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Shakenoak revisited: post-Roman occupation and burial at a Cotswold-edge villa in the light of new evidence and approaches

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ABSTRACT
Shakenoak villa (Oxfordshire) is situated at the interface of the sub-Roman Cotswolds with the Early Anglo-Saxon upper Thames region. A probable sacred site, it may have been an enduring ritual focus. Place-name and topographical evidence builds an unusually strong impression of continuity across the post-Roman period. As at other Cotswold villas, some buildings were occupied well into the fifth century. A cemetery of at least 22 inhumations, mainly male and with sharp-weapon trauma, provides radiocarbon dates which, when modelled, centre around the middle and second half of the fifth century. Multi-isotope analysis ($\delta^{13}C_{coll}$, $\delta^{15}N$, $^{87}Sr/^{86}Sr$, $\delta^{34}S$, $\delta^{13}C_{carb}$, $\delta^{18}O$) of seven individuals indicates a northern European diet typical for this period, and suggests that most of the individuals came from south-west Britain. They may therefore have been warriors posted here by a post-Roman authority in the Cotswolds, not Germanic-speaking mercenaries from the Continent. The late- or sub-Roman military equipment, and a fifth-century bow brooch, are reassessed in the light of more recent studies and new parallels. A boundary ditch contained redeposited Anglo-Saxon material in the fifth- to eighth-century range, suggesting an adjacent settlement; eighth-century sceattas were found on the villa itself. With the new perspectives, Shakenoak re-emerges as a classic study in continuity.

Introduction

Excavated between 1960 and 1967, the Roman villa site at Shakenoak Farm, Oxfordshire (SP 375 138) soon came to be viewed as particularly valuable archaeological evidence for the transition from the Roman to the Anglo-Saxon period across the fifth century in this part of England. Now, some 50 years on, it is illuminating to look back on how the site was perceived at that stage. In the definitive survey *The Archaeology of Anglo-Saxon England*, edited by David M. Wilson and published in

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1976, Wilson introduced it as a prime example of how villa sites did not abruptly fail, but gradually deteriorated and shrank in that phase (Wilson 1976b, 6 and 20 n.12). Peter Fowler also perceived Shakenoak as both important and interesting in relation to continuity and change in agrarian settlement, and he inferred that the graves from the latest phase of the former villa, in the context of 'late Roman military belt-fittings' found very close by, represented 'incomers': presumably the 'Saxon' troops employed by sub-Roman authorities in Britain reported by Gildas (*De excidio*, ch. 23 Winterbottom 1978), who soon rebelled and seized much of the land (Fowler 1976, 33; cf. Hawkes in *S1*, 96–101, *S3*, 74–7; Hawkes and Dunning 1961).

It is curious how rapidly and how thoroughly the site was then dropped from the burgeoning debate on the circumstances out of which Anglo-Saxon England was to emerge. Shakenoak is apparently not mentioned at all in Chris Arnold's *Roman Britain to Saxon England* (1984: here and elsewhere we rely on the index to identify which sites were discussed as significant), while in his *An Archaeology of the Early Anglo-Saxon Kingdoms* (1997, 77 and 90) it was referred to only in respect of the utilitarian economic evidence the excavations produced (cf. Wilson 1976a, *passim*). Likewise, the Shakenoak excavations seem to have offered nothing of tangible relevance to the 'Late Antique' school, which carefully emphasized the extent to which a sub-Romano-British culture could have continued to function with real viability through the middle centuries of the first millennium (e.g. Dark 1994, 2000; cf. also Esmonde-Cleary 1989). One deterrent has probably been the mode of publication, which was exemplary in being both quick and full, but took the form of a sequence of small fascicules (*S1, S2, S3, S4, S5*). For the authors, these solidified interpretations at too early a stage; for readers, they are challenging to engage with.

Notice of the site has re-emerged, briefly, in the report of the 'Fields of Britannia' project (Rippon, Smart, and Pears 2015, 11; cf. Reynolds 2009, 41, 227), albeit on the basis of the radiocarbon dates on the human skeletal remains that are reviewed, contextualized and discussed in greater detail in the present paper. Stephen Rippon and colleagues rightly pointed out that the attribution of an immigrant background and a 'Germanic' or 'Saxon' identity to those individuals was archaeologically groundless. That observation, perhaps, highlights a conceptual unease that has discouraged engagement: a contrastive framework rooted primarily in studies focused on either a 'British/Celtic' or a 'Germanic/Anglo-Saxon' context has left an uncertain site like Shakenoak falling into a gap between those constructs. The time has surely come to look at it afresh.

The landscape and settlement context: topography, prehistory and the Roman roads

Shakenoak lies on the edge of the Cotswolds, in the Wychwood area of west Oxfordshire, between the Evenlode and Windrush rivers (Figure 1). The environs are somewhat unusual in their topography and hydrology (Figure 2; H.P. Powell in *S3*, 143–55; *VCH Oxon*. 12: 296–304). The site, bisected by a small stream (an abandoned course of the Windrush) that flows into the Evenlode, is low-lying and in places often waterlogged. The impervious clays of the Hampton Marly beds collect ground-water through the overlying limestone, and emit it through scattered springs to feed the

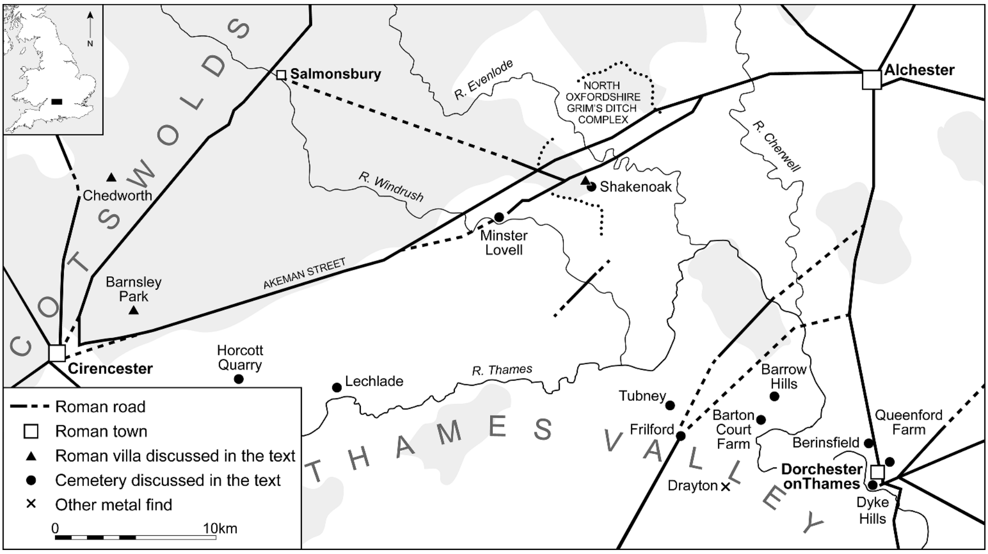

Figure 1. General location map.

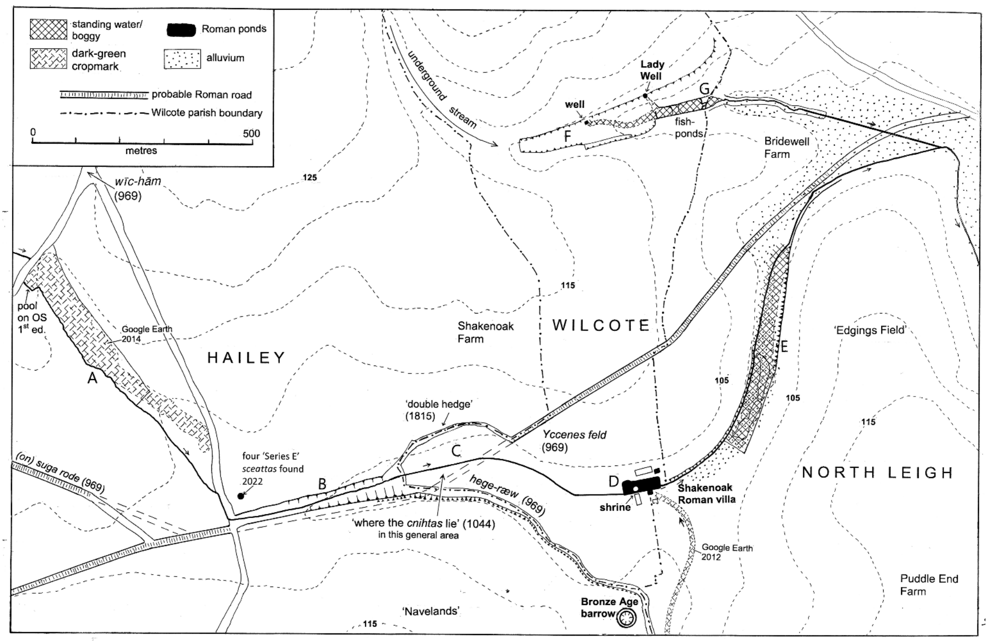

Figure 2. The topography of the Shakenoak valley, showing hydrology. A = linear pond visible as cropmark; B = slightly sunken road following modified stream-bed; C = oval projection in parish boundary enclosed by double hedges; D = the Shakenoak Roman pond; E = broad pond following the stream-bed, of unknown date; F = sunken, pond-like area enclosing a springhead; G = the Wilcote manorial fishponds. Roads and field-boundaries as on the O.S. 1st edn. 25-inch survey.

stream. The hard-water springs have formed occasional deposits of white tufa that show intermittently in the banks, especially at Bridewell Farm down-stream from Shakenoak. In places, the stream-bed broadens naturally into shallow linear pools: one of these was re-worked as the major pond in the Shakenoak Roman complex, while another – on a branch-stream to the north fed from an underground stream and the Lady Well at Wilcote – is re-worked as a line of late-medieval fishponds (*VCH Oxon*. 12: 297).

This is the kind of 'strange place' that could recurrently have been perceived as numinous: the scene of successive ritual episodes that do not necessarily represent continuity, as Richard Bradley has recently emphasized (Bradley 2016). A substantial and isolated Bronze Age barrow is positioned so as to look down on the later villa site in the stream-valley (*S5*, 179–82); it remains visible even after intensive ploughing, and must have been a conspicuous landmark two millennia ago. There is no evidence for pre-Roman ritual activity on the villa site itself, but such a hypothesis might help to explain the abiding puzzle of Shakenoak: why build in such an inconvenient place? The positioning of the main buildings on facing slopes of a small, boggy valley created what looks like an entirely avoidable obstacle, the mitigation of which through drainage, dumping and revetting continued through almost the whole Roman sequence. In this seemingly perverse determination to build out on to unstable ground abutting streams and pools when solid ground was close at hand, Shakenoak resembles a group of Cotswold 'villas' for which ritual functions have recently been proposed, along with a newly-discovered Roman springhead shrine at Showells Farm in Hailey, only 3 km. to the west (Blair 2022, 370–3; Henig et al. 2023).

Major changes to the local topography happened just before and just after the Roman conquest in the 40s AD (Blair 2020, 2021; Copeland 1988, 277–92; 2002). The huge and enigmatic linear earthwork known as the North Oxfordshire Grim's Ditch enclosed what would in due course emerge as an exceptionally dense cluster of Roman villas, some of them with late Iron Age antecedents. Akeman Street was extended westwards from the military base at Alchester in north-east Oxfordshire to the Dobunnic oppidum of Bagendon in the Gloucestershire Cotswolds, and for much of its course through Wychwood it ran parallel with a now largely lost road that may in fact represent the primary course (Blair 2020, 45–7). Much in this sequence remains uncertain, but the Shakenoak villa was evidently established in the aftermath of fundamental political, military and social changes around the middle decades of the first century. It stood immediately south of the 'lost road', which deflects slightly towards it and from which it would have been visible.

The Romano-British complex

This is not the place to discuss the Roman phases in detail, but we need to understand the processes that culminated, after more than three centuries, in the landscape of ruins where the fifth-century activity took place (Figure 3). The following summary tries to stand back from the interpretations developed through the successive excavation reports, and proposes a somewhat different sequence.

The dominant feature was a big, shallow rectangular pond, formed in the muddy stream-bed. By AD 100 this was flanked by two smaller pools, and by two buildings facing each other across it: a small house (Building B), and a probable bathhouse on a miniature scale (Building C). Over the next century, Building B was rebuilt on a larger scale as a corridor villa, while a new structure

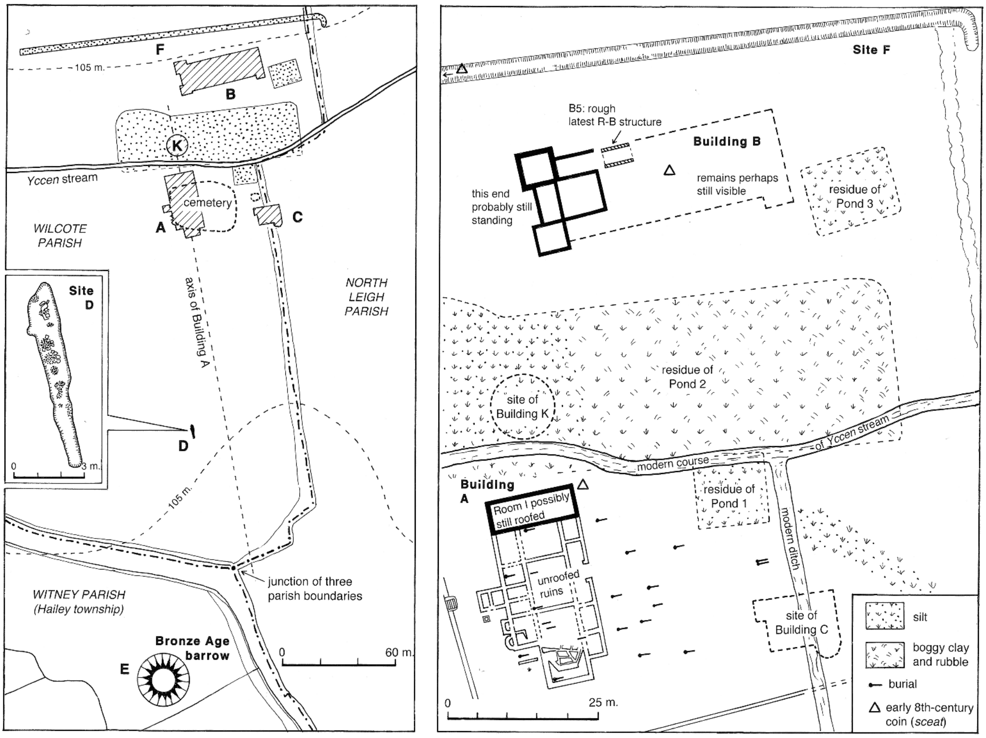

Figure 3. The Shakenoak site: *Left*: The villa buildings in relation to surrounding features (site letter code according to the excavators). *Right*: The site in the early fifth century.

(Building A) was added to the west of Building C and then rebuilt. Meanwhile, management and clearance of the ponds was abandoned, so that they reverted to what were presumably increasingly shapeless expanses of boggy ground; a rubble-footed circular building containing a four-post setting (Building K) was built inside the major pond, towards its west end. During the third and fourth centuries, buildings C and K were demolished and covered with rubbish-tips, and building B was demolished except for its west end. Building A, on the other hand, was reconstructed in the period c. AD 240–70 on a grander scale, with a bath suite and hypocaust at the south end.

This was an odd kind of villa, most of all in its configuration around a stream and a big, shallow pond. The excavators thought that 'the only possible reason for this complex of ponds is the breeding of fresh-water fish, although no other British villa has produced evidence of this nature' (*S5*, 17). That remains possible, but the idea that the whole enterprise was a fish-farm, reconstructed as a high-grade residence in this unprepossessing place even after the fish-farm was abandoned, is unconvincing. It is worth asking whether the function of the complex was in fact ritual: a sacred pool equipped with facilities for travellers along the adjoining long-distance road. The short-lived circular building (K), inserted into the abandoned pond, was interpreted by the excavators as a round-house, but in boggy ground interspersed with standing pools that seems most improbable: it should surely be understood as a shrine. For present purposes, the relevance of that is the possibility that numinous associations survived through the fourth and fifth centuries.

The site and its environs in the fifth century

The Cotswold edge, where Shakenoak is situated, is something of a frontier between the abundant evidence for fifth-century Anglo-Saxon settlements and cemeteries in the upper Thames valley and its tributaries, and the sparser, more tenuous indications found westwards across the Cotswolds (Blair 1994, 6–29; McBride 2020, 147–285). The impressive nodes of activity around Abingdon/Dorchester (now in southern Oxfordshire) and Fairford/Lechlade (Gloucestershire) lay well to the south-east and south. An Anglo-Saxon presence near Shakenoak while burial was active there, c.AD 430–510, is elusive but not completely invisible: burials on the Windrush at Minster Lovell included a well-furnished female with disc brooches, datable to the early/mid-fifth century, as well as a sixth-century male with spear and shield (Dickinson 1976, 2, 184–5). A likely factor in relations between Shakenoak and the region around it is the 'lost' Roman road, parallel with Akeman Street, which apparently remained open as a through-route into this period and beyond (Blair 2020, 47, 64–5): Shakenoak and the Minster Lovell cemetery were both directly on this road, only 6 km apart.

The Shakenoak site (Figure 3) must still have been dominated by the abandoned pond in the stream-bed, now reduced to a long boggy patch flanked by overgrown mounds. The footprints of Buildings C and K were masked by the material dumped over them. In the case of Building B, though, the west end probably still stood. Immediately east of this fragment, on the site of the north corridor, were 'two parallel walls of massive stones, poorly laid and without foundations', on a west-east alignment:

> They were embedded in the Period B.4 fill of the former north corridor, and the surface of this fill was utilized as the floor. … There were no signs of cross-walls, so the structure must have had flimsy end-walls, if any. A dense black deposit, 2 in. to 3 in. [5 to 7.5 cm.] thick, covered the area between the walls and extended some 15 ft. [4.6 metres] further south. It contained … [fused bronze, crucible fragments, some metal objects, and] five coins of the House of Constantine, three of the House of Valentinian and five of the House of Theodosius, together with coarse pots … The structure was probably built in the middle years of the fourth century and the wear on the Theodosian coins indicates that occupation continued for as long as on Site A, that is to say until c.420–430. (*S2*, 35–40)

In section these footings are each shown as a single course of two blocks side-by-side, 57 cm wide on the north and 48 cm on the south (*S2*, Figure 12, Section D-D). There is no detailed plan, but as scaled off the outline plan – and assuming archaeologically invisible end walls – the structure measured 4.6 by 2.2 metres internally: it was therefore very small (see also the present Figure 18). Although clearly placed with reference to the Roman footings, there seems to be no firm evidence that it was necessarily built as early as the mid-fourth century. In character and finds, the dark layer between and outside the walls sounds similar to the early fifth-century dump-layer in and to the east of Building A.

That final activity in Building A is crucial for present purposes (*S1*, 24–7). Before the abandonment of the hypocaust, its flues were 'halved in width by rough insertions of poor masonry'. Cleaning of floors then stopped through the whole building, allowing dirt including Theodosian coins to accumulate. Everything was then unroofed except the room at the northernmost end (Room I), and a much larger build-up of rubbish, including pottery with a higher proportion of colour-coated ware, accumulated in the former rooms closest to Room I. Room I was probably re-roofed on the opposite (i.e. west-east) axis as a free-standing structure, with a new gutter dug into the floor of the former Room II, parallel with this roof and presumably draining from it (*S1*, 28; see present Figure 18). What happened next must be one of the most circumstantial accounts of the end of Roman-style occupation in Britain, and merits repetition (*S1*, 26):

> A few patches of carbonised spelt wheat … lay on the latest rough floor. The roof of the room had clearly been destroyed by fire; above the latest floor on which lay the wheat was a layer of carbonised wood containing many nails, and above this was a layer of shattered and heavily burned pentagonal stone roof-slates and several hundred iron nails, some still in position in the broken slates. Above the slates, in the middle of the room, lay a roof ridge-stone.

Meanwhile, a 'black earth' layer had accumulated over the floor of Building A (apart from Room I), and over an area extending eastwards from it towards Building C. Thereafter, this area started to be used as a cemetery. Much hinges on the date of this layer, and that is addressed further below in the context of the burials and metal-work. Debris from the fire that destroyed Room I spread into Room II and 'overlay the latest black deposit' (*S1*, 26), but it unfortunately remains unclear whether the burials dug into the 'black earth' pre-dated or post-dated that event. Burial 1, at least, was deposited some time after the refurbishment of Room I, since it evidently over-lay the fill of the drainage-gully cut into the floor of Room II (description in *S1*, 27 correlated with plan in *S4*, 33). The fact that Room I contained no burials might tend to suggest that it remained occupied while the rest was laid out as a formally-arranged cemetery, the unroofed walls or their footings defining burial areas. On that scenario one might envisage the inhabitants of the reduced building, or of other buildings on the site, supervising the funerary arrangements. It must be stressed, though, that this is entirely hypothetical: the only chronological anchors for events after the early fifth century are the radiocarbon-dated burials.

Two sites on the periphery of the villa buildings provide certain or possible evidence for post-Roman activity. 'Site F' (reported in *S3*), a straight and very regular ditch, on a west-east alignment, to the north of Building B, produced a remarkable quantity of important finds of various dates. The sequence of fill-layers in this ditch is potentially important, but problematic. The excavators believed that it was originally dug in the fourth century, modified in the fifth, and then gradually filled in three main phases during the fifth to eighth centuries. However, while there does seem to be a broadly consistent chronological sorting of finds by depth, little coherent stratigraphy was observed in the fills after an initial rapid collapse. The late John Hunt proposed in 2013 that the feature was in fact medieval, deliberately backfilled with dumps of material from the villa site (Hunt 2013). The fill-layers include sherds of hand-made (i.e. not wheel-thrown) pottery of a diversity of vessel-forms and in a range of fabrics, defined in the site report by different clays and tempers: calcite, quartz and grass, the latter probably from dung (Berisford in *S3*, 56–66). The stratigraphical problems and the inevitably fragmentary character of the pottery limit us to relatively tentative conclusions about the nature and chronology of the sequence (cf. Blinkhorn in Chambers and McAdam 2007, 229–47).

The pottery could represent much if not the whole period between the fifth-century date of a 'small long' brooch (discussed below) and the final stratified fill which contained a mid-eighth-century *sceatt*; equally, its chronological range could be much more restricted than that. Two distinct phased deposits of the hand-made pottery, at different levels and to some extent in different areas of the ditch, were identified; they are labelled F.3 and F.4. Of these, F.4 does appear to contain sherds that are more likely to be relatively close in date to the eighth-century coin. A comparison of the two assemblages corroborates Freda Berisford's suggestion that grass-/chaff- or organic-tempered ceramics came to predominate in the local functional pottery range, superseding the fabrics with other tempers, especially the oolitic limestone that she referred to as calcite; only one rim sherd in F.4 (no. 413) contained calcite (with quartz) tempering. That was also in fact produced in the finer, hard-fired clay that is marginally more frequently found in the assemblage from F.3 than in that from F.4. The shift towards a predominance of chaff-tempered ware on early Anglo-Saxon sites in this area is characteristic of the sixth century, and it thus appears plausible that the material deposited in the ditch represents settlement in the vicinity across that chronological frontier. The MNV (minimum number of vessels) count for the hand-made pottery in total is a modest 24. Both of those F.3 and F.4 assemblages are quantitatively dominated by familiar Late-Roman pottery, and both must therefore chronologically be extensively mixed.

There is no convincing case to be made here that the adoption of a simpler technique of hand-made potting took place locally around the turn of the fourth to fifth centuries AD in response to the collapse of supply from centres of large-scale production (cf. Arnold 1984, 98; Fleming 2021, 64–6). Nor, on the other hand, is there compelling evidence for continuity. The small long brooch therefore stands in frustrating isolation, as the one artefact that is reliably contemporary with the sub-Roman material but culturally Germanic, though heavy repairs suggest a long life in use, and therefore a deposition significantly later than that of the military equipment (see below).

Finally, the isolated 'Site D' was discovered (it is unclear how) at a point about 100 metres south of Building A (*S1*, 31–2 and figures 3 and 9). This was a discontinuous, 7.6-metre length of wall-trench for a timber building, containing irregularly spaced post-holes ranging in diameter between 15 and 45 cm. The fill included a few sherds of Roman pottery, including later fourth-century colour-coated ware. Post-in-trench construction is unusual on Romano-British sites in the region, and the pottery could be residual, so there is a strong possibility that this structure was sub-Roman or early Anglo-Saxon. It must have been part of something bigger, but without more evidence we can do no more than note its position, roughly aligned between the Bronze Age barrow and Building A.

From Roman to Anglo-Saxon Shakenoak: continuities in the settlement landscape

If Shakenoak has tended to drop out of debates about post-Roman Britain, the unexpected fifth-century date for the cemetery should give it a new lease of life. In

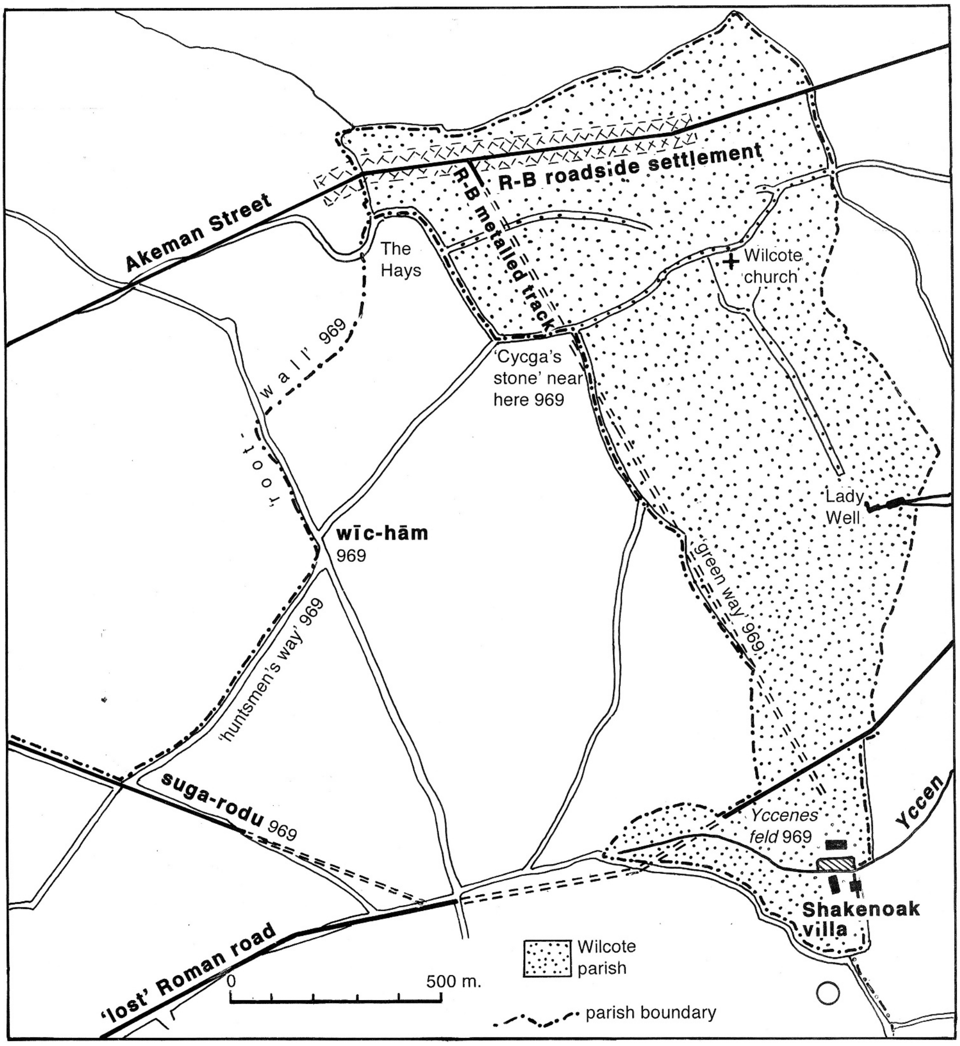

Figure 4. The environs of Shakenoak: topographical and onomastic indications of continuity.

the light of the scientific evidence, of our review of the excavation and finds, and of new archaeological, topographical and onomastic perspectives from the past half-century, it is timely to reappraise the case for continuity (Figure 4).

First, the Brittonic stream-name. The two sets of Anglo-Saxon charter-bounds for the Witney estate, dated AD 969 and 1044, respectively, run 'to the open ground of *Yccen* (*on Yccenes feld*)' when they reach the stream-valley at a point west of the Shakenoak site (S 590, S 771). *Yccen*, versions of which reappear in later field-names adjoining the stream, is the Brittonic word more familiar from the various rivers called Itchen. Margaret Gelling commented: 'It is unusual in this area for so small a stream to keep its pre-English name in the Old English period, and the survival may be due to a period of coexistence here between Celtic and Old English speakers' (Gelling 1967, 102, developed in *S3*, 135, and; Gelling 1978, 203–4). The upper

Thames region is indeed on the eastern limit of the zone where Brittonic names survive for any but the largest rivers (Gelling 1978, 88–90), and the argument still carries weight.

The second onomastic point relates to the compound *wīchām*, which in the charter-boundaries describes a point on its boundary not far from the Shakenoak site. In 1967, Margaret Gelling noted the striking proximity of the twenty-eight *wīchām* place-names known in England to Roman roads and small settlements, and reached the conclusion that

> in the earliest period at which English place-names arose there was a type of settlement called a *wīchām*, which occurred close to Roman roads and usually near small Romano-British settlements, and which derived its name from a connection with the *vici* of Roman Britain

(Gelling 1967, 96; developed in *S3*, 138–9, and; Gelling 1978, 67–74). In the present case, she was much impressed by the proximity of this boundary feature to the early Romano-British settlement at Wilcote, on Akeman Street to the north of Shakenoak (Gelling 1967, 92, 99–103; *S3*, 138–9).

More recent work has strengthened the general hypothesis, and place-name scholars accept an association of *wīchām* names with late Roman places or activities that were visible to early Old English speakers (e.g. Coates 1999). There is, however, a problem with Gelling's interpretation of the Shakenoak case: it is only through a very forced interpretation of the charter-bounds that it can be placed close to the Wilcote settlement (Figure 4). The sequence of the first survey (closely followed by the second) runs: to the 'sow's straight track(?)' (*on suga rode*); along the *rodu* to the 'huntsmen's way' (*on huntena weg*); along the way until it reaches *wīchām*; thence 'always by the root-wall [i.e. wood-bank]' (*a be wyrt wale*) to *ofling* acre. The *suga rodu* is firmly identifiable as a relict Roman road (Blair 2020, 54–6), from which the parish boundary (elsewhere identical with the estate-boundary) turns north-eastwards along a lane which is presumably therefore the 'huntsmen's way'. The boundary then meets a crossroads and turns sharply northwards, around an enclosure called The Hays that could plausibly be identified with an encircling 'root-wall', before eventually reaching the Wilcote Roman settlement. *Wīchām*, therefore, was not at Wilcote but at or near the crossroads (SP 3614 1462), about 1 km north-west of the Shakenoak site and mid-way between the two Roman roads. No features are known in the vicinity, but an impressive Roman bronze figure of Minerva was recently found nearby (Chapman et al. 2019, 481–3). As with *Yccen*, the name points to linguistic and cultural contact in the environs of Shakenoak, but cannot at present be pinned down to a specific structure. Perhaps the most natural reading is that *wīchām* was the crossroads itself, possibly a site for markets or meetings.

Another factor is the size and configuration of Wilcote parish (*VCH Oxon*. 12: 296–304) – the smallest rural parish in Oxfordshire, and one of the smallest in England (Figure 4). Its odd shape suggests that it was purposely framed to include elements surviving from the past: a stretch of Akeman Street (including almost the whole of the Roman roadside settlement) to the north; the Shakenoak villa site and a stretch of the 'lost' Roman road to the south; and the north–south metalled Roman track linking the two roads; the main internal topography of the parish is aligned on the Roman road-system (Gelling in *S3*, 138–9; Blair 2020, 58). This is remarkable: to claim that Wilcote parish is itself a Roman or sub-Roman land-unit may go too far, but it does respect the Roman topography to an extent that is rarely visible in Britain.

Further intimations that the sub-Roman and early Anglo-Saxon activity at Shakenoak was unusual can be found in its surprising after-life. The material dumped in the ditch at Site F (reported in *S3*) contained exceptional quantities of seventh- to eighth-century occupation debris, including evidence for stock-rearing (with an emphasis on sheep), weaving and smithing. An early eighth-century *sceatt* was found in the same ditch, and two others in topsoil over Buildings A and B (*S2*, 47, 49 and Figure 17; *S3*, 35 and Figure 11; *S4*, 40; two of the coins are of Series K and the third is of Series L). It is reasonable to think that this settlement had some connection with the small late seventh-century cemetery at Holly Court, 1.5 km eastwards along the Roman road, where one burial included a cross-inscribed relic-box (Blair and Hills 2020, 83–6).

This looks like a farm producing wool and cloth, perhaps for the wider commercial markets suggested by coin use (Blair 1994, 20–5). Evidence for activity of this kind is now well known (though much less in the Cotswolds than in eastern England), and is sometimes found in or near Roman forts annexed for monastic use after AD 650. It is, however, very unusual on a rural Roman villa that had no visible ecclesiastical use in the seventh century, and at Shakenoak it adds to the rich mix of abnormalities. The recent find of three *sceattas* of similar date (Series G, KLc and VCa) at a Roman site very nearby, the Showells Farm springhead shrine, is intriguing but equally hard to pin down (Blair 2022, 369). Just before this paper went to press, four slightly earlier *sceattas* (all Series E), perhaps from a hoard, were found about 800 m west of the Shakenoak site, immediately north of the Roman road (pers. comm. L. Jackman). Was there something about the physical character of these places that attracted activity as the economy expanded after the 660s, or was that activity the culmination of genuinely continuous occupation since the fourth century?

Finally, the phrase 'where the *cnihtas* lie' in the Witney charter-bounds of 1044 – referring to a section of the boundary near Shakenoak – must be mentioned, if only to be set aside. When the cemetery on the villa was found, this reference provoked much interest, and was part of Gelling's case for a resilient folk-memory (*S3*, 136). Inevitably, the new dating of the cemetery compromises that argument: a tradition of a group of buried warriors (*cnihtas*), passed down orally from c.500 to 1044, may be theoretically possible but takes some believing. Nor does the charter term fit easily with the site: it refers to a landmark on the boundary, apparently somewhere near or to the north of the Bronze Age barrow. The field immediately south-west of that point, on the Witney side of the boundary, has the suggestive name 'Navelands' (*VCH Oxon*. 14, 239). The contrast in modern English between 'knights' and 'knaves' masks the similarity of late Old English *cnihtas* and *cnapan*, both connoting young servants or retainers in senses potentially close to 'the lads' in modern colloquial speech. In the light of recent work on late Anglo-Saxon execution cemeteries, *ðær ða cnihtas licgað* can best be understood as something like 'where the gang lies', referring to a band of executed brigands buried 'uncleanly' on a boundary near a prehistoric monument (Reynolds 2009, 227); it is possibly significant that this boundary mark appears in the 1044 charter-bounds, but not in the earlier set from 969. The likelihood is, then, that the charter term refers to an unidentified tenth- or eleventh-century execution cemetery unrelated to the one at the villa, though it could well reflect some continuing perception of Shakenoak as a special or numinous place.

Many case-studies of territorial continuity in post-Roman Britain have been proposed over the years, and most of them are hard to substantiate. Taking all the evidence into account, the example of the Shakenoak landscape perhaps comes as close to solidity as we can reasonably expect, and a British site with a stronger combination of indicators would be hard to find. Notwithstanding the lack of a clear and securely dated archaeological sequence across the period c.AD 500–650, there are good grounds for envisaging an evolutionary transition from a milieu that was culturally 'Romano-British' to one that was culturally 'Anglo-Saxon', to the extent of allowing some onomastic and topographical continuity into the Middle Ages and beyond. If the cemetery is out of the ordinary, so is its context.

The human burials: context and radiocarbon dating

The excavations encountered human skeletal remains on Sites A and C (*S1*, 27–8, 116–20; *S4*, 14, 32–5, 172–85; present Figures 5 and 6). In the case of Building A, at least nine inhumation burials had been inserted into the 'black earth' layer – containing very late Roman coins and metalwork – that lay within and around the building. The courtyard area of Building C produced a further thirteen interments, most of them to the east of Building A, although graves 11 and 12 lay adjacent to the north of and apparently aligned with a wall of Building C, while grave 22 was comparably adjacent to the enclosure wall in a corner beside the southern entrance beyond the southern gable end of Building A. None of the burials included grave goods. It is reported that stratigraphically these graves must 'post-date the Roman levels in which they lay'. It

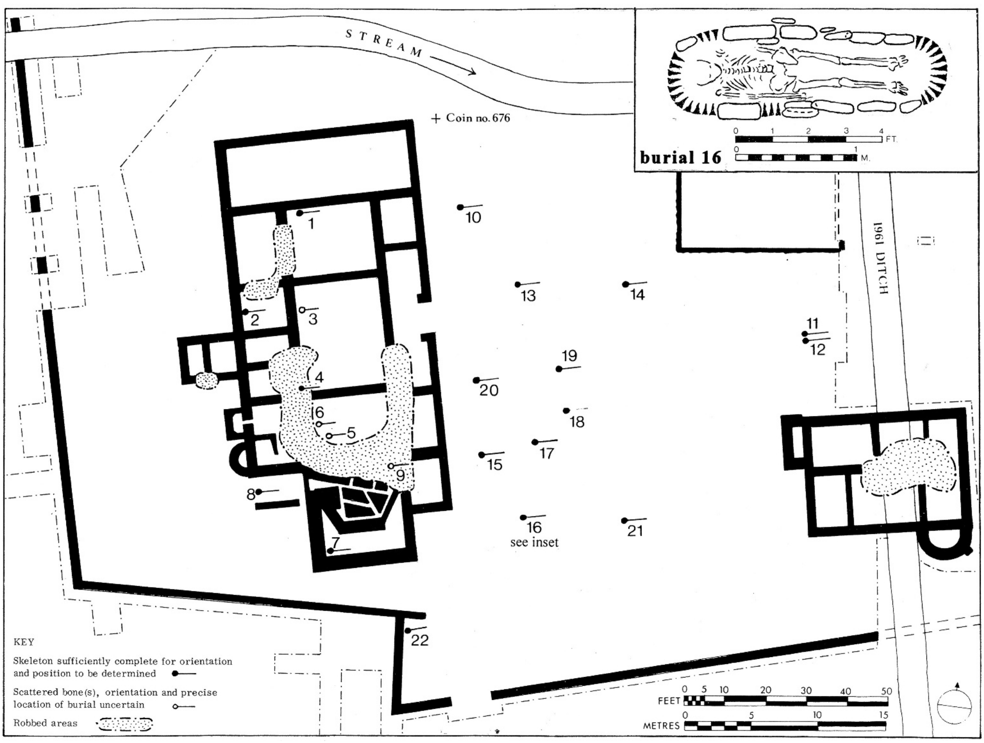

Figure 5. The burials in relation to buildings A and C. *Inset*: One of the stone-lined burials. (Originals reproduced from Shakenoak report).

would have been welcome had this information been more precisely expressed; however, a site plan (Figure 5) makes it tolerably certain that at least some of them were cut into the 'black earth' which marks the end of the Period 3 horizon, and which was found outside the eastern side of Building A as well as inside it.

Osteological analysis identifies all but one of the individuals interred as male (the exception being grave 13), and all of the identifiable deceased were adult, with ages of death potentially ranging from the late teens through to c.50 years. The quality of skeletal preservation was moderate. The burials within Building A were represented on the whole by only very few skeletal fragments; both here and in the adjacent Site C, however, several 'miscellaneous' human bones were retrieved. It is considered likely that those had come from the identified graves, although it must remain possible that at least some represent additional burials to the 22 that have been numbered. At least four of the adult males (graves 1, 10, 14 and 17) showed signs of trauma, probably caused by bladed weapons.

After the excavation, the human remains were deposited at the Duckworth Laboratory in Cambridge, where an osteological report was carried out by Dr. Hughes and Dr. Denston. Following this report, only skulls and specific bones of interest were retained. Individuals from graves 3, 8, and 9 no longer had any curated remains during the cataloguing process in 1972. By 2009–10 the remains had been split in two, half believed to have been lost. At this time, samples from six of the skulls that could be found were taken for radiocarbon dating. The previously lost remains were found at the Duckworth Laboratory in 2018, where remains from only graves 1, 7, 10–16, 18, and 21 were observed. The six skulls which were radiocarbon dated were from burials assigned to Site C, and indeed the selection has something of a bias towards the south-western corner of that burial area. All are from remains identified as male. A replicate date was produced for one burial (grave 21) solely for quality assurance purposes. Those results were fully consistent with one another, and so can be combined to give a more precise dating.

The results were reported by Professor Tom Higham, as shown in Table 1, with calculated radiocarbon dates calibrated using the most recent IntCal20 calibration curve added.

The obvious chronological model to construct using these data is that which postulates that they represent a single continuous phase of burial. Unsurprisingly, in light of the evidently coherent and relatively moderate spread of the radiocarbon ages, from 1630 ± 25 BP to 1531 ± 24 BP, this model has entirely satisfactory agreement (A_{model} 70.9; SM1). It points firmly to a largely fifth-century date for these burials, although quite possibly continuing into the early sixth century. The burial with the youngest radiocarbon age, grave 20, in fact fails to achieve a satisfactory index of agreement with this model, at A: 52.9. The $\delta^{13}C$ measurements with a mean of −20.4‰ and a standard deviation of 0.21 imply no significant dietary difference behind variance in the radiocarbon results. The plateau in the calibration curve covering most of this period regrettably also leaves us with relatively imprecise estimates of when this period of burial began and ended (Figure 6a).

We can nevertheless properly take our modelling further. Although not all of the burials overlie the black earth layer which succeeded Period 3b, around half of them evidently do, and it is reasonable to postulate, as a result, that there is a general

Table 1. The radiocarbon dates for six human graves from Shakenoak, Oxfordshire, calibrated using IntCal20.

Context	Sample	Radiocarbon age BP	Date cal AD (1σ)	Date cal AD (2σ)
Grave 16 (Sk481)	OxA-21897	1630 ± 25	411–436 (34.6%) 464–475 (10.3%) 500–509 (7.8%) 514–531 (15.5%)	402–540 (95.4%)
Grave 21	OxA-21899	1630 ± 25		
Grave 21 replicate	OxA-21898	1612 ± 26		
Grave 21 combined date (Sk486)		1621 ± 19	416–436 (3.3%) 464–475 (12.2%) 500–509 (8.3%) 515–531 (17.5%)	411–482 (58.0%) 491–538 (37.4%)
Grave 18 (Sk483)	OxA-21901	1616 ± 26	416–440 (21.6%) 459–478 (15.4%) 496–534 (31.3%)	412–539 (95.4%)
Grave 10 (Sk443)	OxA-21902	1580 ± 25	435–465 (27.3%) 474–502 (24.6%) 507–516 (7.4%) 530–541 (9.0%)	423–550 (95.4%)
Grave 17 (Sk482)	OxA-21903	1577 ± 28	435–465 (26.5%) 474–502 (24.5%) 507–516 (7.1%) 530–542 (10.2%)	423–556 (95.4%)
Grave 20 (Sk485)	OxA-21900	1531 ± 24	539–588 (68.3%)	436–464 (7.9%) 475–500 (9.5%) 508–516 (1.1%) 530–602 (77.0%)

chronological sequence between this 'post-Period 3b' deposit and the use of the area as a cemetery. Specific dating evidence of relevance associated with that layer comes in the form of Late Roman coins found within it. The two which are particularly emphasized in the report are coin find no. 138, a clipped silver siliqua of Arcadius giving a *terminus post quem* of AD 392–395, the degree of wear on which suggested to the authors of the report a period of circulation of c. 25 years, and the less specifically identified Theodosian coin find no. 135, dated to AD 388–395 but with a suggested period of use of as much as 40–50 years.

The strictest *terminus post quem* we can apply, therefore, is AD 392, and incorporated in the model as the date *After* which the boundary *Start Shakenoak burials* must lie, this makes little difference to the results and estimates produced by the simple single continuous phase model shown in Figure 6a, although both A_{model} and the index of agreement for grave 20 improve slightly (A_{model} 72.5; grave 20 A: 56.9: SM2), as the redistribution of probabilities for graves with older radiocarbon ages to marginally later date-ranges overlaps more with this determination. Further variants of the model were then run with the *terminus post quem* set at AD 420 (coin 138, later *tpq* of AD 395 + 25 years), AD 430 (coin 135, earlier *tpq* of AD 388 + 42 years) and AD 445, the latest implied *terminus post quem* (coin 135, later *tpq* of AD 395 + 50 years). With *Start Shakenoak burials* modelled as post-AD 420 and post-AD 430, the models have satisfactory agreement (A_{model} 68.8 and 67.5, respectively), with the individual index of agreement for grave 20 also rising marginally to A: 57.2 in the latter case too. A *terminus post quem* of AD 445, however, proves to be incompatible with

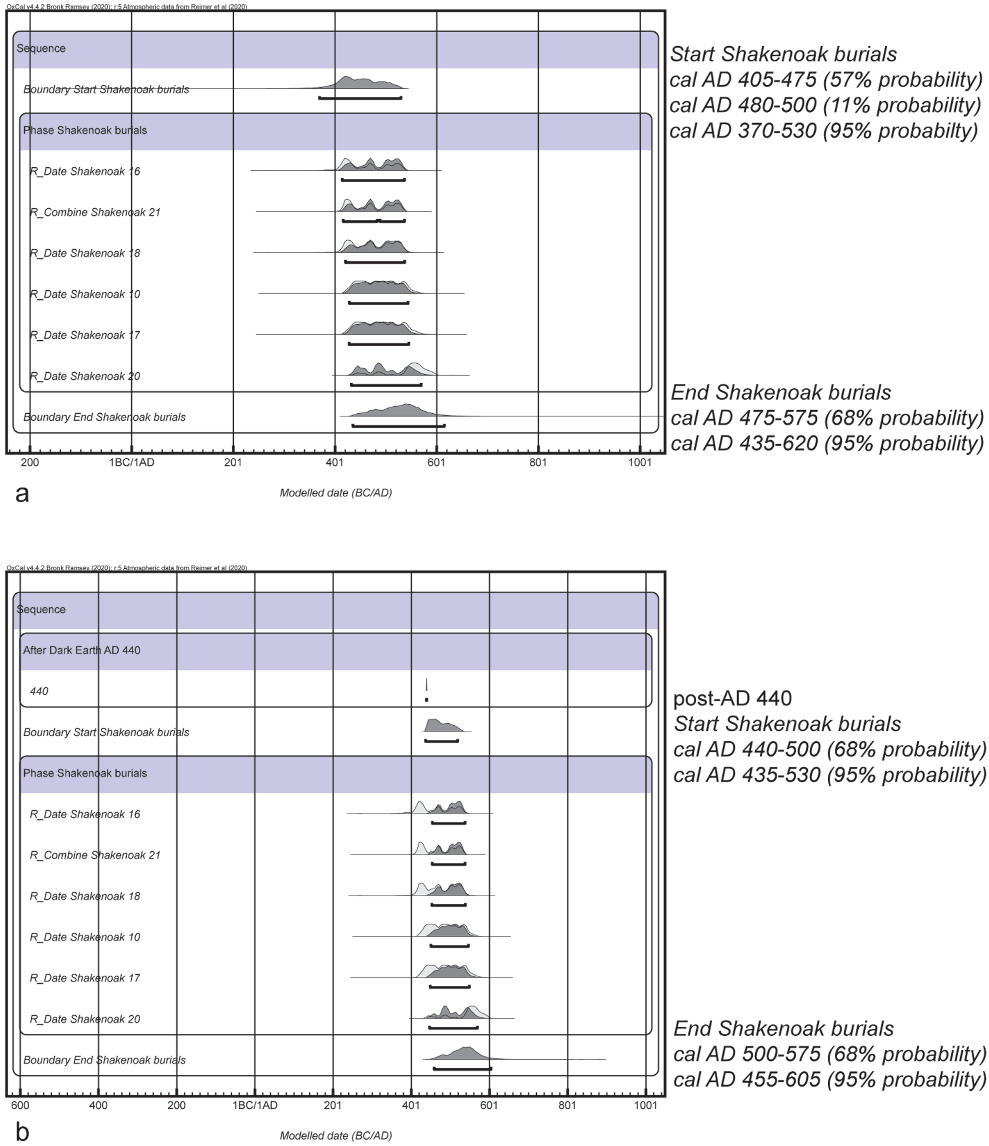

Figure 6. Chronological models of the radiocarbon-dated graves at Shakenoak, produced using OxCal 4.4 and calibrated according to IntCal20. (a) Modelled as a single continuous phase of burial; (b) modelled as a single continuous phase of burial with a *terminus post quem* of AD 440.

the radiocarbon dates, as both of the earliest dated burials, graves 16 and 21, have poor agreement with this imposed parameter.

For the purposes of fuller insight, however, it was reasonable to explore what the impact of further hypothetical positions of this boundary would be on the dates, by re-running the model also with *termini post quos* of AD 435 and AD 440. Both of these models had satisfactory agreement, and interestingly the suggested start date of AD 440 produced as plausible results as any other configuration, at A_{model} 68.4 and with grave 20 at an index of agreement of A: 58.3 (Figure 6b: SM3).

From the combined evidence of stratigraphical observations and reasoning, the certain dates of striking of the coins referred to and estimates of the degree of wear upon them, and the radiocarbon dates of six of the burials, we may therefore propose that burial in the area covering the interior of Building A and the courtyard area to its east is likely to have begun in the later 420s or 430s and could be immediately post-AD 440. Including the estimates of the chronological *Span* of the phase of burials in the models shows that it is possible that all of the burials took place within a short space of time, notwithstanding the spread of the radiocarbon ages; the mean values of the estimated duration, however, range from *84 years* with no *terminus post quem* constraint to *61 years* with the latest valid hypothetical *terminus post quem* of AD 440. Even when exploring the data for the best point of overlap for all the individuals which were dated, the difference in radiocarbon ages between grave 20 at one extreme and graves 16 and 21 at the other is too great for us to infer that these burials are those of the victims of a single act of violence. This strongly suggests, then, that the burials represent use of the cemetery through at least three human generations, and burial could have continued here into the early sixth century.

The human burials: multi-isotope and trauma analysis

Primary analysis of the human remains was undertaken between 1960 and 1976, and therefore this study sought to add value by using scientific approaches to investigate diet, origins and trauma on a sub-sample. Diet and origins were explored in seven individuals using a multi-isotope approach, measuring carbon ($\delta^{13}C_{coll}$, $\delta^{13}C_{carb}$), nitrogen ($\delta^{15}N$), sulfur ($\delta^{34}S$) strontium ($^{87}Sr/^{86}Sr$) and oxygen ($\delta^{18}O$) isotopes in teeth. Traumatic lesions on skulls were analysed macroscopically and by using photogrammetry, to assess the degree and nature of trauma and, where possible, cause of death.

All individuals were buried between Buildings A and C (see Figure 5). No associated faunal remains were recovered and therefore no faunal dietary baseline could be produced. Whilst broadly contemporaneous faunal isotope data do exist, there is no way of assessing what might provide a good analogue for the Shakenoak diet. Sulfur, strontium and oxygen isotope analyses suggest a non-local origin for the humans (see discussion below). Thus, comparing carbon and nitrogen isotope data with contemporaneous animals from nearby is not appropriate, as it is unlikely to bear any direct relationship to the diet of the humans. Values are therefore interpreted in light of comparable human data.

An additional individual was subject to detailed trauma analysis, due to particularly noteworthy patterns.

It is important to provide background and justification for the approaches taken and also a detailed method statement to replicability. Extended statements are provided in the supplementary material (SM4), with only shortened summaries here.

Isotope analysis

Isotope analysis is a long-established approach for reconstructing mobility and diet in past populations. Substantial reviews have been produced for these approaches (see references below), and therefore only a very brief background is provided here. For humans, strontium ($^{87}Sr/^{86}Sr$), oxygen ($\delta^{18}O$) and sulfur ($\delta^{34}S$) isotope analyses are principally used for investigating mobility and childhood origins. Strontium isotope data principally relate to the underlying lithology of the area from which an individual's food derives, although superficial deposits such as tills, loess and peat also affect signals (Montgomery 2010). Seaspray and the consumption of marine foods can also affect biogenic strontium (Alonzi et al. 2020), but this would also impact on carbon and nitrogen isotope values and therefore such effects should be discernible (depending on the element analysed). Oxygen isotope analysis is often used in combination with strontium as a geographical discriminant. Values principally vary according to climate with a well-defined west to east gradient of high to low values in water in Britain (Darling, Bath, and Talbot 2003), although dietary practice also has an impact (Brettell, Montgomery, and Evans 2012; Royer et al. 2017). Oxygen isotopes provide a complex source of information and various papers have stressed caution in the use of drinking water corrections and in relation to analytical variation (e.g. Demény et al. 2019; Lightfoot, O'Connell, and Bondioli 2016; Pederzani and Britton 2019; Pellegrini and Snoeck 2016; Pellegrini et al. 2016; Pollard, Pellegrini, and Lee-Thorp 2011; Snoeck and Pellegrini 2015). As a result, these data, along with associated carbonate $\delta^{13}C$, are presented only in the supplementary material. They are not relied upon in interpretation.

For sulfur isotopes, there is growing evidence that sea-spray relating to coastal proximity has a dominant effect on values (Guiry, Szpak, and Soto 2020; Zazzo et al. 2011) and it has become an increasingly useful provenancing tool as part of a multi-isotope strategy (e.g. Lamb et al. 2012; Madgwick et al. 2013, 2019a, 2019b, 2021; Parker Pearson et al. 2019; Scorrer et al. 2021). Exposed coasts facing prevailing winds generate the highest values, although diet and geology also have an impact (Nehlich 2015; Zazzo et al. 2011). Carbon and nitrogen isotopes are dietary proxies. This study analyses dentine collagen, thus providing evidence for the protein part of the childhood diet. There are many drivers of variation, but nitrogen principally relates to the proportion of animal protein in the diet and the trophic level at which an individual feeds. Manuring of agricultural/pastoral land also causes nitrogen enrichment (Fraser et al. 2011), as does the consumption of marine foods, as marine food chains tend to be elongated. Carbon isotope values are higher in individuals with a marine-rich diet and those in C4 foodchains, in warmer arid areas (Vogel and Van der Merwe 1977). Both proxies also show natural landscape variation (Stevens et al. 2013).

Dental tissues were targeted for all analyses, as they are subject to very little turnover and therefore provide a temporal snapshot for early life diet and origins, as opposed to the longer-term averaged signal in bone. Carefully selected plants from different lithological zones around Shakenoak were also sampled to estimate the local bioavailable range of strontium and sulfur (Figure 7). Precise details on the samples selected, their processing and analysis are provided in the supplementary material. Local baseline plant results are presented in Table 2 and Figure 7, and results from isotope analysis of the humans are presented in Table 3 and Figures 8 and 9.

The $\delta^{13}C$ isotope values from the human skeletal remains cluster tightly between −21.2‰ and −20.2‰ with a mean of −20.8‰. The $\delta^{15}N$ values from this set of samples are more widespread, ranging from 10.3‰ to 12.5‰ with a mean of 11.2‰. These data suggest that the seven individuals had similar diets. The values (all <−20‰) indicate a terrestrial C3 diet and suggest minimal consumption of marine protein. This is consistent with the vast majority of communities from this period.

The very limited range hints that individuals were raised in the same area with a homogeneous landscape baseline carbon signal. However, carbon isotope values such as this are common and do not provide strong evidence of homogeneous origins. As is

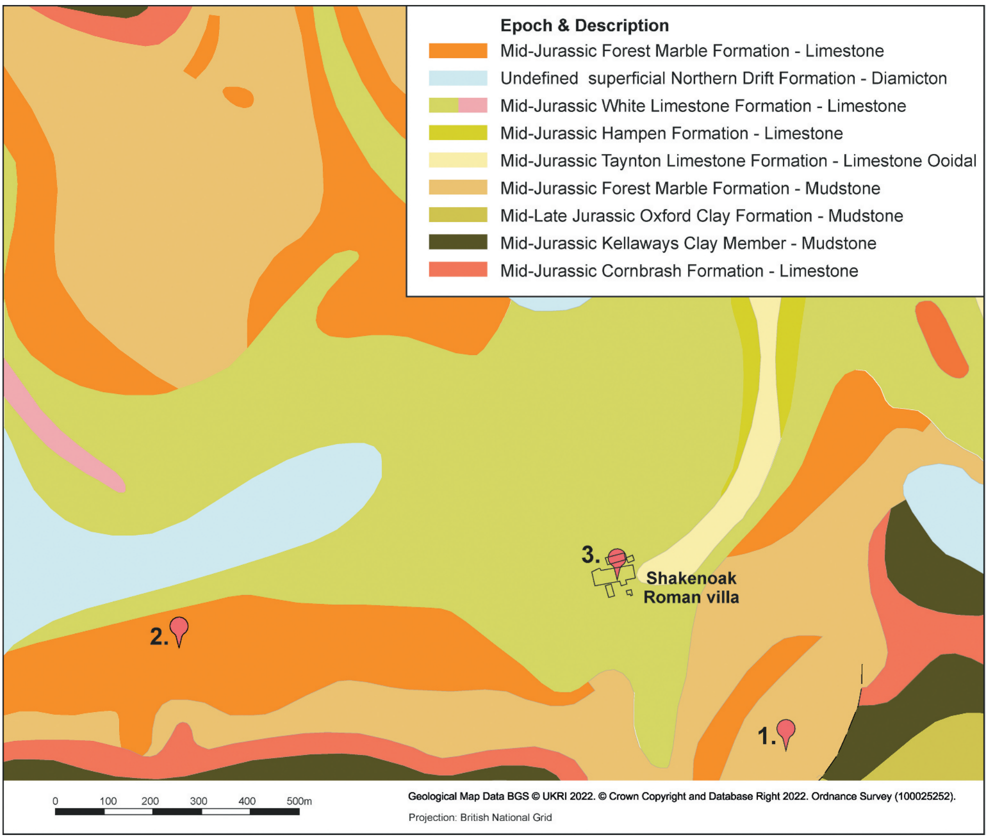

Figure 7. Geological map showing the sampling location of the analysed plants (produced by Kirsty Harding). See Table 2 for lithology descriptions (produced using geological information from Edina Digimap©).

Table 2. Description of plant samples for biosphere mapping along with isotope data.

Plant sample	Description of location	Grid references (approx.)	Lithological zone	$^{87}Sr/^{86}Sr$	$\delta^{34}S$
1	Footpath with minimal foot traffic	SP 3739 1363	Forest marble formation – Mudstone	0.708858	3.8
2	A quiet lane with minimal traffic	SP 3648 1368	Forest Marble formation – Limestone	0.709410	4.5
3	On the site	SP 3739 1381	White limestone formation	0.708685	0.4

Table 3. Isotope results for all individuals, with descriptive statistics.

Skeleton No.	Grave No.	δ^{13}C(‰)	δ^{15}N(‰)	^{87}Sr/^{86}Sr	δ^{34}S(‰)	$\delta^{18}O_p$(‰)	%C	%N	%S	C:N	C:S	N:S
443	10	−20.9	11.5	0.7109	11.6	19.1	43.5	15.5	0.2	3.3	549	168
480	15	−20.2	10.3	0.7103	9.4	18.7	40.6	14.3	0.3	3.3	390	118
481	16	−21.2	10.3	0.7111	15.0	19.6	42.7	15.3	0.2	3.3	511	157
482	17	−20.7	11.9	0.7096	11.2	18.8	29.4	10.2	0.2	3.3	357	107
483	18	−21.0	12.5	0.7106	15.8	18.8	40.9	14.7	0.2	3.3	550	169
485	20	−21.0	11.3	0.7118	16.0	19.4	41.2	14.7	0.2	3.3	472	144
486	21	−20.7	10.8	0.7104	9.6	18.5	31.2	10.9	0.2	3.3	380	114
Mean		−20.8	11.2	0.7107	12.6	19.0						
SD		0.3	0.8	0.0007	2.9	0.4						
Median		−20.9	11.3	0.7106	11.6	18.8						
IQR		0.3	1.2	0.0007	5.0	0.5						

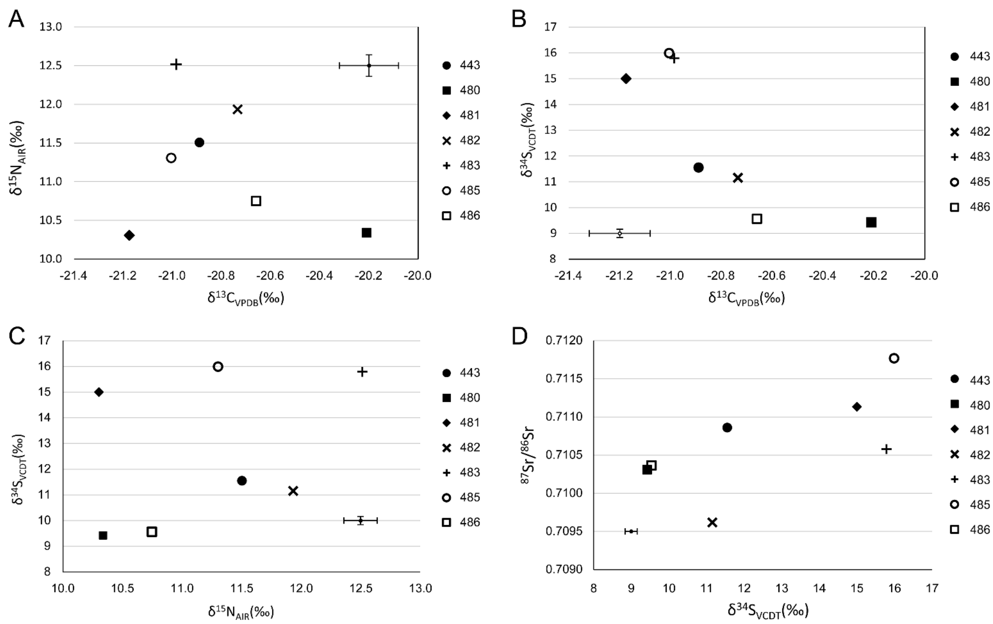

Figure 8. Bivariate scatter plots presenting δ^{13}C and δ^{15}N (A), δ^{13}C and δ^{34}S (B), δ^{15}N and δ^{34}S (C) and δ^{34}S and ^{87}Sr/^{86}Sr (D). Analytical error (1 SD) is presented by the error bars on the plots.

common in human datasets, nitrogen isotope values exhibited a slightly larger range (2.2‰). This is likely to result from variable contributions of animal protein (meat and dairy) in the diet but may also relate to different degrees of manuring in the landscapes where individuals resided during childhood. Contrasting consumption of freshwater fish could also be responsible for the pattern. This is unlikely, at least in terms of local freshwater fish, as the individuals have relatively high sulfur isotope values and the freshwater fish in the Oxfordshire Thames have been shown to be depleted in 34S (Nehlich et al. 2011).

The data are plotted against other early medieval and Roman samples from sites in and around Oxfordshire in Figure 9. The Shakenoak individuals have markedly lower carbon isotope values than the comparative samples from Queenford Farm, Wasperton,

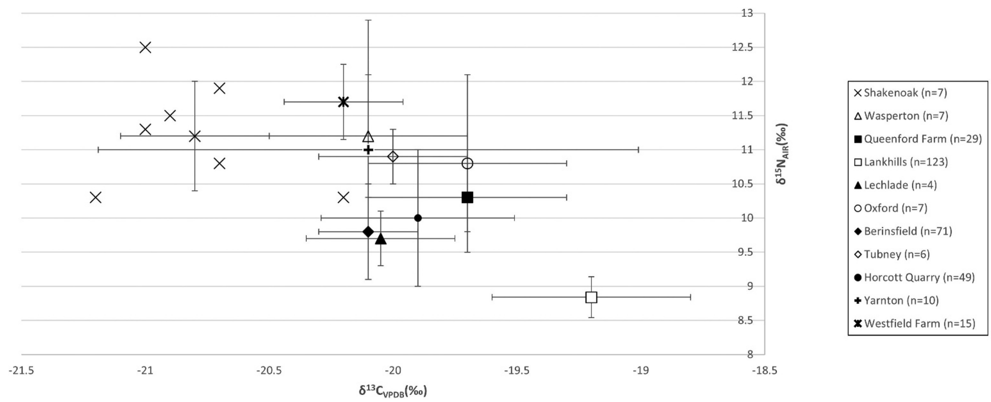

Figure 9. $\delta^{13}C$ and $\delta^{15}N$ individual and mean isotope values from Shakenoak and mean values from a range of broadly contemporaneous sites in southern England. Error bars represent 1 SD (data from Booth et al. 2010; Cheung, Schroeder, and Hedges 2011; Craig-Atkins et al. 2020; Fuller et al. 2006; Lightfoot et al. 2009; Mays and Beavan 2012; Nehlich et al. 2011; Privat, O'Connell, and Richards 2002).

Lechlade, Tubney, Westfield Farm, Horcott Quarry, Lankhlls, Oxford and Berinsfield, with only Yarnton showing a marked overlap. The sample has comparatively high nitrogen isotope values, with the mean equalled only by Wasperton and exceeded by Westfield Farm. It is just possible that the high nitrogen values in Shakenoak dentine (as opposed to bone in the comparative dataset) result from a remnant breastfeeding signal, but this is considered unlikely due to the timing of sample development (approximately 4 to 6.5 years). Inter-site comparisons should only be made cautiously, given the small sample, different sampled tissue, and lack of faunal baseline at Shakenoak. It is plausible that the lower carbon isotope values result from food derived from a distinct, more ^{13}C depleted, landscape. The degree to which they differ from other sites in the region suggests that individuals may be from beyond the locality. Although carbon and nitrogen isotope data are weak provenancing proxies, this interpretation is supported by the strontium and sulfur isotope data.

Overall, the interpretative potential of a small dietary isotope dataset such as this is limited, especially in the absence of faunal baseline data. It is noteworthy that there is no evidence for the consumption of substantial amounts of marine protein, with the result that the strontium and sulfur isotope data can be confidently used to explore origins, rather than being impacted by foodways. The results differ markedly in terms of carbon, suggesting food deriving from a different landscape. They are in broad accordance with nitrogen data from the region but show slightly higher values suggesting more animal protein in the diet. However, this could very well be explained by different landscape baselines.

Primary sampling of plants from the site's immediate environs was undertaken for the purposes of defining the local biosphere range (see Holt, Evans, and Madgwick 2021). Wider local and regional ranges were defined following Evans et al. (2018a). Both strontium and sulfur isotope ranges for the plants in the immediate vicinity of the site were limited, 0.7087–0.7094 for strontium and 0.4–4.5‰ for sulfur. The wider region of central southern England has a predicted bioavailable sulfur isotope range between −9.3‰ and 5.6‰ (Evans et al. 2018a), though sulfur isotope mapping for Britain is currently being updated. This is a very large range and is certain to be more restricted at a local level, but limited mapping precludes more precise definition. That range of sulfur isotope values found in central southern England is unusually low in a British context, and relates to the impervious Jurassic mudstone lithology that is widespread in the region. Consequently, people raised locally should have distinctive low or even negative sulfur isotope values. This low estimation of the local range is supported by Nehlich et al. (2011), who demonstrated Oxfordshire samples to be ^{34}S depleted, and there is an increasing body of work to suggest low and negative sulfur isotopes in wetland environments (Guiry et al. 2022; Lamb et al. 2023; Stevens et al. 2023). The estimated local ^{87}Sr/^{86}Sr range for the site itself is 0.7086 to 0.7094, with the surrounding region (c.20 km radius) only extending to 0.7099. In contrast to bioavailable sulfur, this is a tightly defined local range. However, this range still poses challenges as these values are very common in the British (and European) biosphere (Bataille et al. 2018; Evans et al. 2018a). Consequently, individuals that align with the local range cannot be confidently identified as locally-raised due to the undiagnostic nature of the values.

The δ^{34}S isotope values from the human skeletal remains analysed were moderately wide-ranging given the small sample, from 9.4‰ to 16.0‰. ^{87}Sr/^{86}Sr isotope values showed notable variation, from 0.7096 and 0.7118. The $\delta^{18}O_p$ values showed more limited variation (18.5–19.1‰) and are high in a British context, though these are not relied on for interpretation (see supplementary material, where $\delta^{13}C_{carb}$ data are also presented).

None of the individuals has values that adhere to those provided by the plants from Shakenoak in either strontium or sulfur, and only one individual (482: grave 17), the oldest (c.40–50) in the dataset, had a strontium isotope ratio consistent with origins in the local region (0.7096), though this is consistent with locations across vast swathes of Britain and mainland Europe and therefore undiagnostic (Evans et al. 2018a). The sulfur isotope value of 11.2‰ for this individual is higher than would be expected locally, and strongly suggests that he was not raised in the vicinity even though this mid-ranging value is otherwise undiagnostic. The other six individuals (443, 480, 481, 483, 485 and 486: graves 10, 15, 16, 18, 20 and 21, respectively) have strontium isotope values ranging from 0.7103 to 0.7118. These values are consistent with Palaeozoic lithologies and are relatively common in the British biosphere, especially in western Britain, but with patches in the south and east also (Evans et al. 2018a). This includes limited areas close (<20 km) to the site, such as the Gault formation around Wantage and Didcot. Three individuals (443: grave 10; 480: grave 15; 486: grave 21) have undiagnostic sulfur isotope values similar to 482: grave 17 (9.4–11.6‰). The other three individuals (481: grave 16; 483: grave 18; 485: grave 20) have higher values (15.0, 15.8 and 16.0‰, respectively), strongly suggestive of coastal origins (Nehlich 2015), most likely in the west given the effect of prevailing winds on sulfur isotope values (Zazzo et al. 2011). Potential areas of origin include coastal regions across Wales, Cornwall, Devon and Somerset, with smaller pockets in north-west England (Evans et al. 2018a). It is noteworthy that animal remains from Iron Age sites founded on chalk in Hampshire have produced similarly high values, suggesting that coastal origins cannot be defined with complete confidence (Hamilton et al. 2019). However, none of the individuals has strontium values consistent with chalk lithology and therefore coastal origins are considered markedly more likely. Comparable sulfur isotope values have been produced for medieval individuals from south-west Wales (Hemer et al. 2017), south-east Wales and Anglesey (Faillace and Madgwick n.d.). Continental origins, particularly from a westerly coastal location, cannot be discounted for these individuals from an isotopic perspective. However, given the range of evidence presented in this paper, the post-Roman dates and the fact that the isotope values can be readily sourced in Britain, coastal south-west Britain is considered the most parsimonious interpretation of origins. As mapping improves, additional proxies such as lead isotope analysis may assist in refining origins in the future (Evans et al. 2018b, 2022).

Trauma

The assessed individuals showed abundant evidence of trauma and, with the help of photogrammetry, the analysis yielded new details. Of the 23 inhumations, there were ten individuals that displayed perimortem trauma. Following the excavation, only four skulls and a bisected axis were retained for curation as evidence of trauma for future analysis. The initial analysis used a 30× hand-lens under a 60-watt lamp and high-definition photographs of each skull were taken from multiple angles for further analysis and photogrammetric modelling. Using a turntable, photographs were captured at intervals of 10 degrees with an 18-megapixel Canon EOS 750D Digital Single-lens reflex camera in conjunction with a Canon EF18-55 mm f/3.5–5.6 wide-angle to mid-telephoto zoom lens. The analysis aimed to identify cases of blunt or sharp force trauma and explore directionality, weapon type, and other diagnostic features. The patterns of trauma, along with dating, demographic, and other osteological information, are summarised in Table 4.

Sk443, a 35–40 year old male, was found in grave 10 located to the east of building A, and was oriented with the head to the west. This individual exhibited the most extensive trauma. The excavators identified two sharp-force cuts on the left radius and ulna, each with enough force to penetrate the medullary cavities (*S4*, 172). The left ulna also had a third superficial cut, additional superficial cuts were observed on the distal third of the left tibia and a fracture to the right proximal phalanx. The surviving cranium had some attempted reconstruction which made analysis of the trauma more difficult. However, four perimortem lesions on the left parietal and occipital were observable (Figure 10). There were three circular lesions and one linear cut that ran horizontally between two of the circular lesions (Figure 10). Lesion A exhibited characteristics of a crushing blunt-force trauma, with concentric and hinge fractures in conjunction with relatively sharp edges (Lovell 1997). However, endocranial bevelling would be expected for an example of blunt force trauma (Spencer 2012, 117), but it was not observed in this lesion. This could be indicative of ballistic penetrative trauma, based on the limited bevelling of the endocranial surface (Hart 2005). It is plausible that a sling-shot – a powerful ballistic weapon of the time – caused the lesion (Bishop and Coulston 1989, 165; Borovsky et al. 2017). Lesion B displays as a linear chop mark, likely from a bladed weapon, with conchoidal flaking displayed on the edges (Lewis 2008). This could have been caused by a glancing blow, striking the cranium at an angle parallel to the surface. Lesion C presents similarly to lesion B and, based on its placement, could well be an

Table 4. Summary of trauma evidence. Observations derived from the original excavation report are italicized, with dimensions converted from imperial to metric. For radiocarbon dates on six of these skeletons, see Table 1.

Skeleton No.	Age (years)	Trauma	Trauma	Pathologies and other notes
443 (Grave 10)	35–40	Cranial and post-cranial	2 incidents of blunt force trauma to cranium. 2 blows from sword left side of cranium. 2 incidents of sharp Force trauma; likely *sword blows to L Radius & ulna. Ulna presents a 3rd superficial cut. Small cuts on distal part of L tibia. Fracture to Right hand on 3rd Proximal Phalanx*	Male. Death believed to have come from SF wounds. 1.88 m. Rheumatic disease vertebrae. Osteoarthritis in pelvis, L femur and L Patella. Exostosis on L Tib.
480 (Grave 15)	30–45	Cranial	Sharp force cut across Frontal and R parietal	Male. 1.78 m. Unlined grave with stones on top. Arthritis on vertebrae, extremities and distal Ulnae. Exostosis on R femur. Calculus noted on some teeth
481 (Grave 16)	20–25	Cranial and post-cranial	Sharp force R. parietal to frontal. *L Patella (with infection after)*	Unknown Sex. 1.66 m. Flat Stone Grave. Rheumatic disease in L.radius & R.ulna. Anomalous R acetabulum possibly due to dislocation. R.humerus presents lesions likely from an infection. Arthritic L tibia
483 (Grave 18)	25–30	Cranial	Sharp force to L parietal and second cut to occipital bone	Male. Flat stone grave. Metopic suture bisection frontal. Arthritis on some verts
485 (Grave 20)	16–20	Post-cranial	*Cut to 4th L metacarpal (post or ante unsure)*	Male. 1.70 m. Flat stone grave 10th thoracic vertebrae is wedge shaped possible tuberculosis. Lesion on R humerus; infection likely. Lesion on L tibia, possibly another infection. Wormian bones
486 (Grave 21)	30–50	Post-cranial	*Cut to 3rd R metacarpal (post or ante unsure)*	Male. Remains spread across .93 sq.m., probably by ploughing. Arthritis on L tibia, L talus, 1st R metacarpal & phalanx
417 (Grave ?)	18–25	Post-cranial	Axis vertebrae split in half from a sharp force impact. Probably indicates decapitation	Male. 1.74 m
447 (Grave ?)	20–25	Post-cranial	Sharp force *Rib and R scapula. Blow from above*	Male. 1.74 m. malformations on 1st distal part of L phalanx, possibly due to infection. Good oral hygiene. Wormian bones

extension of the same impact which was then bisected by the straight edge of lesion D. Lesion D's straight and smooth edge would indicate a linear chopping motion that is most likely a sharp-force trauma caused by a sword (Tucker 2015). All trauma was located exclusively on the left side of the body. Defensive lesions on the arms and legs, the blows to the side of the head, and the variation of weapons used might suggest that this was an attack by multiple assailants. However, identifying the order in which the trauma took place is challenging. It may also be possible that this individual received blows to the legs, causing him to fall before being struck from above. Alternatively, the wounds on the lower tibia might suggest that this person carried a shield, or even that his legs were attacked while he was on horseback (Novak 2000).

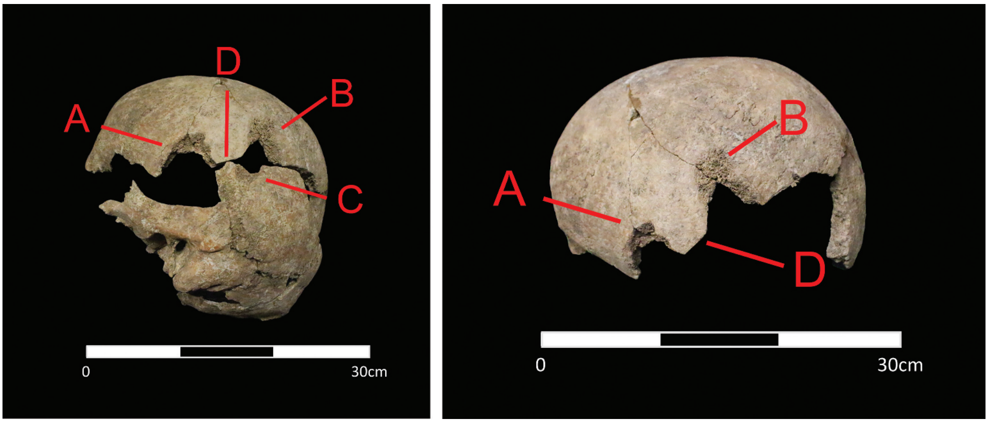

Figure 10. The parietal, temporal and occipital of Sk443 with arrows indicating each of the traumatic wounds [two photos]. Photo: K. Tait.

The remains of Sk480 were conserved only as a partially reconstructed cranium. According to the site report there was a cut that extended across the coronal suture on the right side (*S4*, 177), although this was not observed during the analysis. Shallow lesions on the cranium are visible in Figure 11. Lesion A displays a curved depression into the left parietal whilst the lesions marked as B are short and straight. These lesions could be indicative of perimortem knife injuries, as noted by Donnellan et al. (2012). However, the injuries are not severe enough to be considered fatal and therefore the cause of death cannot be determined based on the available remains.

The remains identified as Sk481 (Figure 5, inset) show evidence of a non-penetrative sharp-force trauma in the form of a chop that extends from the right parietal to the frontal bone (Figure 12). This lesion shows no sign of healing and, measuring approximately 5 cm in length, clearly shows the cut wall exposing the lamellar rings of bone and the kerf, the point at which the blade was stopped by the bone (Lewis 2008). To the lower side of the kerf, bevelling can be seen where the bone has broken away in

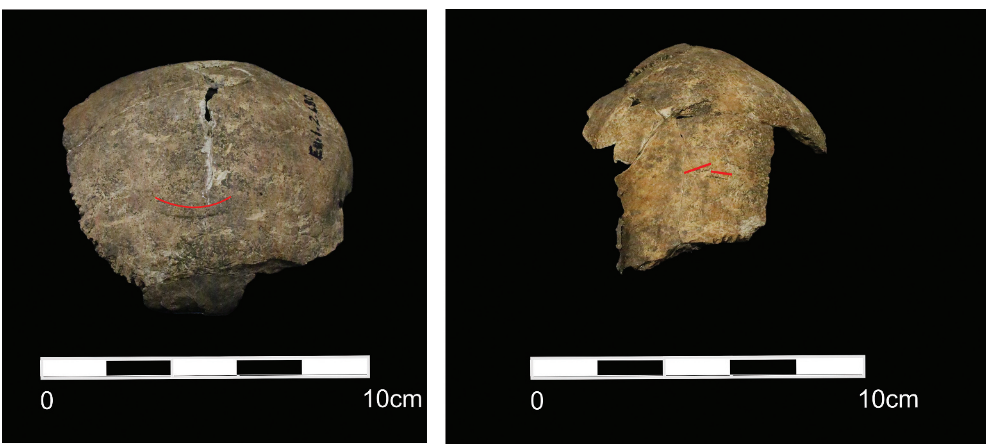

Figure 11. Several minor instances of sharp force trauma on Sk480. Photo: K. Tait.

a flaking manner. This is typical of a flat-bladed weapon, like a sword, striking the area at an angle with enough force to cause fragmentation (Ross and Cunha 2018, 132; White and Folkens 2005, 370). In addition to this injury, the individual displayed signs of infection at the left patella possibly related to antemortem sharp force trauma (*S4*, 178). As the cranial trauma can be considered perimortem, the individual probably died shortly after the interpersonal violence that left him with the lesion to his skull.

Sk483 displays evidence of sharp-force trauma on the left occipital and potentially on the left parietal (Figure 13). Lesion A is non-penetrative, but cuts through the outer table and partially into the cancellous bone with external bevelling, indicating that a sword-blow was the likely cause. Lesion B is a straight and clean cut on the left parietal, roughly parallel to the coronal suture, with radiating fractures that extend to the temporal and across the sagittal suture. Due to the earlier reconstructive work, it

Figure 12. Sharp force trauma on the right parietal across the coronal suture of Sk481. Photo: K. Tait.

was not possible to determine if this lesion resulted from sharp-force trauma, but given the other trauma on the skull, the bevelled linear appearance, and extending radial fractures of lesion B, it is probable that a similar implement to lesion A caused the injury (Figure 13).

The axis that remains of Sk417 displays clear evidence of decapitation, as the axis (C2) has been transversely bisected (Figure 14). The cut surface is smooth and flat, indicating a single chop, sharp-force blow that sliced through the entire bone, fitting Tucker's (2015, 190) signature list for type 4 decapitations: a singular chopping blow to a cervical vertebra. Based on the cleanliness of the cut and the absence of the vertebral body and odontoid process, it is likely that the direction of the blow began at the spinous process, continued inward across the vertebra, and through the neck. These types of cut marks between the second and fourth cervical vertebrae are typical of

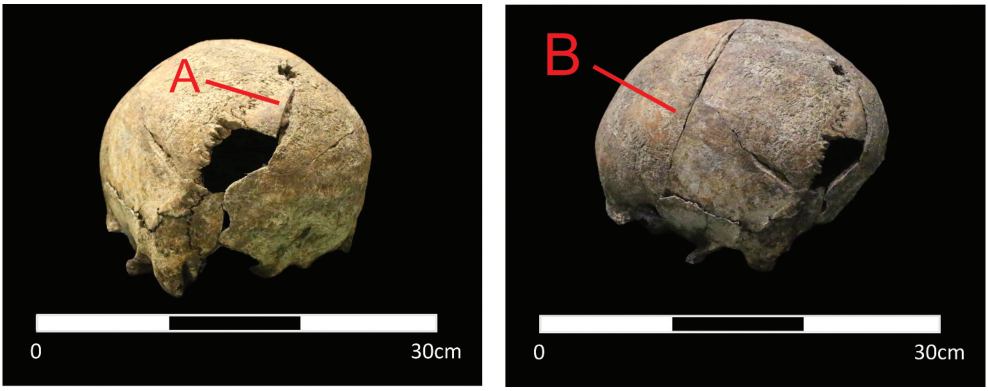

Figure 13. Sharp force trauma (A) on the occipital (left) and a possible instance (B) on the left parietal of Sk483. Photos: K. Tait.

decapitation, and are the most common for the period, as demonstrated in similar cases found in a late Roman cemetery at Water Lane in Towcester (Harman, Molleson, and Price 1981, table 7). Tucker's analysis of decapitation burials in the period identified 74 single chop decapitation burials from the Romano-British period and 24 from the early medieval period (Tucker 2015, 78, 124). Decapitation burials were a common practice in the fourth century, especially in villas and farmsteads (Philpott 1991). Although no other parts of this individual were retained from the original excavation, the evidence of the axis bone points either to a case of post-mortem decapitation in the late Romano-British fashion, or – more likely in the context of the other burials – to a violent death by beheading.

Just under half the human remains discovered at Shakenoak exhibit a complex pattern of predominately perimortem trauma, suggestive of multiple violent episodes. The assortment of lesions observed on the individuals, both in the original report from the site and the more recent study, suggests a variety of weapons were utilised with lethal intent. These injuries are consistent with close combat engagements, and it is feasible that at least some of the weapons used against these individuals were similar to those used as military weapons, like swords and slingshots. It can be concluded that those at the site experienced brutal events in the fifth and maybe early sixth century. Consistent with findings from the period at Sedgeford, the majority of cranial injuries are the result of sharp-edged weapons, some of which penetrated the endocranium and were fatal (SHARP 2014). Whatever may have been happening elsewhere in post-Roman Britain, there is direct evidence for fierce interpersonal violence at or around Shakenoak.

The latest Roman metalwork

Two stratigraphic contexts are distinguished by the presence of fragments of metalwork that is either very late Roman or sub-Roman in origin: that is, produced within the final decades of the fourth century or the first half of the fifth. One of these layers is the deposit of 'black earth', already discussed, which covers rooms II, III, V and XVIII of

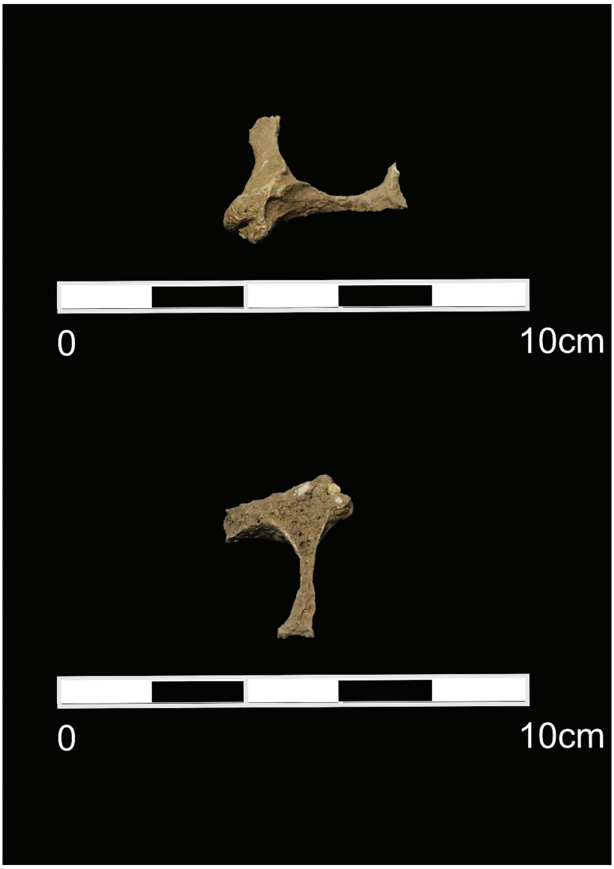

Figure 14. Two views of the axis of Sk417, highlighting the straight-edged chop. Photo: K. Tait.

Building A to a depth of around 15 cm (6 inches) (*S1*, 24–8). This appears to be at least partly the same as a deposit of the same character outside Building A both to the west and to the east, although those exterior layers would appear to have been accumulating over a much longer time. The other context is the layer, divided into Periods F.3 and F.4, which effectively filled the upper half of the depth of the northern boundary ditch F (*S3*, 17–24; in the text on page 24 the fill is described as 'soft, almost stone-free black earth', whereas in the twelve section drawings in the accompanying figures 6–8 this layer is consistently labelled as 'grey', albeit a couple of times 'grey-black'). In and alongside Building A, these metalwork fragments were associated with some fifteen coins of the later Theodosian period (following the defeat of the usurper Magnus Maximus: AD 388–402), all of which display a relatively high degree of wear (*S1*, 26–7, 32–5). There are fewer coins in layer F.3/F.4, but the sequence still continues to a coin of Arcadius (AD 383–408, although the coin is considered unlikely to post-date AD 395) (*S3*, 34–5; pers. comm., Paul Booth).

Although these layers are quite separate, the comparability of the finds of interest in the present context makes it more useful to discuss the material together, focusing on the types represented. There are five items characterized as fittings from Late-Roman belts, often identified as 'military' or more correctly 'official' dress-items. From the black earth of Site A (identified as the final phase of Period 3.b there) there is a rosette disc attachment plate for a suspension loop (*S1*, fig. 29.13: here Figure 15b), which has had the loop itself either cut or broken off. From the same layer there is also half of a belt-slide with one peltate terminal remaining (*S1*, fig. 29.15: here Figure 15a). This incomplete segment of the belt-fitting had been mounted using two rivets, one of which is still *in situ*, the other marked by a rivet-hole in the expanded terminal; both of these modifications were carried out with care and skill. Finally from this context, there is part of the plate of a buckle of Hawkes and Dunning's (1961) Type 1 (*S1*, fig. 32.58: here Figure 15c). All of these objects were discussed by Sonia Hawkes in the original publication (*S1*, 96–101). From the fill of Ditch F, associated with the earlier post-Roman pottery assemblage F.3 (*S3*, 56), there is a second buckle-plate fragment from the same type of buckle as on Site A (*S3*, fig. 30.137: here Figure 15e) and a cast ring typical of exactly the type of suspension loop represented by the attachment plate from Site A (*S3*, fig. 30.136: here Figure 15d). The two items in the upper fill of Ditch F appear to have been found close together (*S3*, 69; discussed by Hawkes and Dunning 1961, 74–7). We can infer, therefore, that the two pieces from the ditch fill could represent the remains of a single belt-set, and it is noticeable that the diameter of the

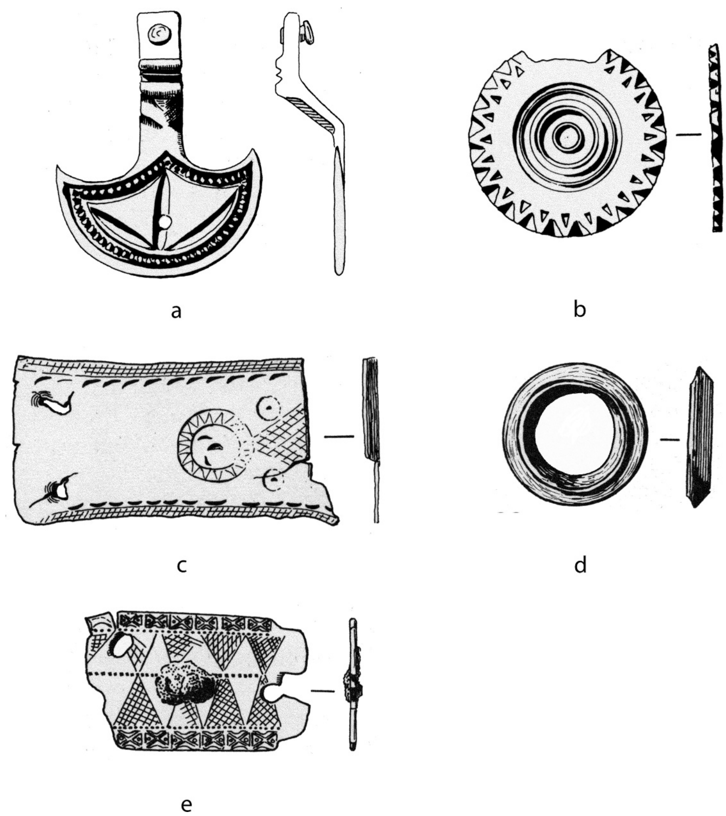

Figure 15. Late- or sub-Roman belt-fittings from Shakenoak, sites a (a – c) and F (d – e). After Brodribb et al. *S1* and *S3*. Scale 1:1.

ring itself, which is typically of the same diameter as its rosette attachment plate, is the same as the width of the buckle-plate at c. 19 mm – even though it is *not* typical for this type of buckle to be found on the same girdle as such belt-rings. At least one and probably two other belt-sets are therefore implied by the unmatched buckle-plate fragment, and the belt-slide and attachment plate from Site A. The fact that the ring from Ditch F is smaller in diameter than the attachment plate from Site A argues against the possibility of those having been two parts of a single original belt-set. There is, however, no reason why the surviving attachment plate and re-used belt-slide from Site A should not originally have been worn together on one belt.

There is little if any dating evidence for Hawkes and Dunning's Type 1 buckles more precise than that yielded by the associated coins within the layers at Shakenoak. This particular type is a distinctly British variant of a very late Roman buckle. Hawkes and Dunning (1961, 41–50) could cite a small number of examples found associated with coins of the 'late fourth or early fifth century' on Late Roman sites, and otherwise could report recurrent associations with stratified contexts on very late Roman-period sites (cf. also Hawkes 1974). There is also a smaller number of cases of such buckles appearing on the costume of women buried in early Anglo-Saxon cemeteries. To the examples listed in Hawkes and Dunning's catalogue (1961, 41–50) can be added one more from a usefully dated context in grave 987 at Mucking (Essex), Cemetery I (Hirst and Clark 2009, 213–16, figs 110-11, and 529–30; present Figure 16). Many of these graves in fact have only the distinctive loops of such buckles, without the plates. The Portable Antiquities Scheme database now has records of many more finds of buckles of this type, quadrupling the figures that Hawkes and Dunning could list in 1961 (cf. Henry 2022, 80–131); among these too, interestingly, the objects occur in the majority of cases as loops alone. Collectively, the examples found in grave contexts clearly testify to the continued circulation and use of these buckles to the middle of the fifth century and even beyond. None of the burials needs be dated any later than sometime in the second half of the fifth century, although the 'swastika-leg' design of a cast saucer brooch from Broadway (Worcestershire) grave 1 seems more likely to date that grave to the early sixth century than the late fifth (Dickinson 1993, 22).

The rosette attachment plates were in use through the same extended date-range as Type I buckles. Hawkes and Dunning classified them as Type VI bronze disc attachments (1961, esp. 65–6). Examples were found in grave 1 at Dyke Hills, Dorchester-on-Thames, a male grave immediately associated with grave 2, a female burial containing a Type 1 buckle and Germanic forms of brooch (Kirk and Leeds 1953). Examples known from early burials in cemeteries of the distinctive Early Anglo-Saxon type are few: the best recorded example is from Mucking grave 979 (Hirst and Clark 2009, 209–11, fig. 108), and there is also an example from Croydon, Greater London (formerly Surrey); as of December 2022, there are five further specimens in the Portable Antiquities Scheme database. The type is, however, familiar from Late Roman contexts on the Continent. Böhme (1986, 471–6) noted that they occur first in association with the chip-carved belt buckles and other fittings which were introduced in a late fourth-century horizon. These attachment loops continue to appear regularly on the latest Roman military belt-sets of the middle third of the fifth century, exactly the type represented in grave 979 at Mucking. Coin-dated specimens were found in one of the famous fully-equipped weapon graves associated with the Late-Roman military employment of *laeti* or *foederati*, at Vieuxville, Liège, Belgium (Böhme 1974, 305–6, Tafn. 110–11), where the coins give the burial a terminus

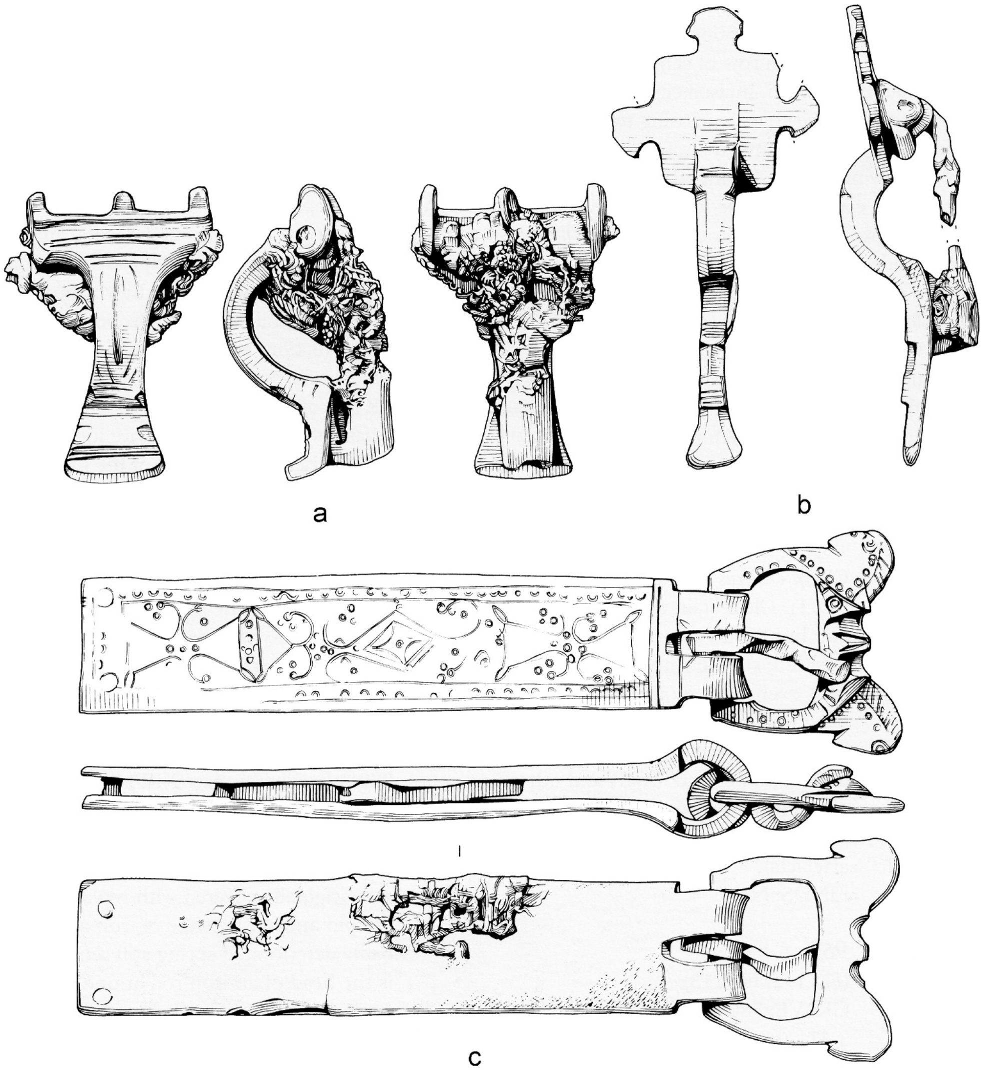

Figure 16. Dress-accessories from Mucking, Essex, grave 987. a: supporting-arm brooch; b: trefoil-headed small long brooch; c: type 1B buckle. After Hirst and Clark (2009). Reproduced with permission. Scale 1:1.

post quem of AD 411. Comparable contexts in terms of men buried as fully equipped warriors are known from the cemetery at Rhenen, prov. Utrecht, in the Netherlands, graves 829 and 833 (Böhme 1974, Tafn. 62–3); Vermand, Dép. Aisne, France, graves 190 and 284 (Böhme 1974, Tafn. 139–41); Furfooz, Namur, Belgium, grave 3 (Böhme 1974, Tafn. 88–9); Bonn, Nordrhein-Westfalen, Germany (Sommer 1984, Tafn. 75–6); and Basel-Aeschenvorstadt, Switzerland, grave 1971 A (Sommer 1984, Taf. 44).

The belt-slide should be the item with the narrowest original dating. Böhme was clear that belt-slides of this form with peltate as opposed to triangular terminal plates occur only in association with chip-carved belt-fittings of his *Fundgruppe* A, dated from the late fourth and first three decades of the fifth century (Böhme 1986, 476; 1987; for fine adjustments to the absolute chronology, see; Rau 2010, 279–303). Two such belt-slides are known from the Saxon Shore fort at Richborough, Kent, which seems to have been abandoned in the first decade of the fifth century, and there is also a specimen found by metal-detecting from West Torrington, Lincolnshire (PAS LIN-05D840). The type is also known across the Channel at Vron, Dép. Somme, and Vermand in France and at Krefeld-Gellep, Nordrhein-Westfalen, on the Rhine (Böhme 1986, 476 n.15; cf. Böhme 1974, Taf. 136), but also from as far afield as Brixen-Stufels in the Südtirol/Alto Adige region of northern Italy (Zagermann 2014, Taf. 13, 176) and Dunaújváros, Fejér megye, Hungary. Böhme (1986, Abb. 6) confidently assigned the Shakenoak belt-slide (and the associable rosette attachment plate) to the end of the fourth century, but the re-purposing of this halved object that is evident from the secondary rivet holes and one surviving rivet implies a life-time of some duration before it ended up in the black earth layer.

One final point to be emphasized in relation to the belt-slide and rosette attachment plate (Figure 15a–b) is that these fragments appear to have been carefully and deliberately cut from the originally larger belt-fittings that they represent. Whether that was for recycling, re-mounting or curation we cannot tell in every case; but these pieces appear collectively to represent something other than discarded, obsolete items that simply broke up as eroding waste.

The bow brooch from Ditch F

Also found in Ditch F, in the same context as the belt-fitting-fragments and the F.3 pottery assemblage, was a copper-alloy bow brooch, 61 mm in length (Figure 17a). This was published and discussed in *S3* (78–83, fig. 32; cf. S3, 56 for the stratigraphical context) by Hayo Vierck. Vierck, with some justification, commented critically on the restricted focus with regard to comparison and interpretation that a rather rigid typological perspective created in the work of immediately preceding generations of scholars such as Åberg (1926), Leeds (1945) and Kühn, ([1940] 1965). In our own context, though, his approach itself may strike one as strongly rooted in the same methodological mindset, and thus heavily focused on seeking to place what is in fact a markedly individualistic object within an all-encompassing classificational system. Hence, Vierck's concentration on the class of 'small long' brooches (first effectively defined as such in Leeds 1945, 4–44; cf. Åberg 1926, 56–61), and his interest in correlating those with other major classes, particularly the cruciform brooches, in the context of this unusual specimen.

Small long brooches are bow brooches, typically similar in size to the Shakenoak brooch and also near-uniformly cast in copper alloy. Moreover, the headplate of the Shakenoak brooch is immediately reminiscent of the trefoil-headed range of small long brooches, which have three flat arms with rounded outlines: manifestly skeuomorphs of the three headplate knobs of relatively early cruciform brooches (Åberg 1926, 28–56; Reichstein 1975; Martin 2015, esp. 24). The disc terminal to the foot, however, is quite untypical of small long brooches, although the Shakenoak brooch does have one close parallel here in a recently found, metal-detected specimen from the area of Drayton (formerly Berkshire, now Oxfordshire), around 20 km south-east of Shakenoak (Figure 17b). This incomplete brooch lacks the headplate, which on its counterpart from Shakenoak is a pierced disc at the opposite end of the brooch to the terminal,

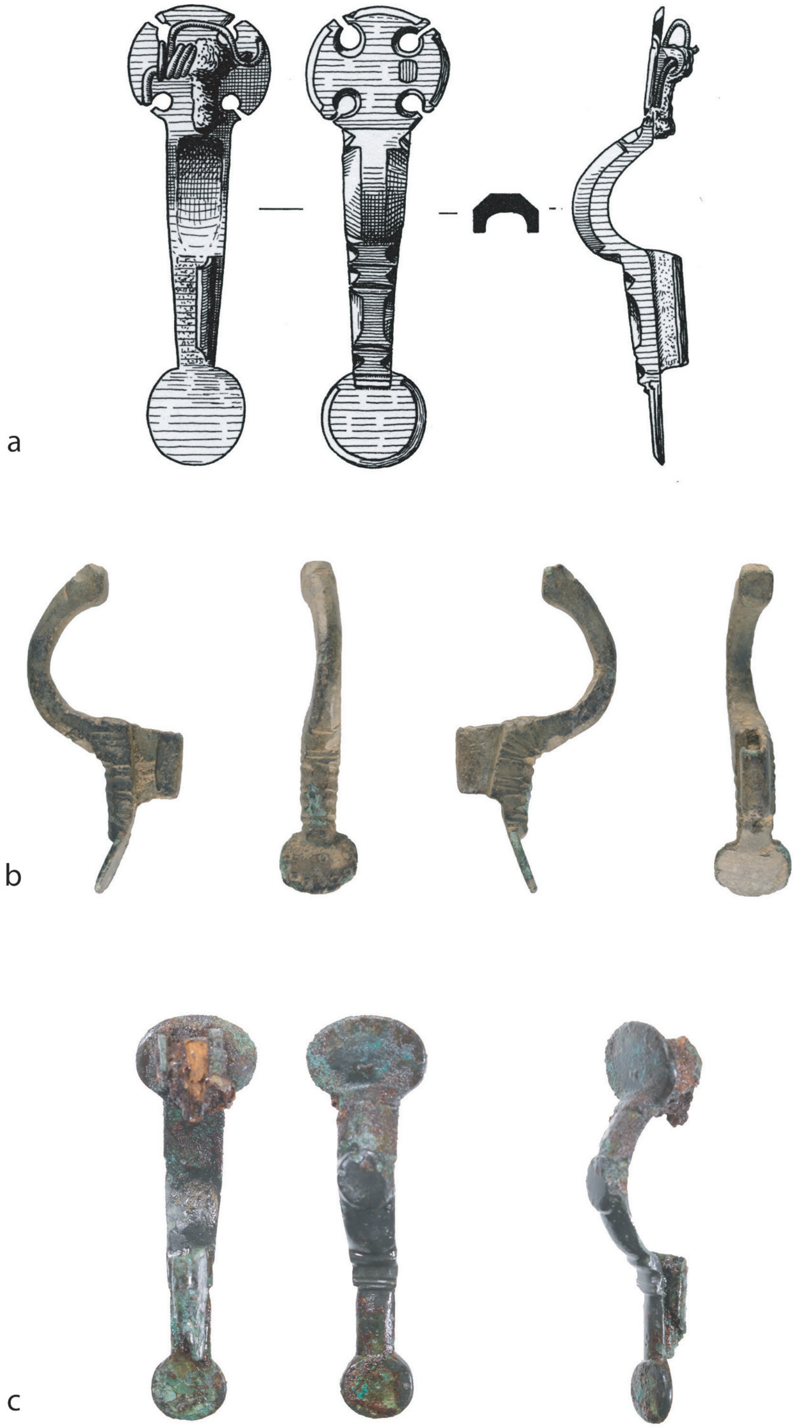

Figure 17. (a) The small bow brooch from Ditch F at Shakenoak; (b) bow and footplate fragment of a comparable small bow brooch from Drayton, Oxon; (c) small bow brooch from Andrup near Esbjerg, Jutland, Denmark, grave A5368. (a) after Brodribb et al. *S1* and *S3*; (b) PAS NMGW-3288EE; (c) Sydvestjyskemuseer_780_2003624. All reproduced with permission. Scale 1:1.

reflecting in terms of design – but of greater diameter than – the terminal lobe (19 mm versus 13 mm); that too is unlike any other small long brooch. The relatively long slender bow – near identical in length with the diameter of the headplate – is also paralleled on the Drayton brooch, except that there it is solid in cross-section, whereas the bow of the Shakenoak brooch is hollowed (the depth and regularity of this are rather exaggerated in the cross-section drawing published in *S3*, figure 33.3). In both respects, however, the bow of the Shakenoak brooch is relatively untypical of the established ranges of small long brooches.

It is possible to conceive of the Shakenoak brooch as representing some form of ancestral stage from which the trefoil-headed small long brooch evolved. Probably more realistic, though, is to view these two comparable brooches found in the upper Thames region as representative of a general period of creativity in the design of small bow brooches, out of which small long brooches would emerge in England, northern Germany and Frisia (cf. Hines 1984, 10–13), with rather different ranges of small bow brooches in Scandinavia (Shetelig 1910), and indeed more widely on the Continent. As Vierck noted, tantalisingly similar are a pair of brooches found in the nineteenth century at Perlberg, Lkr. Stade, Niedersachsen (*S3* fig. 33.2), although the wider, more elliptical headplate on these points more directly to a possible relationship with the numerous Thüringian 'pincer' brooches (*Zangenfibeln*) (Koch 1998, 399–410, Taf. 50,18–22; M. Martin 2014, esp. fig. 10; Theune 2014, 276–80); it also finds a range of echoes amongst Frisian small bow brooches and bears comparison with the characteristic headplate outline of the generally later Domburg brooches of the Low Countries (Nicolay 2021, esp. figs. 10.4 and 10.5).

Another newly-found parallel is a small copper-alloy bow brooch excavated in grave A5368 in the cemetery at Andrup near Esbjerg in western Jutland (SJM 780 × 109–01: online database accessible through http://sol.sydvestjyskemuseer.dk/). This brooch (Figure 17c) is 55 mm in length and has an elliptical headplate and round terminal lobe, along with a raised circular knob in the centre of the bow. The other grave goods included two amber and sixteen glass beads, three of them polychrome, a spiral copper-alloy armring, a pair of form B1 plain wrist-clasps, and a cruciform brooch with a relatively broad, single-field headplate, swelling bow and scroll-shaped nostrils on the equine-head terminal. A small number of cruciform brooches in Scandinavia have rounded flat plates as terminal lobes rather than the usual equine head: particularly those of or related to Reichstein's Norwegian *späte* Typ Søndre Gammelsrød, one of the definitive features of which he identified as a half-round spatulate terminal (Reichstein 1975, 37: see *S3*, fig. 33.1 and 33.7; Bode 1998, Abb. 10,5 and Karte 29; Reichstein 1975, Taf. 25,1). Only on two markedly similar brooches from Bornholm and Skåne, however, does this look anything like as regularly executed as the terminal on the Shakenoak brooch (see esp. Klindt-Jensen 1957, fig. 85,4). While the relative paucity of known grave-assemblages from the Danish Early Germanic Iron Age makes it impossible to assign Andrup grave A5368 to a precise phase, its cruciform brooch is also fully consistent with Reichstein's *späte* types, suggesting a date of burial in the later fifth or early sixth century. But none of these examples is so close in form to the Shakenoak specimen that any specific relationship, influence or copying needs to be postulated.

The regularity of the design of the Shakenoak brooch is to be emphasized. The bow and the stem of the footplate – the latter being essentially the body to which the catch-piece is attached – are similar in length, although, in keeping with the overall taper from head to foot, the bow is 1–2 mm longer. These proportions start to appear on some Late Roman crossbow brooches (cf. Zagermann 2014, Taf. 2,17–20) but are truly characteristic of later fourth- to fifth-century Nydam brooches (Bemmann 1993, esp. Abb. 1–2; Rau 2010, 146–80, esp. 164–8 for a dating to the period AD 355/365–405/415). As also pointed out by Vierck, the sharply faceted cross-section of the bow is familiar on late fourth- and fifth-century simple bow brooches found in Germanic contexts on the north-western Continent in northern France, the Low Countries and northern Germany, although usually those have shorter feet which are often splayed not tapering (see also Rau 2010, Abb. 71). Metallurgical analysis by Catherine Mortimer (MacGregor and Bolick 1993, 146–7, no. 15.83) reveals the body of the Shakenoak brooch to be a nearly pure leaded bronze, with the recorded levels of copper, tin and lead accounting for 99.77% of the metals measured.

Frustratingly not discussed by Vierck is the fact that the brooch has been repaired and refitted at least twice. A copper-alloy plug visible on the face of the headplate (see Figure 17a) is immediately in front of one of the pin-anchor lugs to the rear, and may represent repair of a manufacturing fault. Unlikely to be original is the S-bent rod of copper-alloy wire, around 1.6 mm in diameter, threaded through the lugs to form an axis for the pin. This had had an iron pin hung on it; there is also iron staining in the catch-piece behind the foot of the brooch. In cross-section that pin was flattened on its upper and lower faces, and it appears to have been forcefully bent and torn off parallel with where the back of the headplate meets the bow. Subsequently a further pin or attachment loop of thinner copper-alloy wire (c.1.1 mm in diameter) was coiled at one end around the thicker wire, neatly fitting into the space available alongside the remaining loop of the iron pin.

In the case of the belt-fittings from Site A, it is pertinent to stress how early the date of manufacture of these might be: that they could all have been manufactured before the end of the fourth century, and so are completely in line with the considerable number of coins in this same layer, which must have been formed before human burials were dug into it in a subsequent phase starting before the middle of the fifth century. The belt-fittings from Ditch F could be of exactly the same date. At the very least, we can presume that essentially the same circumstances brought a minimum of two highly typical Late- or early sub-Roman official belt-sets to the community living on the former villa site of Shakenoak at the very end of the fourth century or in the early decades of the fifth – but in what condition, and precisely what those circumstances were, it is impossible to say.

Although also found in the fill of Ditch F, the bow brooch was not directly associated with either belt-fitting fragment: they lay in the fill about 15 metres apart. We can only confidently conclude that the brooch was probably produced in the early to middle fifth century, but then had a long life of several phases. In design, it would have been markedly ahead of its time as a product of the end of the fourth century. In contrast to the Late-Roman belt-fittings from Site A, we should note that the extended period from production through its use and repair to its loss or abandonment is likely to overlap chronologically not only with the phase preceding the burials but also with the period of burial itself – from around the middle of the fifth century into the early sixth – and quite plausibly also with some of the hand-made pottery found in Ditch F. That being so, it is particularly significant that this is the one early piece of metalwork in respect of which we have to look to Germanic cultural contexts for plausible sources of the metalworking practices involved and for formal parallels: not to Roman Britain, nor indeed to the emerging cultural context of Early Anglo-Saxon England.

Conclusions: Shakenoak in the sub-Roman zone of south-western England

Who were the inhabitants of post-Roman Shakenoak? The near-exclusive predominance of young-adult and adult males in the cemetery, and the number of them with weapon-inflicted trauma, strongly imply that these individuals belonged to some military detachment or war-band. The isotopic evidence – consistently with the archaeological interpretation – argues firmly against their having been immigrant warriors from Germanic areas across the North Sea, whether engaged by sub-Roman authorities or rebels against those authorities. It seems more likely that this was some form of unit recruited within the sub-Romano-British south-west of the island. At all events they died violently, in two or more episodes of armed conflict.

Recent and ongoing isotope-based analyses of food sources (both animal and vegetable), and of their effects upon human skeletal remains, are showing how much we can learn about diet and mobility, and how much more we undoubtedly shall learn in the future, from such a large dataset (Cocozza et al. 2022). That concerns, not least, the scope for discovering subtle but potentially important patterns of difference within and between populations – here defined simply as all people living within any specified study area datable to any specified period, which may or may not coincide with cultural, linguistic or historically named groups identified from other perspectives. Of direct contextual relevance to Shakenoak, for instance, should be the evidence that the livestock farming regime in and around the upper Thames region of the Iron Age and Roman periods changed in the Early Middle Ages to one in which cattle were more clearly predominant, and so came to align very closely with what had previously characterized the Middle and Lower Thames regions and continued to do so (Mallet and Stansbie 2021, 191–3). Although that case can have no automatic implications in terms of population movement or change, variance has been detected that is comfortably consistent with some of the relatively large-scale patterns, not only of transformative migration but also of regular individual mobility over considerable distances, that have long been argued for within the nascent, early Anglo-Saxon England (Leggett 2021; 2022, esp. 527–33). The data include valuable implications for cumulative differentiation between the sexes – or indeed the very lack of any such differentials (Leggett, Hakenbeck, and O’Connell 2022, 25–7). At present, however, the level of chronological discrimination in these studies is much lower than is possible with conventional archaeological approaches to modelling sequences of relationship and change. In addition, there are dangers that scientifically advanced analyses are presented through an overwhelmingly scientific lens, with deficient knowledge and understanding of previous archaeological positions and arguments, a pitfall we have endeavoured to avoid here.

The interpretation of isotope data from this period is fraught with challenges and can easily be influenced by entrenched narratives, current political situations and fears over media misuse (Depaermentier 2023) and we have striven not to over-interpret the results here.

The funerary phase at Shakenoak may (or may not) have overlapped with the development of a new occupation area, in the neighbourhood of boundary ditch F and most probably to its north. This is represented by deposits of pottery and the small-long brooch in the upper half of the ditch-fill, and then by weaving equipment and coins of a clearly seventh- to eighth-century character. The material-cultural profile of this settlement is recognisably Anglo-Saxon, and markedly contrastive to that of the late and sub-Roman settlement. While it cannot be dated with any precision, the pottery evidence does render it plausible that occupation covered at least some part of the sixth century. The small long brooch is earlier, but its history of heavy use could be held to suggest that it arrived on the site during the Anglo-Saxon rather than the sub-Roman phase.

On the other hand, the topography and place-names around Shakenoak offer persuasive if indirect evidence that there was indeed continuity of occupation and land-use from the sub-Romano-British world into a stable early medieval one. The contemporary situations at Barton Court Farm and Barrow Hills, Radley (both Oxfordshire, old Berkshire), and at Horcott Quarry near Fairford (Gloucestershire), are also relevant here. In each of these cases, there is evidence of a succeeding phase in which a rural settlement of quite different material-cultural character was established adjacent to the Roman site (Chambers and McAdam 2007; Hayden et al. 2017; Miles 1986). At Barrow Hills and Horcott Quarry, the evidence comprises a familiar range of structures and artefacts that can be labelled 'Anglo-Saxon'. These parallels, when taken in conjunction with the topographical evidence, help to strengthen the possibility of Anglo-Saxon settlers at or near Shakenoak as early as the second half of the fifth century. By that date, as noted above, an Anglo-Saxon-style cemetery was already in use at Minster Lovell, only 6 km westwards along the Roman road.

The evidence for sub-Roman modification of the buildings comprises the miniature-scale final phase of Building B, the re-roofing of the northernmost room of Building A, and the enigmatic wall-trench on Site D. A regional context can be suggested here, notably in the afterlives of some villas in the Gloucestershire Cotswolds (Figure 18). At Gatcombe, the fourth-century Building 16 was rebuilt to a lower standard around the 390s (Building 13/14), and then modified at least twice (Branigan and Blagg 1977, 23–8). At Frocester Court, the ruinous corridor of Building A was crudely re-fitted in the fifth century, involving a combination of post-settings and rubble footings, to create areas for human and livestock accommodation separated by an unroofed space (Price 2000, 115–16). Looking further afield, we find comparable behaviour at Caerleon, where a legionary store building was replaced in the post-Roman period by a lighter and rougher structure with rubble footings (Guest and Gardner forthcoming).

Such low-grade rubble construction overlying substantial Roman features would almost certainly have been missed in pre-modern excavations, and can be fugitive (because of plough-damage) even in modern ones. Timber construction is still harder to recognise. A building in the latest phase at Barnsley Park villa had a surviving clay floor, but walls – presumably of mass construction – that were completely invisible

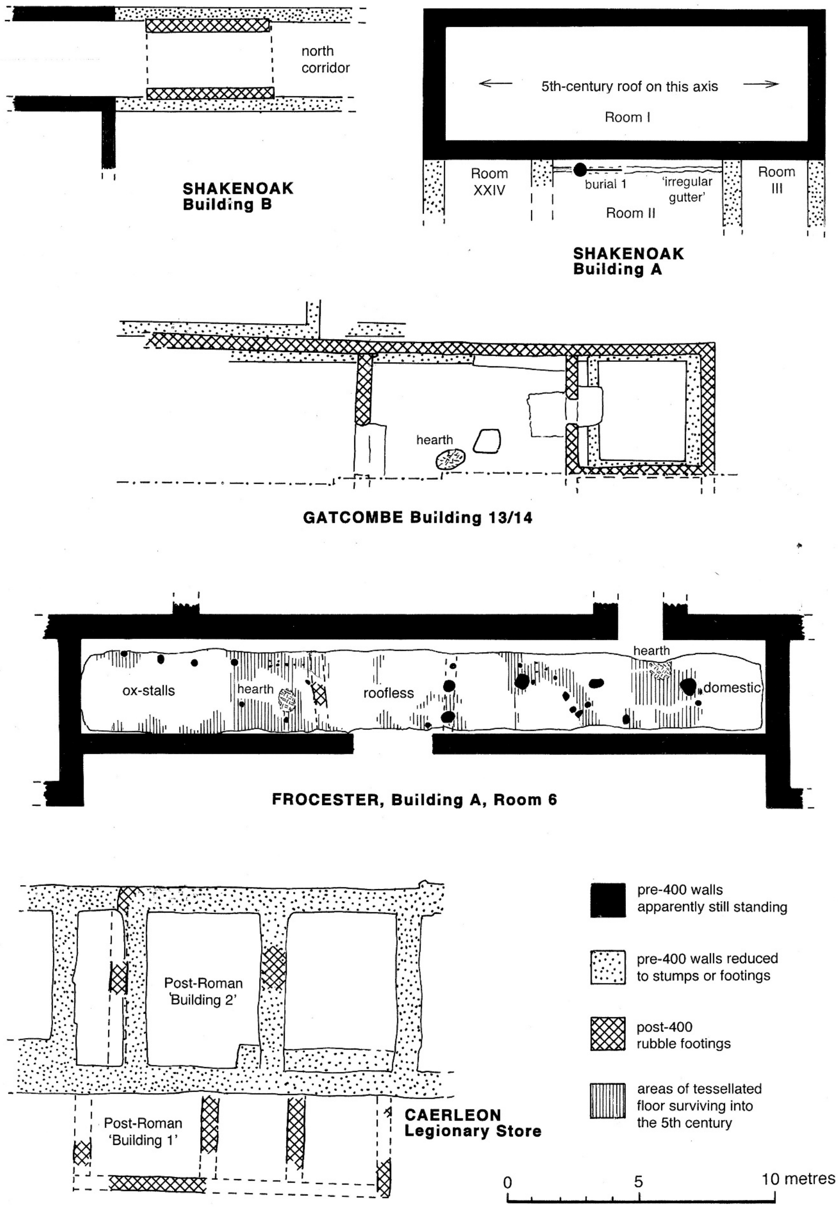

Figure 18. Sub-Roman rubble-walled structures at Shakenoak and comparable sites (Gatcombe after Branigan and Blagg 1977, fig. 5; Frocester after Price 2000, fig. 6.6; Caerleon after Guest and Gardner forthcoming, figure kindly supplied by Peter Guest).

archaeologically (Webster and Smith 1983, 97). Potentially more useful are Building E and Structure 21 at Frocester Court, where shallow wall-trenches were combined with intermittent post-settings (Price 2000, 113–18): these are certainly comparable in basic structural terms to Site D at Shakenoak, and make a sub-Roman date for it a realistic possibility.

This kind of behaviour at recently-occupied villas seems mysterious at first sight: if substantial stone walls were still standing, why not just re-use them? The explanation may lie in a sharply-reduced technical capacity to build roofs of requisite span. At Shakenoak, the re-roofing of Room I on the cross-axis reduced the span from 11 metres to 4.3 metres; at Caerleon, the legionary store had an internal width of 6 metres, its replacement one of 3.4 metres. At Barnsley, where the last-phase building had a span of 7.5 metres, it is suggested that roof-trusses from the former villa were re-used (Webster and Smith 1983, 97), but in the absence of such possibilities there may have been technological constraints.

These recorded structures are surely the tip of an iceberg: maybe fifth-century occupation on villa sites was widespread across the Cotswold zone. That possibility puts in context a recent and much more dramatic discovery: the demonstration that the mosaic floor in Room 28 at the Chedworth villa post-dates the construction of a partition wall, from the foundation of which a radiocarbon sample is dated cal AD 424–544 (95% probability: Papworth 2020, 13–38; 2021). Running counter to all received expectations about the collapse of Romano-British material culture, this find has understandably aroused great public interest, but against the background of a continuing afterlife at Cotswold villas it is perhaps not so extraordinary. A preliminary report notes that the mosaic appears to be later and less skilful than normal *Corinium* products; 'the workmanship is inferior to other mosaics at Chedworth, and there are several mistakes and inconsistencies' (Stephen Cosh in Papworth 2020, 34–5). Perhaps the analogies should be with minor decorative arts rather than with the construction industries: it may have been easier to find a half-competent mosaicist than to maintain major stone buildings.

Turning to the Shakenoak burials, they were consistently oriented W–E, and the bodies were laid in the graves supine and extended. The graves were aligned relatively neatly with the walls of Buildings A and C, in a way suggesting that some of the ruined internal walls of Building A continued to define mortuary zones. Four of the graves were stone-lined (see *S4*, figure 17; present Figure 5) while a fifth is reported as 'packed tightly with large stones above the skeleton' (*S4*, 32–5). The total absence of non-organic grave-goods contrasts definitively with the burial evidence regularly associated with the proto-Anglo-Saxon culture.

Like the building modifications, the burials can be understood within a wider cultural context. Regionally, their affinities lie not in the upper Thames Valley to the east but in the sub-Romano-British south-west of England, beyond the Cotswolds and the head-waters of the Thames. Some cemeteries there were in continuous use from the fourth century or even earlier into the fifth, sixth or seventh centuries, for instance Bradley Hill and Cannington in Somerset (Gerrard 2005, 2011; Rahtz, Hirst, and Wright 2000). The earliest available radiocarbon dates from Tolpuddle Ball (Dorset) and Henley Wood (Somerset) strongly suggest middle to later fourth-century origins for the burial sequences there too (Hearne and Birbeck 1999; Watts and Leach 1996). At Tubney (formerly Berkshire, now Oxfordshire) and Shepton Mallet (Somerset), small numbers of fifth- to seventh-century burials have been found in coherent groups separate from, but close to, the location of earlier Roman-period burial grounds (Leach and Evans 2001; Simmonds, Anderson-Whymark, and Norton 2011). This seems also to be the case at Horcott Quarry (Hayden et al. 2017, 23–30, 133–263), and perhaps at Frilford (formerly Berkshire, now Oxfordshire), though the data there are inadequate (Blair 1994, 11). Concurrently, the direct associability of most of these burial sites with settlements or cult centres of the Late Roman period has long been noted: temples or shrines at Cannington, Henley Wood and Lamyatt Beacon (Somerset: Leech et al. 1986); essentially rural though not necessarily agrarian settlements from the small town at Shepton Mallet to villa-type sites like Shakenoak or Bradley Hill; or a farm like Tolpuddle. The burials at Tubney and Horcott Quarry were sited within the boundary features of farmed landscapes.

More broadly, Shakenoak typifies a Late Antique 'transitional' culture of burial that had emerged a century earlier in the north-western provinces of the empire – still under Roman rule – as villas and other formal buildings were re-purposed for funerary use:

> Only the group of burials from Britannia Secunda shows a bias towards the fifth century. Primarily, transitional burials are a feature of the funerary landscape of the fourth century, which indicates two broadly similar trends. First, different attitudes towards the dead were developing across the north-western provinces amongst rural populations … Second, it suggests that villa buildings were still visible when the individuals were inhumed … Many transitional burials were deliberately aligned with the orientation of buildings. (Dodd 2021, 78)

The individual graves show a distinct consistency of form, which can be understood to reflect a sort of regularized plainness, not a purely passive and minimalized approach to interment. Oriented (W–E), supine inhumation is regular, although there are some intriguing deviations, for instance in the demonstratively contrastive alignment of N–S burials: at Tubney that contrast is strikingly displayed, even to the point of graves intercutting. While the body is unaccompanied, the grave itself may be actively enhanced or constructed. There is a minority – but a recurrent minority across multiple sites – of cases where timber coffins are used, and very occasionally stone sarcophagi or lead coffins. Most widespread (as at Shakenoak) is the use of stone linings in graves, some only around the head or feet of the corpse.

The ordered relationship of belonging to a living community – which had to organize the burial of its dead as a recurrent and regular practice – is reflected also in the commonly-practised arrangement of graves in rows (albeit usually snaking and variable rather than rigidly linear), and in the use of walls to define burial plots in re-purposed ruins such as Shakenoak. Normally, where it is possible to summarize the demography of the buried population from osteological analyses of age and gender, we consistently find organic and naturally self-reproducing communities of men, women and children. The burial population at Shakenoak – almost entirely male, with weapon-wounds in several cases – stands in stark contrast to all of this, and is currently without parallel.

It may be most appropriate to interpret the entire fifth-century cultural package in terms of elements of Late Antique continuity and an engaged conservatism of practice. That perspective emphasizes the inherent plausibility that a sense of this society's Roman past remained part of its self-understanding, even to the extent of carrying it through into a world that was culturally, linguistically and politically Anglo-Saxon. That in turn is highly relevant to longer-term processes of assimilation and Anglicization; the case-study provided by Shakenoak, however, is clearly one characterized by difference, decline, lethally violent disruption and replacement, not the constructive processes of adaptation and change proposed by James Gerrard (2013, esp. 253–62). To make such a stark declaration is not to suggest that Shakenoak should be assumed to be a representative microcosm of the relationships and experiences as a whole; its value is that of a detailed and specific example which must in the future be combined with the evidence of further sites to compose a steadily more comprehensive and therefore more informative overview. Shakenoak – on the extreme eastern edge of the sub-Roman British cultural zone – stands alongside major cemeteries, such as Ulwell (Dorset) and Camerton (Somerset), as one of the sites where such questions of cultural and even ethnic identity can most usefully be explored (Cox 1988; Wedlake 1958). At Horcott Quarry, the juxtaposition of a small cemetery of apparently sub-Roman-British character with potentially contemporary settlement features of the new, 'Anglo-Saxon' character is especially fascinating. Opportunities are opening for further reassessments, extending well beyond the range of this paper.

Abbreviations

PAS	Portable Antiquities Scheme Database, https://finds.org.uk/
S	Sawyer Charter number. The Electronic Sawyer, https://esawyer.lib.cam.ac.uk/
S1 – S5	Brodribb, Hands and Walker 1968–78
VCH Oxon.	*Victoria History of the County of* Oxfordshire. 1–20 and continuing. 1939 – 2023. London: Archibald Constable and Institute of Historical Research.

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