riveted to a leather surface. One side is slightly more worn than the other, and on this side, the four rivet holes are punched through the decoration (corner motifs of fir-tree triangles), while on the other side, they avoid the decoration (a border pattern of circle and dot motifs), showing that the less worn

side was displayed when the object was in its final form. In this case, the decoration on both sides is quite similar, geometric designs derived from late Roman belt fittings.

Worthy Park (Hampshire) Grave 41 belt

The belt plate (Fig 15),¹²¹ has been cut down from a larger plate (the decoration is continuous to the edge of the plate and cut off by it, and one end is cut more squarely than the other). There are six rivet holes (one still containing a rivet), all placed within the decorative field, and some poorly aligned. The bottom right-hand hole is larger, probably caused by wear. A glass setting has been inserted in the centre of the plate. This appears not to be an original feature since it is not symmetrical within the decoration, and erases the edge of some stamped and engraved motifs. Unlike the previous examples, the modification continues to display the original decorated outer surface of the plate and so this appears to have still been valued. The stamped and punched decoration places the original item earlier in the series of quoit brooch objects, while glass settings occur on the later objects, with zoomorphic decoration, the closest parallel in this instance being the Alfriston belt plate from grave 17. The object would thus appear to have been produced in the earlier part of the 5th century, and modified in the later 5th to bring it into line with decorative trends at that time, then being deposited in a grave of late 5th to early 6th century date (see Table A).

Highdown Grave 34 belt

This belt set comprises a rectangular buckle frame with two straps looped around the hinge side, and a separate heart-shaped belt plate (Fig 16).¹²² The holes on the straps and belt plate do not align, and so the buckle and plate were attached separately to the belt rather than connected to each other (as in the QBS belt set from Morning Thorpe (Norfolk), which featured similar straps, clearly attached directly to the belt since they contained leather).¹²³ The individual Highdown belt set pieces have different metal compositions, but so do other belt sets consisting of well-matched items, see above, so this is not significant. On personal inspection, the pieces are mismatched. The rectangular buckle frame is solid with a flat back, and shows wear, and metal analysis shows no evidence of gilding. The heart-shaped buckle plate has a recessed back, it was originally gilded (traces of gilding remain, confirmed by metal analysis), and it has a cabochon setting. Both pieces have stamped decoration, the frame is heavily decorated, and the plate has only border stamps

with a plain area in between. Each piece also uses different motifs, and the stamps on the plate are larger than those on the frame. Heart-shaped belt plates from Anglo-Saxon cemeteries usually occur with oval or D-shaped buckles, not rectangular ones.¹²⁴ Considering the buckle frame more closely, the rounded outer corners, and cut-out interior, which is not rectangular, are distinctive and clearly links the frame to two other rectangular QBS buckles (see above, Fig 12).¹²⁵ In both instances, these buckles occur with matching belt plates of quite different style and form to those of the heart-shaped belt plate in Highdown grave 34. The use of shallow chip-carving has been dated stylistically to middle quarters of the 5th century (see above), while cabochon glass settings are associated with the latest QBS objects in the series, with developed zoomorphic animal style, such as the Faversham disc brooch, and so late-to-end 5th century in date. The context dating evidence for the relevant graves is slight, but appears to point in the same direction (Table A). The buckle frame and belt plate from Highdown thus show chronological divergence within the 5th century, but manufacture could have occurred within the lifespan of one individual.

Plate brooches

The Quoit brooch corpus includes four plate brooches, one of which, from Howletts,¹²⁶ previous scholars have recognised as a modified object. It consists of a belt plate converted into a square plate brooch.¹²⁷ Personal examination of all four plate brooches, however, makes clear that none of these items were originally brooches. The principal evidence for this consists of the attachment method of the pin mechanism. In both the Roman and early medieval periods, brooches were fastened onto clothing with a pin attached by means of a catch plate, which is invariably an integral cast component of the brooch. Much more rarely, a separate catch plate is soldered onto the back of the brooch. In either case, the front of the brooch remains intact and the fixing of the catch plate is not visible.¹²⁸ None of the QBS plate brooches, however, features an integral or soldered catch plate. In every case, the object has been converted into a brooch by riveting on a hinge bar and catch plate for a pin. Rivet holes have been drilled through the brooch and are visible from the front of the object. Additional details of the form and decoration of the objects also suggests modification.

Howletts grave 28 brooch

The square form of this brooch (Fig 17) makes it unusual and the presence of four redundant rivets in the four corners of the object show that it was originally a belt plate. It is comparable in size and shape to some other QBS belt plates, for instance that from Bishopstone.¹²⁹ Examining the back of the brooch, the catch plate has been riveted onto the central area of the brooch, with two rivets clearly visible on the part of the catch plate that would have held the point of the pin. Rivet holes are visible from the front view.

Temple Hill Dartford (Kent) disc brooch

This circular silver brooch has a separately attached domed centre, and so resembles a shield (Fig 18).¹³⁰ Examining the outlines of the brooch, it is not perfectly circular, and there are two rectangular recessed areas on opposite edges. The outer edge of the brooch also cuts through decoration just visible at its extremities. This suggests the brooch has been cut down from another object, which may have been similar to the Bowcombe Down mount (described above), with rectangular slots originally positioned at the edges of the object. The back of the brooch features a riveted copper alloy catch plate, so a different material to the rest of the brooch. The rivets are visible from the front on either side of the domed central part, and do not respect the decoration, since they were drilled through the face masks that occupy this part of the brooch.

Higham (Kent) disc brooch

This circular disc brooch is in relatively poor condition, with the edges broken and missing, and patches of corrosion on the surface (Fig 19).¹³¹ Like the Temple Hill disc brooch above, a repeating series of face masks decorates the brooch, however, because of the damaged edges, it cannot be ascertained whether it also once had slots near the edges. There are four small rivets around the centre of the brooch, part of a central setting which is now missing (confirmed by metal analysis, in which this area does not show the silvering present elsewhere on the front surface). On personal inspection, the stub of a pin catch is visible on the back of the brooch. Four rivets have been drilled through the brooch (additional to those described above), arranged in a long rectangle. Two are visible from the front, and the partially broken off hole of another is seen at the left hand edge opposite. On the back, one rivet projects from the surface and the corroded remains of the catch plate are positioned over the other. The rivets are placed overlapping the edge between the plain

area and the outer decorative roundels, i.e. there is no attempt to hide them within the design.

Faversham disc brooch

This item is a large circular disc brooch with animal and geometric decoration and a central glass setting (Fig 20) held in place by a silver mount, which is attached to the brooch by three small rivets.¹³² The decoration runs right to the edges of the brooch, but these edges are slightly damaged, and so it is difficult to evaluate whether the object would originally have been larger. Examining the back of the brooch, an unorthodox catch plate consists of a long flat loop riveted to one side of the brooch, with a corresponding part to hold the point of the pin riveted at the opposite side. This latter part has been subjected to a secondary repair. A new edge strip has been added, and an additional strip of metal has been riveted over the original flat part of the pin catch. The long flat loop does not look very suitable for attaching the hinge of a pin. The other end looks more like a normal catch plate. From the front of the brooch, the rivets holding the long flat loop are quite well hidden in the border of the animal design. They are placed toward the bottom of the animal figures, and avoid overlap with them. Therefore, the loop could relate to the original purpose of the disc. The rivets on the other side, however, which include those from the secondary repair, are much more evident and do not respect the decoration.

It is worth noting that all of these four objects occur in cemeteries in Kent, where plate brooches seems to have been desirable but difficult to obtain as a new item. One is silver, and the others all have silver applied to selected areas, so they were not objects owned by those of the very lowest socioeconomic status. Unfortunately only one, the Temple Hill brooch, has a context date, of early to mid-6th century (see Table A). Since it was associated with a bag group at burial it may have survived for some time beyond even its secondary use as a brooch. The Faversham brooch may also have had a long use period, suggested by the secondary repair to the catch plate. The evidence implies conversion of these items into brooches well within the 5th century from already extant 5th-century material. Smaller, stamped copper alloy disc brooches start to appear in southern Britain from the second half of the 5th century and may be related.¹³³

How should we interpret objects that show definite repairs and modification, in some cases combined with heavy wear? They are mostly belt fittings produced in the earlier 5th century, but context dates confirm that deposition is also occurring within the 5th century for many items, probably the late 5th. Deposition occurred after a period of use and repair or modification, also implied by details of the stylistic alterations made to the pieces, see above. Repairs to objects including cutting down belt plates (removing areas with broken rivet holes), drilling new holes, replacing tongues, pins and rivets, and the like, show the maintenance of functionality in items that had been broken. These objects were sufficiently valued in their own right not to be discarded, either because new objects were scarce to the users, technology for making new objects was scarce, or/and the particular cultural or personal associations which would have been destroyed with remelting were especially valued.

In order to examine the question of cultural value, let us review the evidence relating to 'Orpington' type buckles. Those three with context details were all found in female graves (see Table A). The Bishopstone example, not in a datable grave, was also probably in a female grave, from associated beads.¹³⁴ All five had worn surfaces, and/or were extensively repaired, by the time of burial. Levels of wear correlate with deposition dates in that the Mitcham buckle, from a probably first half of 5th century context (implied by the lack of other objects), is complete, and the Frilford and Orpington buckles, from late 5th to early 6th century contexts, are cut down (Table A). (The others are not from datable contexts). This buckle form may have originally had masculine associations, which then changed. This seems to be the case for late Roman buckles from Anglo-Saxon cemeteries more widely, which, as documented by Marzinzik, are more likely to occur in female graves than male ones, even though the same types of buckles would have been masculine artefacts in the late Roman period.¹³⁵ A find of a type IB buckle in a male grave at Lankhills (Hampshire), sexed through physical anthropology, also suggests originally masculine associations for indigenous imitations of late Roman belt fittings.¹³⁶ The 'Orpington' type QBS belt fittings were not valued, curated and included in grave deposits as masculine military items, as in the late Roman period. Instead, their use changed, so that they were worn by, and buried with, women. It has been suggested more widely for late Roman belt fittings found in female Anglo-Saxon graves, that such changes in cultural norms of usage

are related to the loss of their original context of use and hence the attribution of new meanings.¹³⁷

The QBS belt fittings discussed here had a current value for their final owners because belt fittings in general were widely worn contemporary artefacts, and metal dress accessories were still important in the assertion of status relationships within a particular community. Deposition dates suggest curation over many generations generally did not occur, rather, discard took place when metal availability improved from the late 5th century onwards. Scarcity value, rather than continuing cultural value as late Roman style artefacts, may be the most likely explanation for the extension to their use-life period. Similarly, the mode of modification of some QBS artefacts appears to show modification or repair in order to maintain their value by updating their appearance or form, i.e. by transforming them into new objects, rather than by preserving their old form. It appears therefore that these artefacts in their original form had lost cultural or personalised value to their users at the point of alteration, and indicate cultural change rather than attempts at continuity.

DISCUSSION

The assembled evidence allows us to firstly evaluate some previous interpretations of QBS material, and secondly put forward a new picture of cultural, political and economic connections and developments in the 5th century.

DOES QBS MATERIAL REPRESENT A POLITICAL ENTITY IN 5TH C. SE BRITAIN?

Several synthetic accounts of the 5th century suggest that the overall distribution of quoit brooch material represents some kind of post-Roman political entity in South-East England. Distribution of QBS metalwork has been contrasted with that of other distinctive types of dress accessories in order to construct putative territorial groupings, e.g. SE Britain south of the Thames contrasted with an area further west under a different authority.¹³⁸ These interpretations are problematic, not least because the different belt fitting types are not concurrent in date, see discussion of type IB buckles, above. Theoretically speaking, a distinctive, chronologically restricted and geographically localised decorative style could relate to the construction and communication of a particular identity, as Suzuki in fact argues for the developed zoomorphic form of the QBS in East Kent.¹³⁹ QBS objects taken as a whole, however, are anything but distinctive. They are stylistically, technologically,

chronologically and geographically diverse, and produced by a number of different workshops.¹⁴⁰ An increasing number of them come from northern France. Most QBS belt fittings, in particular, are close copies of individual Continental late Roman belt sets, and are much more similar to these prototypes than they are to each other, or to other QBS objects. Any single overall interpretation of the style is thus not valid. In addition, distribution maps of QBS objects relate to the final phase of the object's use and deposition, often after long curation, and may only have an indirect relationship with original production and use. Previous detailed studies of QBS material have been sensitive to the chronological and stylistic differences within the corpus,¹⁴¹ and we need to maintain this approach.

EVIDENCE OF MERCENARIES?

Another widespread interpretation of QBS objects, particularly belt fittings, which have military associations in the late Roman period, is their manufacture for Germanic mercenary soldiers by a surviving Romano-British political authority seeking military protection. Distribution of QBS metalwork is then suggested to represent mercenary presence in the 5th century.¹⁴² This uses as a framework historical evidence about the recruitment of such mercenaries, probably in Kent. The interpretation appears to correlate with the Kentish associations of the style, its derivation from late Roman military metalwork, burial in cemeteries containing Anglo-Saxon artefacts, and a later phase in which the objects are influenced by Germanic material culture.

It is a long stretch to associate any QBS objects other than belt fittings with mercenary activity, since most of them were worn only by women, however, let us examine the belt fittings evidence in more detail. In Continental Europe, we can identify graves containing belt sets, common in late Roman cemeteries associated with military sites, with service in the late Roman army. The status of belt fittings as military insignia (also representing high status civilians who took on a quasi-military identity), is confirmed by multiple sources of evidence.¹⁴³ Böhme has identified Germanic mercenary soldiers in late 4th to earlier 5th century burials in Continental Europe on the basis that they contain both official issue late Roman belt sets, and weapons.¹⁴⁴ Scholars have disputed this, and put alternative proposals forward, that the burials may represent the development of local powerful leaders or militias, and the debate is ongoing.¹⁴⁵ Those buried with belt sets could also be either regular Roman troops or mercenaries, of whatever ethnicity.¹⁴⁶ Härke,

meanwhile, has argued that weapon graves in Anglo-Saxon England represent inherited status, a kind of warrior class, in society.¹⁴⁷ Isotope analysis of burials found in Britain with late Roman belt fittings, some also containing weapons, suggests that many are of individuals who spent their childhood outside the Roman empire.¹⁴⁸ Such studies also, however, reveal complex relationships between geographical origins, and the cultural affinities of material culture used at death to express particular identities.¹⁴⁹ Let us accept for the moment that belt fittings have late Roman military connotations in the 4th and early 5th century, which is uncontroversial, and that weapons in burials are to be associated with the display of a militarised identity, which could have some non-Roman cultural elements.

QBS belt fittings occur in thirteen graves from southeast England (one with two items) and two from Brittany in France. There are also eleven items with no surviving contextual information beyond site location. These objects do not occur mostly in Kent, but widely within the South East (Fig 21). Only grave A at Saint-Marcel, Brittany, can be unequivocally dated in the early to mid-5th century, although two graves from Mucking (grs. 117 and 823), one from Alfriston (grave 17), and the Mitcham grave are poorly furnished and so might be early to mid-5th century, and the QBS objects in the Mitcham and Mucking graves certainly look stylistically early.¹⁵⁰ The rest, where datable, have date ranges of mid/late 5th century to early/mid-6th century, and at least two are dated within the 6th century (Table A), Some of these dates thus appear later than we would expect for the earliest Germanic presence in England, which has increasingly been argued to span a range within the earlier 5th century.¹⁵¹

Considering the grave material from southeast England, four items occur in female graves (three of them 'Orpington' type buckles), four in male graves (none of these from Kent) and four in unsexed graves. Two, from Mucking grave 823 and Worthy Park grave 41, were significantly altered to match current belt styles of the mid-5th century and later. This appears unlikely behaviour in relation to military insignia conferring a particular status, and implies a burial date after the mid-5th century. One belt set, from Highdown grave 34, was assembled from pieces of different dates and styles. The remaining one from Morning Thorpe grave 367, is in its original form. These latter two graves both contain spear heads, and this evidence could be used to construct a warrior or 'military' identity for these two burials. Collectively, this evidence substantially undermines, rather than supports, any case

for an association between Germanic mercenary soldiers and burials containing QBS belt fittings in Britain.

Against this, we can observe that many grave associations have been lost, and that since belt fittings from grave contexts in Britain are often heavily curated items, their deposition associations may not reflect their original uses.¹⁵² Some of the objects could originally have been issued to mercenaries, even if they were later used for different purposes. The best case for a mercenary wearer of QBS belt fittings is Grave A from Saint-Marcel, Brittany. Ager sees it as convincing evidence of an association between the QBS and Germanic federate troops, since it contained both a weapon and a Germanic iron bow brooch of the early 5th century.¹⁵³ It is clearly right to raise the possibility of this grave being that of an incomer. Yet as mentioned above, recent isotope work shows that exotic origin is not always proven from exotic material culture. Even if we accept the grave occupant is likely to be Germanic, extrapolating evidence from one French grave, to the British material more generally, is problematic.

To sum up, there is no convincing evidence that we can relate to putative mercenaries in Kent. Use by mercenaries remains possible for some of the earliest belt fittings in an original phase of use. Yet we cannot infer anything about the presence of militias at particular sites from final deposition patterns. These result from a long period of use and curation of the objects in many instances and demonstrable changes to their cultural uses and meanings. Let us consider, instead, particular themes within the material that takes account of its chronological and stylistic diversity.

CONTINUITY AND DEVELOPMENT OF LATE ROMAN MATERIAL CULTURE

The evidence for production shows that in the earliest phases of manufacture, perhaps around the 420s, there was access to technology and expertise to produce at least some objects with quite high production values. Copper alloy items were made from recycled metal, as was the norm in the late Roman period, and silver was available, although used mainly in tiny amounts as inlay (though complete silver objects may have virtually disappeared through recycling). We can compare this with the wider picture of artefact shortages and disruption of the metal economy at the end of the Roman period in Britain implied by other sources of evidence.¹⁵⁴ The production evidence supports previous

suggestions based on the 'late Roman military' associations of the belt fittings, that production was related to powerful groups within society,¹⁵⁵ who were able to facilitate the manufacture of new artefacts through requisitioning of relevant expertise.

QBS belt fittings of the earlier period (so excluding those with developed zoomorphic animal ornament) were extremely varied in appearance, based, as they were, on a diverse range of late Roman material. They show idiosyncratic production details, and are generally closer in appearance to their late Roman prototypes than they are to each other. They also occur in small numbers (fewer than 30), and unlike other types of very late to post-Roman belt fittings, these numbers have not been appreciably increased by PAS finds.¹⁵⁶ In the same period on the Continent, production of late Roman belt fittings and more localised derivations from them continues well into the 5th century,¹⁵⁷ and finds of late Roman belt fittings in Anglo-Saxon graves imply curation and continued use of this material in England.¹⁵⁸ (We can make a distinction between this continued use of extant artefacts produced at the end of the Roman period, and later rediscovery and reuse of Roman material.)¹⁵⁹ Copying of both Romano-British and Continental late Roman metalwork is in evidence in QBS material, as noted in previous studies,¹⁶⁰ and reflects a wider availability of Continental late Roman metalwork in Britain than is suggested by the relatively few extant burial finds such as those at Lankhills and Dorchester (Oxfordshire).¹⁶¹ Portable Antiquities finds have also added significantly to the known quantity of Continental late Roman metalwork in Britain.¹⁶² Considering this wider context, we can propose that QBS belt fittings never existed in large numbers, and that use occurred alongside both curated Romano-British material, and contemporary or curated late Roman Continental metalwork. QBS belt fittings probably carried the same connotations as curated late Roman ones, although there may have been some drift away from the original meaning of these as symbols of the late Roman state. They had no special status in their own right, but alongside other types of belt fittings, were perhaps intended to legitimise the status of their owners as defenders of Britannia and northern Gaul in the post-Roman period.

The range of items in production comprised not only military-style objects such as belt-fittings, but also feminine dress accessories such as bracelets, so QBS objects were not only worn by militias but more generally by people presenting themselves within wider late Roman conventions of dress. This also underlines the late Roman cultural affiliations of the

style in the earlier period. Continued production of established metalwork forms is unsurprising in a context in which late Roman style objects functioned as symbols of power.¹⁶³ Yet the makers of these objects were also developing the object forms in a contemporary way, and so were responding to current as well as past cultural contexts. For instance, we see some attempts to follow more up-to-date trends current on the near Continent, such as the extensive use of silver inlay. This is even the case with such close imitations of Continental late Roman belt fittings as the Mucking grave 117 belt set. We therefore see an incremental drift away from late Roman norms, but a common currency in acknowledged symbols of power across southern Britain and the near Continent.

CONNECTIVITY VIA THE WESTERN CHANNEL

Although the vast majority of QBS objects occur in Britain, the form and style of the earlier objects (bracelets as well as belt fittings) continues to point towards northern Gaul. The addition of further examples of QBS metalwork from Brittany (Saint-Marcel, Pont-de-buis-lès-Quimerch, and Rennes) and Normandy (Frénouville) to extant material previously known from Normandy (Réville and Bénouville) is evidence of more direct contact.¹⁶⁴ The clustering of the material in the maritime northwestern *départements* in particular is notable. It is evidence of direct connections with Britain in the post-Roman period using the western Channel/Atlantic route, which flourished during the late Roman period.¹⁶⁵ Corresponding clusters of QBS material on the opposite coast, in the Isle of Wight, adjacent areas of Hampshire, and in Sussex, also support this picture of direct contact.

The multiple connections between southern Britain and northern Gaul demonstrated by the form, decoration, and find-spots of QBS material illustrate a littoral zone of cross-channel communications, especially via the western Channel route. This correlates with studies of both late Roman (4th to early 5th century), and later 5th-century Frankish, and Anglo-Saxon material, which demonstrate close relationships between Britain and the coastal regions of the near Continent during the 5th century.¹⁶⁶ It corresponds with information from historical sources that suggest cross-channel movements such as the 5th century appearance of Saxons in the Loire region, or migrations of Britons to Brittany.¹⁶⁷ The importance of these connections in understanding QBS metalwork, and the post-Roman trajectory of southern Britain more widely is now clear.

CESSATION OF PRODUCTION AND SOCIAL TRANSFORMATIONS

At a certain point within the 5th century, widely across the area of Britain in which QBS metalwork is found, a sharp decline occurred in access to the materials and technology to produce this metalwork (and perhaps any new metal objects). The evidence for this, as detailed above, is the repair, modification and prolonged curation of extant objects. Since Roman metal objects suitable for recycling would still have been abundant, the problems must have been principally in mustering the technology to melt down old objects and manufacture new ones. The redecoration of belt plates using the reverse side for a new decorative scheme, or their cutting down into new shapes, implies that in these cases the late Roman associations of the original were no longer valued. In Kent, the transformation of a number of objects, probably mostly mounts or belt plates, into disc brooches, also shows a loss of value for the objects in their original form, and a new value for brooches in identity display, also suggested by Suzuki in relation to quoit brooches themselves.¹⁶⁸ These types of modification, which do not respect the original object, also imply that curation occurred mainly because of scarcity. A number of silver objects in QBS made from very thin silver also suggest attempts to eke out precious metal resources, as does the removal of silver inlay in some instances before burial.¹⁶⁹ During the period of curation, which explains the loss of the original contexts of use for such material, items such as belt-fittings altered their cultural connotations so that they were considered appropriate wear for women, rather than being masculine and military as had been the case in the late Roman period. We can suggest that collapse in the ability to manufacture new objects fostered accelerated cultural transformations. Extant material culture enjoyed an extended lifespan, but came to be used in different contexts by new users, and so developed new meanings.

RENEWED PRODUCTION AND DEVELOPMENT

In the second half of the 5th century, numerous kinds of metal objects became much more widely available, implying the resumption of localised political and economic stability, and production of a new range of QBS material started, albeit with Germanic cultural influences that corresponded to the wider Germanic hegemony developing in southern Britain. The Quoit brooch form itself derives from Germanic brooch forms, as previously argued especially by Ager.¹⁷⁰ The current study adds to this picture of Germanic cultural influence on later QBS objects through new evidence regarding the distinctive D-sectioned

tubes. These were clearly not related to late Roman military belt fittings as previously believed, but were feminine dress accessories, dating to the second half of the 5th century, and associated with items suspended from the waist in a Germanic dress style (see above). When new objects became more widely available from the late 5th century period onwards, there was a consequent increase in the deposition of reused and curated material. In the same cemeteries, in time, people were also buried with the newer QBS metalwork, such as D-sectioned tubes, or quoit brooches themselves. It is increasingly recognised that many, although perhaps not all, of these earliest 'Anglo-Saxon' cemeteries are likely to have been very mixed in cemetery population and will have included probably significant numbers of indigenous inhabitants.¹⁷¹ These inhabitants will have reached an accommodation with incoming elites by adopting Germanic dress styles and burial practices. While details of the interactions of Germanic groups with local power-groups remain obscure, both deposition patterns, and the continued development of QBS objects with a recognisable kinship to those of earlier periods, would be consistent with a wider picture of political alliances forged between disparate groups of people in this period.

Where were QBS objects produced? Suzuki's work focused on the area of East Kent,¹⁷² which was clearly important and will be further discussed below. His compilation of material, however, excluded QBS objects such as 'smaller variant' quoit brooches, and tubes. The earliest QBS material is not concentrated in East Kent. In fact, many QBS objects have a wide distribution in the Thames corridor and southern coastal zones of Britain. This follows the general distribution of cemeteries that contain 5th-century material,¹⁷³ and because much QBS material is curated material, its distribution is probably only indirectly related to production areas. We can examine Portable Antiquities data to assess the relationship between the deposition pattern of QBS material in early cemeteries and the original availability of QBS objects in the South East. Portable Antiquities finds currently cluster in the same areas as the cemetery material, particularly near the south coast, for instance the Meon valley in Hampshire and the Isle of Wight have both produced further PAS finds as well as cemetery finds (Some PAS finds of course may be dispersed cemetery material) (Fig 22). This suggests that QBS material was never very widely available in Britain (although this may need to be reassessed in due course taking into account further PAS finds).

‘Smaller variant’ quoit brooches of form D1, which were not curated for long periods, present a clearer picture. Scholars suggest production in Sussex, on stylistic grounds, and because of their abundance at Highdown.¹⁷⁴ Finds since Ager’s 1985 publication add two more each in Wiltshire (at Blacknall Field and Charlton Plantation), the Isle of Wight (Hampshire), and Kent (Mill Hill, and a rediscovered old find from Howletts). We can conclude that type D1 was mainly produced in the West Sussex/Hampshire region (Fig 23). From the new compositional analysis of type D1 brooches, in this area at least, there appears to have been renewed access to fresh metal supplies, probably indicating links between the West Sussex and Hampshire area and post-Roman communities producing tin in the South West of Britain.

As noted in previous studies, East Kent, with a number of prolific sites and individual finds, is certainly the location for the manufacture of some objects, particularly those later in the series that have little evidence of curation and repair.¹⁷⁵ Suzuki observes that the zoomorphic quoit brooches in Kent are some of the earliest material culture marking out Kent as a distinctive cultural zone, but overlooks wider geographical relationships in his omission of the ‘smaller variant’ quoit brooches.¹⁷⁶ The earlier quoit brooch forms occur in both areas, though in slightly different versions in Kent (zoomorphic decoration and/or long pin slot) compared to Hampshire/Sussex (geometric decoration, short pin slot). There are also new finds with developed zoomorphic ornament that show that some objects with this decoration circulated beyond Kent, for instance on the Isle of Wight, and in the adjacent Meon valley on the mainland. D-sectioned tubes, studied here in detail for the first time, cluster in similar areas (Fig 24). This linking together of Kent with the Isle of Wight and the adjacent area of mainland Hampshire matches the territorial grouping that scholars associate with Jutish origins and the kingdom of Kent, projected through more overtly Scandinavian-derived material culture.¹⁷⁷ It may relate to common kinship groups, political alliances, or trading relationships and cultural contact between these areas.

CONCLUSION

In this paper, I have argued that previous interpretations, that view distributions of QBS material as representing either a political entity in southeastern Britain in the 5th century, or the presence of Germanic mercenaries in the pay of Romano-British leaders, are problematic. I propose instead that the earliest QBS belt fittings were used alongside other

still extant late Roman belt fittings, especially Continental ones, with shared meanings, as symbols of power both within and beyond Britain. Such a shared cultural zone is also demonstrated by other evidence of ongoing connectivity between the South Coast and Continental Europe at this time, and I have shown that connections existed especially via the western Channel route during the 5th century. I have documented the extreme disruptions occurring to the 5th century metal economy in southern Britain through extensive evidence presented for reuse and modification of QBS objects. This evidence also confirms that a gradual loss of cultural value occurred for late Roman style artefacts during the 5th century. New compositional analysis has added to what we know more widely of the production of 5th-century objects and the selection and sourcing of metals. Evidence for curation and repair of metal objects helps to both fill, and explain, the puzzling gap in the material evidence between the late Roman and early Anglo-Saxon periods, and the seeming disjunction between material culture of the early 5th century and that produced in its later phases.

Appendix 1 Complete list of objects; lists of excluded and uncertain objects (online only, see separate doc)

Appendix 2 Compositional analysis (online only, see separate doc)

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List of Figure captions

FIG 1

Examples of the most common types of QBS artefacts.

(a) Type D1 quoit brooch from Highdown, Worthing Museum and Art Gallery acc no 3389.

Photograph: author, edited by Lloyd Bosworth. Courtesy of Worthing Museum and Art Gallery.

(b) Penannular brooch from Alfriston, Barbican House Museum Lewes, acc. no. A001.43.3.

Photograph: author, edited by Lloyd Bosworth, by kind permission Sussex Archaeological Society.

(c) Belt buckle with fixed plate from Newport, Portable Antiquities Scheme IOW-OCB093.

Photograph: courtesy of Isle of Wight Council, Creative Commons licence,

<https://creativecommons.org/licenses/by-sa/4.0/>

(d) D-sectioned tube decorated with QBS animals, Portable Antiquities Scheme FAKL-

2931C4. *Photograph: courtesy of Portable Antiquities Scheme, Creative Commons licence,*

<https://creativecommons.org/licenses/by-sa/4.0/>

FIG 2

Other types of late Roman belt fitting.

(a) type IB 'horsehead' buckle, Portable Antiquities Scheme SOM-D07208. *Photograph:*

courtesy of Somerset County Council, Creative Commons licence,

<https://creativecommons.org/licenses/by-sa/4.0/>

(b) buckle with birds applied to the frame, Portable Antiquities Scheme SUR-886B81.

Photograph: courtesy of Surrey County Council, Creative Commons licence,

<https://creativecommons.org/licenses/by-sa/4.0/>

(c) Continental late Roman fixed plate belt fitting from Highdown cemetery, Worthing

Museum and Art Gallery acc no 1984-118-1. *Photograph: author, edited by Lloyd Bosworth.*

Courtesy of Worthing Museum and Art Gallery.

FIG 3

Comparison of QBS material with Continental late Roman belt fittings.

(a) Pewsey type strap-end, Portable Antiquities Scheme HAMP2158. *Photograph: courtesy of Portable Antiquities Scheme, Creative Commons licence,*

<https://creativecommons.org/licenses/by-sa/4.0/>

(b) Sommer Sorte 2 Continental style late Roman belt fitting, Portable Antiquities Scheme DOR-C6F631. *Photograph: courtesy of Somerset County Council, Creative Commons licence,*

<https://creativecommons.org/licenses/by-sa/4.0/>

FIG 4

Comparison of QBS bracelets with late Roman bracelets.

(a) QBS bracelet from Saint-Marcel cemetery. *Drawing: redrawn by Lloyd Bosworth after Boulanger and Simon 2012, fig 104, no 106.3.*

(b) late Roman bracelet from Krefeld-Gellep, grave 1131. *Drawing: redrawn by Lloyd Bosworth after Pirling 1966, Taf 93 nos 7-8.*

FIG 5

Hooked mount from Saint-Marcel cemetery, grave 106. *Drawing: redrawn by Lloyd Bosworth after Boulanger and Simon 212, fig 74, no 106.2.*

FIG 6

Bar chart summarising context dating for QBS objects. *Graph: author.*

FIG 7

Tube from Highdown, grave 29, Worthing Museum and Art Gallery, no acc no.

(a) assemblage, with iron objects adhering to the tube. (b) view of the interior of the tube, with mineralised thread visible. *Photographs: author, edited by Lloyd Bosworth, courtesy of Worthing Museum and Art Gallery.*

FIG 8

Tube from Alfriston grave 14, Barbican House Museum, Lewes, acc no A001.14.5.

Photograph: author, edited by Lloyd Bosworth, by kind permission Sussex Archaeological Society.

FIG 9

Bar chart summarising gender associations for QBS objects. *Graph: author.*

FIG 10

Two examples of 'Orpington' type buckles.

(a) Buckle from Orpington. *Drawing: redrawn by Lloyd Bosworth after Evison 1968, fig 2a.*

(b) Buckle from Bishopstone. *Photograph: by kind permission of the Society of Antiquaries of London.*

FIG 11

Belt plate from Howletts grave 5, British Museum acc no 1935,1029.10. Photograph: © *The Trustees of the British Museum. All rights reserved.*

FIG 12

Comparison of Mucking belt set with belt set representing its likely original appearance.

(a) Buckle and plate from Mucking, grave 823, *Drawing: redrawn by Lloyd Bosworth after Hirst and Clark 2009, fig 73 gr 823 no 4.*

(b) Buckle from Pont-de-Buis-lès-Quimerch. *Drawing: redrawn by Lloyd Bosworth after Böhme 1986, Abb 48.*

FIG 13

Triangular belt plate from Alfriston grave A/17, Barbican House Museum Lewes, acc no A001.17.1.

(a) Front view. (b) Back view. *Photographs: author, edited by Lloyd Bosworth, by kind permission Sussex Archaeological Society.*

FIG 14

Belt plate from Faversham, British Museum, acc no 1156.'70.

(a) Front view. (b) Back view. *Photographs: © The Trustees of the British Museum. All rights reserved.*

FIG 15

Worthy Park belt plate, Hampshire Cultural Trust acc no ARCH 84.268. *Photograph: author, edited by Lloyd Bosworth, courtesy of Hampshire Cultural Trust.*

FIG 16

Belt set from Highdown grave 34, Worthing Museum and Art Gallery acc no 3433.

Photograph: author, edited by Lloyd Bosworth, courtesy of Worthing Museum and Art Gallery.

FIG 17

Brooch from Howletts grave 28, British Museum acc no 1935,1029.9.

(a) Front view. (b) Back view. *Photographs: © The Trustees of the British Museum. All rights reserved.*

FIG 18

Brooch from Temple Hill, Dartford grave 54 (a) Front view. (b) Back view. Redrawn by Lloyd Bosworth after O'Brien and Mustchin 2015, Fig 32 no 54.3, with reference to photographs of the original object.

FIG 19

Higham disc brooch, Guildhall Museum Rochester, acc no A2496. *Photograph: author, edited by Lloyd Bosworth, courtesy of Guildhall Museum Rochester.*

FIG 20

Disc brooch from Faversham, British Museum acc no 1069.'70.

(a) Front view. (b) Back view. *Photographs: © The Trustees of the British Museum. All rights reserved.*

FIG 21

Distribution map of QBS belt fittings. *Map: Lloyd Bosworth/Ellen Swift.*

FIG 22

Distribution map of Portable Antiquities finds of QBS objects. *Map: Lloyd Bosworth/Ellen Swift.*

FIG 23

Distribution map of 'smaller variant' brooches of form D1, and early type zoomorphic Quoit brooches. *Map: Lloyd Bosworth/Ellen Swift.*

FIG 24

Distribution map of D-sectioned QBS tubes. *Map: Lloyd Bosworth/Ellen Swift.*

List of Table captions

Table A Context dating

¹ SECL, Cornwallis Building, University of Kent, Canterbury, KENT, CT2 7NF, E.V.Swift@kent.ac.uk

² See Suzuki 2000, 4–6; other important studies are by Ager (1985) and Evison (1965); see also Ager 2012, 242.

³ Suzuki 2000; Inker 2000; Hirst and Clark 2009, 666; Ager 1990; Ager 1985

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- ⁴ Suzuki 2000.
- ⁵ Ager 1985; Ager 1990.
- ⁶ Inker 2000.
- ⁷ Evison 1965, 50–51, 99–100 and map 10.
- ⁸ Evison 1965, 46–78.
- ⁹ Suzuki 2000; Ager 1985; Evison 1965; Inker 2000.
- ¹⁰ Evison 1965; Hawkes 1961.
- ¹¹ Ager 1985.
- ¹² Brugmann 2004, Hines et al 2013.
- ¹³ Hills 2003, 90; Inker 2000, 50; Evison 1968, 241; Hawkes 1961, 49.
- ¹⁴ Swift 2014, Swift 2013, Swift 2012.
- ¹⁵ Ager dates ‘smaller variant’ types D2 and D3 to the 6th century and later, while his D4 form is represented by only one object, and may be an anomalous version of D2, see Ager 1985, 16–17.
- ¹⁶ Inker 2000, 28–39; Suzuki 2000, 21–73; Evison 1965, 46–69; Ager 1985, especially fig 13 on motifs.
- ¹⁷ Suzuki 2000, 21–73.
- ¹⁸ Suzuki 2000, 44–57, 104; Ager 1985, 16–17.
- ¹⁹ Hawkes and Dunning 1961 updated by Leahy 2007; Laycock 2008, 113–128.
- ²⁰ Leahy 2007, fig 136.
- ²¹ Ager examines grave contexts for the D1 brooches, Ager 1985.
- ²² Inker 2000, 28–39; Richardson 2005, 21–23 and table 4, based on Inker; Suzuki 2000, 89, 104; Evison 1968, 240.
- ²³ Hawkes 1961, 50. A very recent PAS find of a QBS bracelet (Appendix number A144) apparently came from a location where other Roman material had been recovered (Jo Ahmet pers. comm.).
- ²⁴ Hawkes and Dunning 1961, 47–49.
- ²⁵ See, for example, Cool (2010, 286) for an important dated buckle in a male grave at Lankhills, with a coin of AD 388–395, plus further examples with similar context dates.
- ²⁶ Laycock 2008, 113–128.
- ²⁷ Hawkes 1961, 71.
- ²⁸ Sommer’s Sorte 2 form of buckle, dated early 4th to early 5th century, see Sommer 1984, 74–82.
- ²⁹ Appendix 1, A113, A125 and A129.
- ³⁰ Ager 2012, 241.
- ³¹ Hirst and Clark 2009, 496.
- ³² Swift 2000, 304, figs 180 and 188–190, types rosette, b31 and related, and h3, h4 and h5.
- ³³ Pirling 1966, 33 (vol. ii). I also suggested in a previous publication that continuing development of late Roman style bracelets was occurring in the coastal area of Gaul in the early 5th century, see Swift 2000, 118–119 and fig 140.
- ³⁴ Appendix 1, A157, A158, A160 and A162.
- ³⁵ Ager 2012, 240–242.
- ³⁶ Appendix 1, A155.
- ³⁷ Bullinger 1969, Taf LIV.
- ³⁸ Swift 2000, 127 and figs 151 and 159.
- ³⁹ See Harrington and Welch 2014, 181.
- ⁴⁰ Richardson 2005, 21–23.

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- ⁴¹ See also Ager 1985, 16–17.
- ⁴² Although Evison 1965, 51 documents sixteen tubes, information is available for only ten, see MacGregor and Bolick 1993, cat no 25.12, two of which, of noticeably smaller diameter and undecorated, have been omitted.
- ⁴³ See Swift 2010, 268–270 for a discussion.
- ⁴⁴ Evison 1965, 50; Evison 1968, 240–41.
- ⁴⁵ See Stoodley 1999, 34.
- ⁴⁶ Further examples from undatable graves: Apple Down, grave 18, in bag group, Down and Welch 1990, 101; Petersfinger grave XLVIII, below hip with ivory ring, see Leeds and Shortt 1953, 30.
- ⁴⁷ Parfitt and Anderson 2012, 440; Care Evans 2012, 153; not identified as a QBS object. Appendix 1, A101.
- ⁴⁸ Appendix 1, A117.
- ⁴⁹ Appendix 1, A118, A119, A121, A140, A97, A99.
- ⁵⁰ Appendix 1, A114. Barry Ager pers. comm.
- ⁵¹ Other examples, Appendix 1, A90, A98, A109, A131, A133, A140. A98 in particular is extremely worn, in a concave curve, at one end.
- ⁵² Appendix 1, A100, A113, A114, and A125.
- ⁵³ See Owen-Crocker (2004, 68–71); Meaney 1981, 249–255 on chatelaines and bags including Continental Germanic parallels.
- ⁵⁴ Ager 1985, 3.
- ⁵⁵ Lucy 2000, 46–7.
- ⁵⁶ Richardson 2005, 219.
- ⁵⁷ For an overview, see Lucy (2000).
- ⁵⁸ Late Roman belt fittings found in Anglo-Saxon graves also occur with women, and this has been suggested by Booth to relate to reuse, Booth 2014, 267.
- ⁵⁹ Swift 2014, Swift 2013, Swift 2012; Martin 2012; Caple 2010.
- ⁶⁰ See Swift (2014), Swift (2013) for further discussion.
- ⁶¹ Swift 2012, Swift 2014.
- ⁶² Martin 2012, 55.
- ⁶³ Swift 2012, 186–190; Dungworth 1997; Fleming 2012, 9–10; Hunter and Painter 2013.
- ⁶⁴ Dungworth 1997, 907; see also Bayley 1998.
- ⁶⁵ Caple 2010, 313; Fleming 2012, 22–23; Harrington and Welch 2014, 141; Baker 2013, 71–323.
- ⁶⁶ Esmonde-Cleary 1989; Esmonde-Cleary 2013.
- ⁶⁷ Caple 2012, 314; Fleming 2012, 23; Baker 2013, 47.
- ⁶⁸ Fleming 2012, 23; Harrington and Welch 2014, 169.
- ⁶⁹ Baker 2013, 30–31; Meharg et al 2011, 726.
- ⁷⁰ Harrington and Welch 2014, 139–40; Baker 2013, 33, 105.
- ⁷¹ Caple 2010, 314; Baker 2013, 107–8.
- ⁷² Caple 2010, 313–4; Baker 2013, 72; Mortimer 1988, 232–233.
- ⁷³ Baker 2013, 378–80.
- ⁷⁴ Baker 2013, 44–45; Mortimer 1991, 163.
- ⁷⁵ Baker 2013, 359, fig 10.18.
- ⁷⁶ Baker 2013, 58–62; Caple 2010, 314.
- ⁷⁷ Craddock et al 2002, 120.
- ⁷⁸ Lutz and Pernicka 1996.

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- ⁷⁹ Craddock et al 2002, 120.
- ⁸⁰ Wilthew 2003, 196; Bayley and Butcher 2004, 16.
- ⁸¹ Appendix 1, A54.
- ⁸² Appendix 1, A44.
- ⁸³ Appendix 1, A3.
- ⁸⁴ Appendix 1, A4, A13, A23, A148, A150. See Appendix 2 for details of composition.
- ⁸⁵ Baker 2013, 105, 421–4.
- ⁸⁶ Cowell and Hook 2010, 176–179.
- ⁸⁷ Leigh 1980, 185–6; Alice Blackwell pers. comm.
- ⁸⁸ Harrington and Welch 2014, 168–169. See Swift forthcoming for further discussion of silver QBS objects.
- ⁸⁹ Appendix 1, A18 and A22.
- ⁹⁰ See also PAS IOW-OCB093 entry.
- ⁹¹ Suzuki 2000, pl 7.
- ⁹² Appendix 1, A12.
- ⁹³ Appendix 1, A23. Evison 1968, 243–44 and fig 2a; Tester 1968, 42.
- ⁹⁴ Swift 2013, 97; Evison 1968, 243; Tester 1968, 42.
- ⁹⁵ Evison 1968, 244.
- ⁹⁶ Evison 1968, fig 2a.
- ⁹⁷ Appendix 1, A5. Suzuki 2000, cat no 6, pl 6; Evison 1968, 244.
- ⁹⁸ Evison 1968, 244.
- ⁹⁹ Welch 1983, 92.
- ¹⁰⁰ Inker 2000, 29.
- ¹⁰¹ Appendix 1, A15.
- ¹⁰² Appendix 1, A20.
- ¹⁰³ Appendix 1, A21.
- ¹⁰⁴ Appendix 1, A25.
- ¹⁰⁵ Marzinzik 2003, 40.
- ¹⁰⁶ Appendix 1, A141, A153 and A156.
- ¹⁰⁷ Warhurst 1955, fig 7.
- ¹⁰⁸ Warhurst 1955, 11.
- ¹⁰⁹ Appendix 1, A17, A19, A88, A89, A90, A94, A96, A98, A99, A103, A114, A115, A120, A121, A122, A132, A138, A140, A147, A166.
- ¹¹⁰ Appendix 1, A6.
- ¹¹¹ Appendix 1, A25.
- ¹¹² Appendix 1, A145.
- ¹¹³ Swift forthcoming. Appendix 1, A30.
- ¹¹⁴ Ager 1985, 21–23.
- ¹¹⁵ Appendix 1, A1 and A2.
- ¹¹⁶ Evison 1965, fig 28j, reproduced as Suzuki 2000, fig 10 and Welch 1983, figs 7a and 41e.
- ¹¹⁷ Evison 1965, 65–66.
- ¹¹⁸ Welch 1983, fig 103 e–f.
- ¹¹⁹ Soulat 2009, 134–5, fig 95; Seillier 1989, 627–630, grave 121A, fig 20.
- ¹²⁰ Appendix 1, A11.
- ¹²¹ Appendix 1, A27.
- ¹²² Appendix 1, A13.
- ¹²³ Green, Rogerson and White 1987, 142. Appendix 1, A19.

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- ¹²⁴ Marzinzik 2003, pls 82–83.
- ¹²⁵ Appendix 1, A21 and A25.
- ¹²⁶ Appendix 1, A150.
- ¹²⁷ Suzuki 2000, 163; Evison 1965, 50.
- ¹²⁸ Leigh 1980, 239–240.
- ¹²⁹ Appendix 1, A6.
- ¹³⁰ Appendix 1, A164.
- ¹³¹ Appendix 1, A149.
- ¹³² Appendix 1, A148.
- ¹³³ See Dickinson 1979.
- ¹³⁴ Evison 1968, 244.
- ¹³⁵ Marzinzik 2003, 69–70.
- ¹³⁶ Grave details in Booth et al 2010, 159; see also Cool 2010, 286.
- ¹³⁷ Booth 2014, 267; Leahy 2007, 134.
- ¹³⁸ Halsall 2013, 260–265; Laycock 2008, 123–125; White 2007, 197.
- ¹³⁹ Suzuki 2000, 108–114.
- ¹⁴⁰ Inker 2000, 51.
- ¹⁴¹ Suzuki 2000; Ager 1985.
- ¹⁴² Welch 2007, 200; Suzuki 2000, 119–120; Welch 1990, 273; Böhme 1986, 523–526.
- ¹⁴³ Böhme 1974.
- ¹⁴⁴ Böhme 2000; Böhme 1986; Böhme 1974.
- ¹⁴⁵ Theuws 2009; Halsall 1992; Kazanski and Perin 2017.
- ¹⁴⁶ Hills 2003, 90.
- ¹⁴⁷ Härke 1990.
- ¹⁴⁸ Eckardt et al 2015; Booth 2014.
- ¹⁴⁹ Eckardt 2014.
- ¹⁵⁰ Hirst and Clarke (2009, 767) concur regarding the Mucking graves.
- ¹⁵¹ Booth et al 2007, 379; Hirst and Clark 2009, 767.
- ¹⁵² Hills 2003, 90.
- ¹⁵³ Ager 2012, 242. It can be identified as a Germanic/South Baltic brooch of Schönwarling type, worn by males, see Schulze-Dörrlamm 1986, 650–52.
- ¹⁵⁴ See Swift 2012; Fleming 2012, 9–10 and 18; Guest 2010, 199–200.
- ¹⁵⁵ Hirst and Clark 2009, 768–9.
- ¹⁵⁶ One buckle, Appendix 1, A22, and three strap ends A9, A14 and A16. Metal-detected QBS items continue to be identified and so some further additions are likely in the future.
- ¹⁵⁷ Legoux et al 2006, 30–31; Sommer 1984.
- ¹⁵⁸ See White 1988, 59–60.
- ¹⁵⁹ Swift 2012, 194–202.
- ¹⁶⁰ Suzuki 2000, 74–85, 109; Evison 1965, 47, 53–5.
- ¹⁶¹ Clarke 1979; Booth et al 2010; Booth 2014; Kirk and Leeds 1952/3.
- ¹⁶² Leahy 2007, especially fig 136.
- ¹⁶³ Swift 2006, 106–9.
- ¹⁶⁴ An outlier site in Charente (Herpes, France) is very questionable as the material may in fact have a provenance elsewhere in France, see Ager 1997.
- ¹⁶⁵ Morris 2010 130–135 and 152; Lyne 2015, 95; Orengo and Livarda 2016, 30–32 and fig 4.

¹⁶⁶ See e.g. Swift 2010 (late Roman); Harrington and Welch 2014, 174–205 (Frankish); Soulat 2009 (Anglo-Saxon material found in France); Halsall 2013, 226–7, Harrington and Welch 2014, 189–91 and Welch 2007 on more extended North Sea networks.

¹⁶⁷ Halsall 2013, 257–8.

¹⁶⁸ Suzuki 2000, 109.

¹⁶⁹ Inker 2000, 50.

¹⁷⁰ Ager 1990; Ager 1985; perhaps developed via QBS penannular brooches (Suzuki 2000, 86–89).

¹⁷¹ See e.g. Hirst and Clark 2009, 666, 766–7. Martin Welch argued that the Highdown cemetery was initially Romano-British, and later Anglo-Saxon under the supervision of a small, Romano-British community, Welch 1983, 214–6.

¹⁷² Suzuki 2000, 103, 111, 119–121.

¹⁷³ See Harrington and Welch 2014, fig 26.

¹⁷⁴ Ager 1985, 16; see also Hawkes 1961, 46–7.

¹⁷⁵ Suzuki 2000, 89; Ager 1985, 18.

¹⁷⁶ Suzuki 2000, 110.

¹⁷⁷ On the latter, see Brookes and Harrington 2010, 66; Suzuki 2000, 95–102 and 120–121, Yorke 1989.

TABLE A

5TH CENTURY (FROM ASSOCIATED OBJECTS OTHER THAN QBS ITEM/S)

Site	Grave	QBS object/s [Appendix number]	Position on body	Other objects in grave assemblage	Dating
Alfriston	103 (F?)	Tube [A90]	NK	Late Roman openwork belt fitting (see discussion in Appendix 1), buckle, punch (?), glass beads, flint beads.	Openwork belt fitting is late 4th to early 5th century. Beads could not be located at museum.
Highdown	26 (F?)	QB d1 (Ae pin) [A42]	NK	Pair gilt 'small-long' brooches (small versions of radiate brooches).	Böhme (1986, 554, Abb 71) dates brooch type to mid/2nd half 5th century. See also Marzinzik 2003, 18; Ager 1985, 20.
Lyminge	3 (F)	Mount [A152]	Near knife at left arm	4th century coin, gilt stud set with glass (Richardson 2005, 259), plate frags (both probably knife/sheath dec), buckle, knife	Continental late Roman buckle, 5th century (see discussion in Appendix).
Mucking	637 (F?)	Tube [A127], QB d1 [A52]	Tube: left hip next to bag group. QB d1: worn in pair	Unusual type equal-arm brooch; glass beads (mainly dark blue annular). Bag group: rings, buckle loop.	Hirst and Clark 2009 date equal-arm brooch later 5th century and grave Phase 1a ⁱⁱ /a ⁱⁱⁱ , 5th century.
Reading (Earley)	13 (NK)	Tube [A130]	NK	Two rings made from late Roman bracelets, pierced 3rd century coin, strap end, late Roman belt fitting, rings, glass bead, pottery vessel.	Cut-down Roman bracelets date late 4th to early 5th century, see Swift 2012. Myres (1977, 6), dates pot to mid-5th century. Buckle probably early 5th, insular derivative of late 4th to early 5th century Roman buckle.

Saint-Marcel	A (M?)	Belt [A26]	At waist? (centre of grave)	Axe, knife, pursement/firesteel, ferrule, ring, two square buckle loops, plate frags, bow brooch, four belt stiffener strips, 'Tortworth' type strap end, D-shaped buckle and plate, other metal frags.	Early to mid-5th century grave, from objects including francisca, early 5th century bow brooch, and pursement/firesteel (Ager 2012).
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LIKELY TO BE 5TH CENTURY (POORLY FURNISHED; QBS OBJECT ONLY DATABLE ITEM IN GRAVE)

Site details	Grave	QBS object [Appendix number]	Position	Grave assemblage
Alfriston	57 (NK)	QB d1 (Ae pin) [A36]	NK	Flint flake, green pebble.
Alfriston	17 (NK)	Two belts [A1, A3]	NK	Strap ends.
Charlton Plantation	25 (child)	QB d1 [A38]	NK	No other objects.
Mitcham	133 (NK)	Belt [A18]	NK	No other objects.
Mucking	117 (NK)	Belt [A20]	Across upper pelvis	Fitting, frags.
Mucking	631 (M [doubtful] from phys. anth., F? from artefacts)	Bracelet [A154]	Left side of waist, probably left wrist	Three bracelets(?).
Mucking	823 (M?)	Belt [A21]	Right side of waist	Knife, buckle and plate, coiled rings, awl (items in fill not counted as part of grave assemblage).
S. Marcel	67 (NK)	Hooked mount [A157]	NK	Awl? (Fe object with tapering square cross-section).
S. Marcel	129 (F?)	Bracelet [A159]	NK	Glass bead.
S. Marcel	145 (NK)	Hooked mount [A158]	NK	No other objects.

MID/LATE 5TH TO EARLY 6TH CENTURY

Site details	Grave	QBS object [Appendix number]	Position	Grave assemblage	Dating
Abingdon	B50 (F?)	Pair of QB d1 [A33, A34]	Pair on breast.	Glass and amber beads, knife.	Ager (1985) 5th or 6th
Alfriston	A (NK)	Belt [A2]	NK	Two plates, two ivory frags, buckle, firesteel/purse mount, knife and frags, wood and leather frags.	Firesteel/p (century) and 520/30).
Alfriston	14 (NK, both M and F objects)	Tube [A88]	NK	2nd century coin, fixed plate late Roman buckle, buckle loop with Fe tongue, disc brooch, spearhead, knife, purse ring, bucket rim.	Buckle of S (Swift 2000) disc brooch Marzinzik 2 early 6th. Note: another grave 14a, (Welch 198) the grave a that from t
Alfriston	91 (M?)	Tube [A89]	NK	<i>Francisca</i> , spearhead, knife, firesteel, snaffle bit, handle and frags.	<i>Francisca</i> 4 2006. Fires Legoux et al
Alfriston	68	QB d1 (Fe pin) [A35]	On pelvis.	Glass and amber beads, ivory ring, knife, keys, chisel(?) and fragments.	Beads inclu AD 450–53 black annu c 4th to mi
Blacknall Field, Pewsey	48 (F?)	QB d1 (Fe pin) [A37]	Right shoulder in pair with disc brooch.	Tinned disc brooch, three glass beads.	Annable an dates for d 530.
Bowcombe Down	15 (NK, disc brooch, but 'reported to be M' Evison 1965, 64)	Mount [A145]	On chest (Evison 1965, 64).	Buckle with kite shaped rivets, lead bead [spindle whorl?], disc brooch, metal frags, rings, pottery and glass frags (Evison 1965, 64 and fig 28a–f), Suzuki 2000, 148, also knife.	Hines et al 6th centur form may l 2006, rivet tongue bu
Chatham Lines	Tumulus VI (F?)	8 x Tubes [A105–112]	Around waist (Richardson 2005, 138).	Small square-headed brooches, radiate head brooch, belt fittings and rings (both found with tubes), knife,	Brugmann radiate bro gr 263B (a)

				rock crystal beads, glass beads, amber beads.	brooches, date range
Frilford	5 (F?)	Belt [A12]	NK	Two cast saucer brooches (White 1988, 51).	White says early 6th c (51).
Highdown	34 (M?)	Belt [A13]	NK	Knife, spearhead, firesteel/purse mount.	Marzinzik 2 Rhineland 1999, Fig. 3 century gra
Lyminge	10 (F)	Penannular brooch [A153]	Right shoulder in pair with applied brooch	Applied saucer brooch with star design.	Evison suggests design is 5th however, Hirst found this in contexts.
Mucking	842 (F?)	Tube [A126]	Over lower R part of head stain possibly 'strung with bead or spindle whorl found on chest' (Hirst and Clark 2009, 538).	Small-long brooch on shoulder; polychrome glass bead or spindle whorl near brooch; buckle with inlay at waist; knife left side pelvis; ring lower pelvis.	Hirst and Clark 1a iii, late 5th
Orpington	51 (F)	Belt [A23]	At waist.	Disc brooch, amber bead, Roman coin frag.	Dickinson 1971 brooches n
Pont-de-Buis-Les Quimerch	Single grave (NK)	Belt [A25]	At waist.	Glass bowl with applied trail decoration, ring.	Evison 2011 form late 5th
Portway Down	67 (F?)	QB d1 (Fe pin) [A53]	To left of neck, in pair with Roman brooch	Roman brooch, pin, perforated Roman coins, rim from bucket, chatelaine items: Fe objects, Romano-British penannular brooch, sheet bronze piece, and Fe strips and loops.	Cook and Dickinson 1952 'from
Riseley	69 (F?)	QB d1 [A54]	Centre of breast (either worn or in bag group).	Bag group on breast: disc brooch, Ae frags, Ae disc, Iron Age/Roman cosmetic grinder, folded Ae scrap, pins.	Dickinson 1971 brooches n
S. Marcel	106 (F?)	2 x Hooked mount [A160, A162], bracelet [A161]	In group of objects at west end of grave.	Glass bowl.	Boulanger 1971 bowl 5th n

Temple Hill Dartford	6 (F?)	Bracelet [A165], tube [A138]	Bracelet near left arm/hand, tube threaded on bracelet.	Pottery vessel, pair of disc brooches, amber and glass beads.	O'Brien an late 5th to
Worthy Park	41 (M)	Belt [A27]	Upper-mid thoracic vertebrae.	Inlaid buckle, knife, tweezers on ring.	Marzinzik 2 earlier 6th
Worthy Park	50 (M?)	Mount [A167]	Near right elbow.	Spearhead, ferrule, knife, tweezers.	Spearhead early 6th c
Worthy Park	77 (F)	QB d1 (Fe pin) [A55] Tube [A140]	QB d1 left shoulder, tube in group at waist.	Black annular beads, circular pendant, group at waist: Fe rings, buckle, broad-band annular brooch, style 1 pendant.	Marzinzik 2 6th century

EARLY TO MID-6TH CENTURY

Site details	Grave	QBS object [Appendix 1 number]	Position	Grave assemblage	Datable objects
Buckland Dover	407 (F?)	Tube [A101]	By left pelvis, as part of chatelaine.	Amber and glass beads, knife, buckle and rivets, bow brooches of Poysdorf type, Roman coin and intaglio, Iron Age toggle, chatelaine comprising three tubes (of which QBS tube one), two Fe lozenges and Fe strip.	Grave dated in site report to Phase 2, AD 510/30–550/60.
Chessell Down	40 (F?)	Belt [A7]	NK	Two gilt Ag square-headed brooches, Ag mounted crystal ball, bird brooch, buckle, beads.	Leigh 1980 dates square-headed brooches to his series II, so 530–60. Adams 2012, 83 dates sling-mounted rock crystal balls to the 6th century' although Frankish example exist from

					the late 5th century, see Legoux et al 2006.
Howletts	5 (F?)	Belt [A15]	NK	Button brooch, Style I buckle; gilt frags (Suzuki 2000, 138). Richardson 2005, 257 additionally lists disc brooch.	Button brooch Class Ai (Avent and Evison 1982) late 5th to mid-6th; Suzuki 2008, 334 re-dates this brooch end 5th c. Style I buckle plate, early-mid 6th century (Marzinzik 2003, 42).
Lechlade	123 (F)	Mount [A151]	Chest.	Button brooch with face mask, 56 amber beads, pin and disc brooch, Fe rings, hooks and knife.	Button brooch Avent and Evison class Iii, 5th c. (Suzuki 2008, 314 re-dates to 500-520). Stamped disc brooch mid-5th to mid-6th century (Dickinson 1979). Site report says Phase 1, 2nd half 5th/6th, Table 3.1
Riseley	XCVII (F?)	Tube [A131]	Right side of pelvis just below knife	2 saucer brooches, applied brooch, buckle, knife, amber bead, frag of wheel thrown pottery.	Four-legged swastika design of saucer brooches Welch 1983, 50 suggests is early 6th century. See also Dickinson 1993, 22. Welch 1983, 50 says applied brooch is late 5th.
Temple Hill Dartford	54 (F?)	Disc brooch [A164]	Region of pelvis (same area as bag group).	Knife, Ag square-headed brooch, bag group: latchlifter, annular rings, glass and amber beads, crystal bead, crystal ball, eagle talon, brush case.	Site report (O'Brien and Mustchin 2015) dates grave early to mid-6th century.

6TH CENTURY

Site details	Grave	QBS object [Appendix 1 number]	Position	Grave assemblage	Datable objects
Alfriston	43 (F)	Penannular brooch [A141]	On chest with other brooches.	Glass cone beaker, gilt great square-headed brooch, two small square-headed brooches, two pairs gilt equal-arm brooches, square buckle loop, cowrie shell, two late Roman coins, Ae rings, beads.	Hines et al 2013, 474 dates great square-headed brooch type BR1-b to 510/45–555/85. Leigh 1980, 474, dates square-headed brooches mostly earlier to mid-6th century.
Bifrons	75 (F?)	Tube (pointed fitting) [A94]	By feet.	Ag finger ring, buckle and shoe-shaped rivets, beads, pin, key fragments. At feet: tweezers, shears, bone comb.	Hines et al 2013, 138–9, shield-on-tongue buckle and shoe shaped rivets are 6th century.
Charlton Plantation	40 (burial 24) (F)	Tube x 2 [A103–4]	Both at side of waist.	Knife, cross-pattée brooch, brush holder, buckle, Fe lozenge, 2 rings made from the same Roman bracelet, boar tusk, ivory ring frag, glass and amber beads.	Site report (Davies, Bojko and Crowfoot 1985) dates grave to 6th century.
Réville	147 (F?)	Tube [A129]	In bag group.	Necklace of glass and amber beads, buckle, ring, bag group: knife, girdle hanger, large ring.	Site report (Scuvée 1973) dates grave broadly, early 6th century to early 7th.

MID-LATE 6TH CENTURY

Site details	Grave	QBS object [Appendix 1 number]	Position	Grave assemblage	Datable objects
Howletts	13 (NK)	QB [A30]	NK	Knife, pottery bottle.	Pottery bottle Evison 1979 type

					1c, mid to late 6th century.
Little Eriswell	11 (F?)	Pair of QB d1 [A49–50]	Pair on shoulders.	Two pairs wrist clasps; multi-coloured glass bead, tweezers, ring frag.	Ager 1985, 20 suggests polychrome beads 6th century and wrist clasps mid-6th.
Mill Hill Deal	95 (F)	QB d1 [A51]	Left hip.	Beads, ring. Also left hip: knife, ring and key. Foot of Roman glass vessel below left hip.	Parfitt and Brugmann 1997, 108 dates grave from beads, 560/70–580/90.

M/F = sex from physical anthropology M?/F? = gender implied by grave goods Ae = copper alloy Fe = iron Ag = silver. Belt = any type of belt fitting, so buckle, buckle plate or strap-end. QB d1 = Ager's smaller variant quoit brooch type d1. QB = quoit brooch. NK = not known. Please refer to Appendix 1 for full references for each item, given here as appendix numbers [A1] etc.

APPENDIX 1: see separate document

APPENDIX 2: COMPOSITIONAL ANALYSIS

The Niton XL3T portable X-ray fluorescence (XRF) analyser machine used has a 40keV tube with SiPIN detector with silver filter and resolution is around 230eV giving detection limits of around 10–15 ppm. The ‘main range’ setting of the instrument is suitable for elements between Ti and Bi on the periodic table (standard analytical range). The machine has the facility to evaluate 3 mm and 8 mm wide areas on the metal surface. Following a calibration verification check at the start of each period of use, an average of three readings at 60 seconds sample time were taken for each area investigated. Samples were taken from both the front and the back of each object, and each part of multi-part objects was sampled separately. Where the results differed for front and back, contributory factors were taken into account when judging between them, for instance presence of an iron pin can contaminate the back surface, or decorative treatments such as tinning or silvering may affect the result obtained in adjacent areas on the front surface. The alloys have been distinguished following the categories used by Bayley and Butcher (2004, Table 5), so, for instance, ‘bronze(lead)’ and ‘bronze lead’ distinguish different proportions of lead.

BELT FITTINGS

Site Details	Appendix 1 Cat no	Alloy	Notes
Alfriston, grave A	A2	Bronze [back].	Front contaminated with iron.
Alfriston, grave 17	A3	Bronze lead[backle frame and pin] gunmetal lead [backle plate] copper [strip linking frame and plate] bronze [backle plate and 2nd belt plate].	Silvered area confirmed as silver.
Bifrons	A4	Brass/gunmetal lead [front]; gunmetal lead [back]; bronze lead [front of backle plate]; bronze (lead) back of backle plate.	Silvered areas confirmed as silver. Back of main plate oxidised.
Bishopstone, Bucks.	A6	Copper/brass lead(front) brass lead (back).	Object originally silvered.
Chessell Down, grave 40	A7	Bronze lead.	Object originally silvered.
Exton	A9	Bronze lead.	Oxidised surface.

Faversham	A10	Bronze/gunmetal leaded [front].	Oxidised surface. Back contaminated with iron.
Faversham	A11	Bronze.	
Frilford, grave 5	A12	Brass(leaded) [back]	Oxidised surface. Variable reading from front.
Highdown (Ferring), grave 34	A13	Gunmetal(leaded)[frame]; brass/gunmetal[plate back] bronze[straps between frame and plate].	Gilding confirmed on front of plate.
Howletts, grave 5	A15	Bronze [back].	Oxidised surface. Front tinned?
Meonstoke	A16	Gunmetal leaded [back].	Front surface tinned.
Mucking, grave 117	A20	Copper/brass (leaded) [1a]; gunmetal leaded [1b]; brass/gunmetal (leaded) [1c]; brass/gunmetal leaded [1d]; Copper/brass leaded [1e]; bronze leaded [buckle tongue].	Back oxidised. All readings taken from front.
Mucking, grave 823	A21	Gunmetal leaded.	Metal analysis from Hirst and Clarke 2009, 140.
Newport, Hamp. (IoW)	A22	Gunmetal leaded.	Oxidised surface.
Orpington West, grave 51	A23	Bronze/gunmetal [buckle loop] gunmetal [plate] bronze(leaded) [strip on back].	
Worthy Park (Kingsworthy), grave 41	A27	Bronze.	Metal analysis from Wilthew 2003, 197–8.
Highdown (Ferring), grave 12	C3	Brass, high levels of Zinc > 17 %.	Doubtful as a quoit brooch style object, see Appendix 1.

Smaller Variant Quoit brooches (for Shalfleet and Aylesbury examples, see table of silver objects below)

Site Details	Appendix 1 Cat no	Alloy	Notes
<i>Type D1</i>			
Alfriston, grave 57	A36	Bronze leaded [front]; bronze(leaded) back.	

Alfriston, grave 68	A35	Bronze leaded.	Oxidised surface. Tinned front confirmed.
Blacknall Field, Pewsey, grave 48	A37	Bronze.	Metal analysis from site report (Annable and Eagles 2010). Tinned front confirmed.
Clatterford	A39	Bronze.	Spots of oxidation.
?Herpes	A40	Bronze(leaded).	Spots of oxidation on back.
Highdown (Ferring), grave 7	A41	Bronze	Tinned front confirmed.
Highdown (Ferring), grave 26	A42	Bronze leaded [back]; bronze(leaded) [front].	
Highdown (Ferring)	A43	Bronze [front]; bronze(leaded) back.	
Highdown (Ferring)	A44	Copper/brass.	
Highdown (Ferring)	A45	Bronze leaded [back]; bronze(leaded) front.	
Highdown (Ferring), grave 60	A46	Bronze [front].	Back contaminated with solder.
Mucking, grave 637	A52	Bronze leaded.	Metal analysis from Hirst and Clark 2009, 415–420. Tinned front confirmed.
Portway Down, grave 67	A53	Bronze leaded.	Metal analysis from Bayley 1985.
Riseley, grave 69	A54	Brass.	High levels of Zinc, > 17 %.
Worthy Park (Kingsworthy), grave 77	A55	Bronze.	Metal analysis from Wilthew 2003, 197–8.
Barnwell	A58	Bronze(leaded).	Oxidised surface.
Wheatley, grave 12	A69	Bronze leaded.	Oxidised surface.
Barrington	A87	Bronze(leaded)	Oxidised surface.

D-SECTIONED TUBES

Site Details	Appendix 1 Cat no	Alloy	Notes
Alfriston, grave 14	A88	Gunmetal leaded [front].	
Alfriston, grave 91	A89	Brass.	
Bifrons, grave 75	A94	Bronze.	Varnished.

Bifrons	A95	Bronze [front].	Oxidised surface, but corrosion removed from section on front.
Bifrons	A96	Bronze(leaded).	Oxidised surface. Back varnished.
Bifrons	A97	Gunmetal leaded.	Oxidised surface. Varnished.
Bifrons		Brass/gunmetal leaded [back]; gunmetal leaded [front].	Patches of oxidation.
Bifrons	A99	Brass leaded.	Oxidised surface.
Chatham Lines, tumulus vi	A105	Brass[back].	Patches of oxidation.
Chatham Lines, tumulus vi	A108	Brass(leaded) [front]; Copper/brass(leaded) [back].	Patches of oxidation.
Chatham Lines, tumulus vi	A109	Brass(leaded).	Patches of oxidation.
Chatham Lines, tumulus vi	A110	Gunmetal(leaded).	Patches of oxidation.
Chatham Lines, tumulus vi	A111	Bronze.	Patches of oxidation.
Chatham Lines, tumulus vi	A112	Gunmetal [front]; Gunmetal(leaded)[back].	Patches of oxidation.
Croydon	A113	Bronze leaded.	Oxidised surface.
Droxford	A114	Bronze leaded.	Oxidised surface.
East Shefford	A115	Bronze.	Patches of oxidation.
Highdown (Ferring), grave 29?	A117	Bronze leaded.	Oxidised surface.
Highdown (Ferring)	A118	Brass leaded.	Oxidised surface.
Highdown (Ferring)	A119	Bronze/gunmetal leaded.	Oxidised surface.
Highdown (Ferring)	A120	Bronze/gunmetal leaded [front].	Patches of oxidation.
Highdown (Ferring)	A121	Brass.	Spots of oxidation.
Isle of Wight	A122	Bronze leaded.	Oxidised surface.
Mucking, grave 842	A126	Gunmetal leaded.	Metal analysis from Hirst and Clarke 2009, 144.
Mucking, grave 637	A127	Bronze leaded	Metal analysis from Hirst and Clarke 2009, 107.
Riseley, grave XCVII	A132	Copper/brass leaded (front) Brass leaded (back).	Back is oxidised.
Rochester (Orange Terrace)	A133	Copper/brass.	
Restricted location, Isle of Wight	A134	Bronze leaded.	

Shorwell	A136	Bronze (leaded).	Oxidised surface. Tinned?
Temple Hill, Dartford, grave 6	A138	Brass (leaded).	Spots of oxidation.
Worthy Park (Kingsworthy), grave 77	A140	Brass.	Metal analysis from Wiltshew 2003, 197–8.

OTHER COPPER ALLOY OBJECTS

Site and Object Details	Appendix 1 Cat no	Alloy	Notes
Bowcombe Down, grave 15, mount	A145	Bronze/gunmetal leaded.	Spots of oxidation.
East Shefford bracelet	A147	Bronze.	
Faversham, plate brooch	A148	Brass, edge strip and extra strip over pin catch area bronze leaded; pin catch loop bronze (leaded).	Silvered areas confirmed as silver.
Higham, plate brooch	A149	Gunmetal (leaded).	Metal analysis confirms front originally silvered.
Howletts, grave 28, plate brooch	A150	Brass/gunmetal leaded [front only].	Oxidised surface.
Lyminge, grave 3, mount	A152	Brass/gunmetal (leaded) [front].	Back oxidised.
Lyminge, grave 10 penannular brooch	A153	Bronze leaded.	Oxidised surface.
Riseley, grave 22, penannular brooch	A156	Bronze leaded (back). Bronze (leaded)(front).	Oxidised surface.
Temple Hill, Dartford, grave 6, bracelet	A165	Bronze.	Oxidised surface.

SILVER OBJECTS

Site and Object Details	Appendix 1 Cat no	Composition	Notes
Alfriston, grave 43 penannular brooch	A141	Ag c 86 %, Cu c 8.7 %, Sn c 2.7 %, Au 0.9 %. Pin: Ag 94 %, Sn 2.8 %, Au 1.4 %.	
Bifrons, pendant	A142	Ag 88 %, Cu 5.5 %, Sn 4 %, Au 0.9 %, Pb 0.4 %.	Gilding on front confirmed by metal analysis.

Bifrons, pendant	A143	Ag 88.9 %, Cu 5.1 %, Sn 3.4 %, Au 0.9 %, Pb 0.5 %.	Gilding on front confirmed by metal analysis.
Isle of Wight, smaller variant quoit brooch type d1	A48	Ag c 87 %, Au 1.2 %, and Sn c 2.8 %.	
Stone area, Aylesbury vale, smaller variant quoit brooch type d2	A66	Ag 92 %, Cu c 6 %.	Metal analysis from PAS entry.
Howletts, grave 2, zoomorphic quoit brooch	A29	Ag 92.8 %, Au 1 %, Zn 0.3 %, Sn 1.2 %, Cu 4.1 %, Pb 0.5 %.	
Howletts, grave 13, zoomorphic quoit brooch	A30	Ag 95.2 %, Au 1.1 %, Sn 0.9 %, Zn 0.1 %, Cu 2.2 %, Pb 0.3 %.	
Sarre, zoomorphic quoit brooch	A31	Ag 92.8 %, Au 1.1 %, Zn 0.7 %, Cu 4.9 %, Pb 0.5 % [back].	Gilding on front confirmed by metal analysis.