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Hoarding in a material world: the selection and deposition of metalwork in Middle–Late Bronze Age south-east and west Wales

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ABSTRACT

This paper explores the collection and deposition of metalwork in south-east and west Wales from c. 1550–800 BC. Utilising a comprehensive database of over 1400 metal objects, this paper examines the deliberate selection of ornaments, weapons, axes and objects associated with the production of metalwork of this period, highlighting regional and chronological patterns in the flow of metalwork being buried within hoards and as single finds. In addition to the selection of specific objects for burial, this research identifies changes in depositional practices, such as the manipulation of gold ornaments within Middle Bronze Age hoards and the deliberate fragmentation of weapons, particularly swords, during the Late Bronze Age. This paper also takes a fresh look at one of the most emblematic groups of metalwork deposition in Late Bronze Age Britain – the Llantwit-Stogursey tradition. The geographical limits and frequencies of object associations for this tradition are redefined, affirming the significance of South Wales Type socketed axes whilst also highlighting, for the first time, the importance of casting jets and ingots within hoards in south-east Wales and eastern Carmarthenshire.

Introduction

> "Samuel Davies … found he had cut through an ancient hole, like a pan, going down perpendicular, like a well … He emptied about 6 ft. deep of this hole … and it was not full of water, but dry. He then drove the handle of the fork down into the middle of it … he says he got frightened, thinking there had been burying there, and some weakness to him, and he left it … he thought he was digging among corpses … " (Griffiths 1893, 144)

The account given above partly details the discovery of what is now known to be the Pant-y-Maen hoard – a collection of mostly broken weapons and weapon fittings that was buried in a bog in northern Pembrokeshire, between 1000–800 BC. Although no human remains were ever reported to have been associated with the find, Davies was clearly alarmed at the prospect of having disturbed human graves when he discovered the

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weapons. However, there is relatively little evidence for burials during the Late Bronze Age in Britain (Brück 2019, 50), with even fewer associated with deposits of metalwork (Burgess 1976; Cooper, Garrow, and Gibson 2020). Davies might not have been familiar with this pattern of dissociation between deposits of Late Bronze Age metalwork and human remains, but the potency of his account serves to demonstrate that hoards could communicate both meaning and vibrancy, both in the past and present. Of course, the interpretation of hoards like Pant-y-Maen remains a subject of debate amongst archaeologists. In his discussion of the Pant-y-Maen hoard, archaeologist W. E. Griffiths focused on the nature of the damage and fragmentation of its weapons, arguing that the old and broken condition of its objects represented the stock of a bronze metalworker, buried temporarily for safe-keeping (1957, 123). For other authors, the types of objects, the manner of their destruction and/or its depositional context have contributed towards interpreting the Pant-y-Maen hoard as a sacrifice of weapons following a violent conflict (Mörtz 2018), a body-less funerary deposit (Barnwell 1864, 230) or a votive offering of prestigious objects to supernatural deities (Darvill and Wainwright 2016, 195).

The Pant-y-Maen hoard specifically will be revisited in a later section, but the primary aim of this paper is to explore the wider evidence for hoarding practices in south-east and west Wales from c. 1550–800 BC. Important contributions towards our understanding of the character and composition of hoards from the study area were made during the later twentieth century (Burgess 1968, 2012; Needham 1981; Savory 1958, 1980), but they require critical reassessment in light of new evidence and ways of thinking. The last major synthesis of material from these regions was carried out in the 1990s by Peter Northover, the results of which remain unpublished and largely inaccessible to many scholars. Moreover, there has been an unprecedented increase in the number of Bronze Age metalwork finds being reported across Britain. In England and Wales, this is due, in large part, to the introduction of the *Treasure Act 1996*, its revision in 2002 to include base-metal hoards and associations, and the success of the Portable Antiquities Scheme (PAS) (Griffiths 2023; Murgia, Roberts, and Wiseman 2014; Wiseman 2018). By bringing together the evidence for the deposition of metalwork across all contexts, with a particular focus on hoards and single finds, it is possible to identify compelling patterns in the kinds of objects that were selected for burial during the Middle–Late Bronze Age. As explored in more detail below, this paper avoids simplistic explanations for metalwork depositional practices, carefully examining connections between metalwork depositional practices across a large area, recognizing the interplay between them at a very fine level of detail and considering how they fit within broader societal processes and belief systems.

Approaching hoards and metalwork deposition

Considering that many thousands of metal objects have been discovered all across Europe (Fontijn 2020), it is perhaps no surprise that the question of *why* people buried Bronze Age metalwork has been a crucial point of debate since the early days of archaeology. Some of the possible explanations for the burial of hoards were outlined in the introduction to this paper, but more detailed reflections on this debate can be found elsewhere (cf. Needham 2001; Fontijn 2002; Bradley (1990) 1998, 2013). In brief, much of this debate has revolved around the same question: were metal objects deposited for ritual (e.g. votive offerings or body-less funerary deposits) or functional

(e.g. scrap or trade objects meant to be recovered) reasons? As Fontijn rightly stressed, some archaeologists have readily favoured certain interpretations over others without fully considering what the evidence tells us (2002, 14–15). For example, Griffiths' interpretation that the Pant-y-Maen hoard was buried temporarily as scrap *could* certainly be correct (1957, 123), but it does not come across as firmly grounded in the material dynamics of the evidence. Neither its exclusive composition – of weapons and weapon fittings – nor its depositional context were considered relevant in explaining why the Pant-y-Maen hoard had been buried. While these questions are considered within the concluding discussion, the main focus of this paper is on understanding *what* was collected for the purposes of hoarding and the dynamic processes that objects were caught up in when they were buried.

More recent authors have convincingly argued that many hoards were not randomly assembled collections of objects but were, instead, meaningfully constructed from a wider assemblage of material culture (Becker 2013; Bradley 1998; Cooper et al. 2022, 86–110; Fontijn 2002, 2020; Knight 2022; Needham 1988). From the sorting of palstaves into particular types within Middle Bronze Age hoards in southern England (Rowlands 1976, 99–114), to the over-representation of cutting edges of axes and swords within Late Bronze Age fragmentary hoards across Europe (Bradley 2005, 151–153; Becker 2013, 254; Knight 2022, Fig. 5.25), the selection of certain objects (or parts of objects) suggests that assembling and depositing hoards was not simply a physical process of collecting whatever metalwork was available at that moment in time. Identifying these patterns relies on viewing all depositional contexts as essentially equivalent and interlinked, ranging from single finds in the landscape to settlement and burial contexts (Bradley 2013; Fontijn 2002, 2020). Of course, it is important to be aware of the possibility that some selective practices were not shared uniformly across space and time. The association between major European rivers and single finds of Middle–Late Bronze Age weaponry is well cited (Fontijn 2020; Torbrügge 1971), but there is also sufficient evidence to indicate that some rivers and wet places (e.g. fen edges) were not a foci for the destruction and deposition of weaponry during this period (e.g. Mullin 2012, 49, Figure 3; Needham and Wilkin 2024, 259; Pendleton 1999, 68–72). An important aside from this is that patterns of selection must be built up locally and regionally first, before exploring inter-regional connections and correlations.

Many recent discussions of Bronze Age hoards tend to focus on the moment of deposition, but it is also essential to consider what processes may have contributed towards the bringing together of objects for burial. As argued by Garrow and Gosden in their study of Later Iron Age art, hoards provide a useful 'snapshot' of the networks between people, objects and places (2012, 156–58). There are a number of methodologies which can give us greater insight into these collecting practices, including careful analysis of the arrangement of objects in the ground (Wilkin 2017) and an examination of the 'biographies' of objects (Joy 2009; Kopytoff 1986). The latter of these approaches brings together the evidence of an object's production, preparation, use and destruction, whilst also setting the object within its social and cultural context. For example, in his study of the Iron Age hoards from Snettisham, Joy observed that many of the torcs from Hoard L were extensively used before their deposition (2016, 248). One object within this hoard – the Grotesque Torc – was even older than the rest of the objects, had been much repaired, and was of a style that was in fashion over 100 years before it was buried (Joy 2016). It may have been for these reasons that the Grotesque Torc was

not broken up and recycled to make coins, and instead removed from circulation and buried within a hoard (Joy 2016, 250). More recently, Knight (2022, 16) has demonstrated that the destruction of Bronze Age metalwork would have required a degree of technical knowledge on the part of the individual or group carrying out the act. The breaking up of metalwork would have required sound material knowledge and access to a suitable fire, whereas other destructive actions, such as bending an object without causing a breakage, would have required greater technical knowledge and happened far less often (Knight 2022, 16–17, 78–9, 158; Needham and Wilkin 2024, 261). Careful analysis of damage and breaks can, therefore, be used to construct and enhance the biography of objects.

In the past, antiquarians and archaeologists tended to analyse objects according to their typologies, sorting objects into groups based on their outward forms. Typologies remain a cornerstone for many studies of material culture but they have been criticized for reducing or even eliminating differences between objects, forcing artefacts to conform to rigid schemes that artificially enforce homogeneity (Boozer 2015, 94; Sørensen 2015). In some of his most recent work, Bradley (2017) questioned whether the appearance of objects had any impact on how they were deposited. Instead, he posited that it was an object's history, as outlined above, that was more important for determining whether it was removed from circulation and permanently deposited (Bradley 2017, 51–54). When used appropriately, however, typologies can be a useful tool for making sense of change and continuity across space and time (Fowler 2017). This is especially important for studies of bronze metalwork because, unlike other materials such as stone, bronze typically lacks the visual properties that might inform people where it came from (Fontijn 2020, 27; Sørensen 1987). The appearance of metal objects would have played an important role in informing people where it may have come from and, in some cases, different styles of objects may have warranted an alternative, selective treatment (Sørensen 1987, 94). For example, in their study of the Hoogeloon hoard from the southern Netherlands, Fontijn and Roymans (2019) drew attention to its unusual character within a regional context. The palstaves were all decorated and made in the style of those that are more commonly found in north-western France and southern England, whilst several were buried with minimal preparation and no signs of use (Fontijn and Roymans 2019, 175). They went on to suggest that the use-life histories of these palstaves may have been secondary to their 'foreign' appearance, which is what may have required them to undergo a specific form of treatment that was consistent with what was being practiced by people hundreds of kilometres away to the south (Fontijn and Roymans 2019, 179).

In what follows, this paper will demonstrate how typologies, biography, and material science (cf. Northover n.d.; Rohl and Needham 1998) can be used together to find balance between a more traditional, classificational approach and more novel ways of thinking. It follows several authors in suggesting that hoards were part of a wider, relational body of material that was deliberately deposited during this period and that also includes single finds, and metalwork deposited in settlement and funerary contexts. Interpreting Bronze Age metalwork effectively also requires analysis at regional scales, not least because this aligns with the likely perceptions of later prehistoric communities regarding its production, circulation and deposition. Recent studies have tended to either atomize aspects of the metalwork record (e.g. by

focusing on a certain artefact type, Metalwork Assemblages/phases or use-wear analysis) or over-simplify it by approaching it on a 'national' level, meaning that the precise factors which prevailed in influencing metalwork depositional practices have seldom been thoroughly weighed up alongside other contemporary strands of evidence. As noted above, local and foreign tensions may have been an important factor in organizing selective deposition, especially from c. 1550 BC when pan-European exchange networks became increasingly important (cf. Fontijn 2020, 36; Sørensen 1987). Regional studies allow for these tensions to be brought to the fore, highlighting important intra-, inter-, and supra-regional similairities and differences that have hitherto been overlooked by the lack of variety in the scale of many pre-existing studies.

In order to set the scene, this paper first presents a broad overview of the metalwork record from the study area, bringing into focus the diversity of materials and objects that were collected and buried between c. 1550–800 BC. Secondly, it explores, in details, four specific categories of evidence – ornaments, weapons, axes, and objects associated with the production of metalwork. These categories provide a useful lens through which it is possible to explore how the different appearances, functions, and biographies of objects may have influenced their deposition, within hoards and other archaeological contexts.

Middle–Late Bronze Age hoards: the study area, chronology and definitions

When approaching the topic of metalwork deposition, it is essential to use a case study area with a suitably high volume of metal objects that come from a variety of contexts. South-east and west Wales provide suitable regions for study. The former includes the historic counties of Glamorgan, Gwent and Brecknock, while the latter includes Carmarthenshire, Pembrokeshire and the southern half of Ceredigion (Figure 1). By the end of 2023, just over 1400 metal objects belonging to the Middle–Late Bronze Age were reported from the two regions. The study area is also diverse in terms of its topography, with a mix of lowlands and uplands, as well as dryland and wetland landscapes. Both study regions are also partly coastal in locations, allowing for the investigation of far-reaching connections not just with neighbouring regions, but also across the Irish Sea and with the near Continent.

This study covers the period c. 1550–800 BC, which is divided into the Middle (c. 1550–1150 BC) and the Late Bronze Age (c. 1150–800 BC). Although the Chalcolithic (c. 2450–2200/2150 BC), Early Bronze Age (c. 2200/2150–1550 BC) and the Earliest Iron Age (c. 800–600 BC) are often included within studies of Bronze Age metalwork deposition (e.g. Fontijn 2002, 2020; Knight 2018, 2022), including them here is beyond the scope and scale of this study. The Middle and Late Bronze Ages are further sub-divided into 'Assemblages' (Table 1) – chronological 'behaviour packages' comprising a range of metalwork types interlinked by frequent or occasional mutual associations (Needham 2017a, 127, Figure 1). Assemblages are best portrayed as 'bubble chronologies', representing depositional phenomena with possible gaps, overlaps, or uncertain phases between them.

A comprehensive database of all metalwork known from the study area that can be dated to the period c. 1550–800 BC was created. The research methods used to

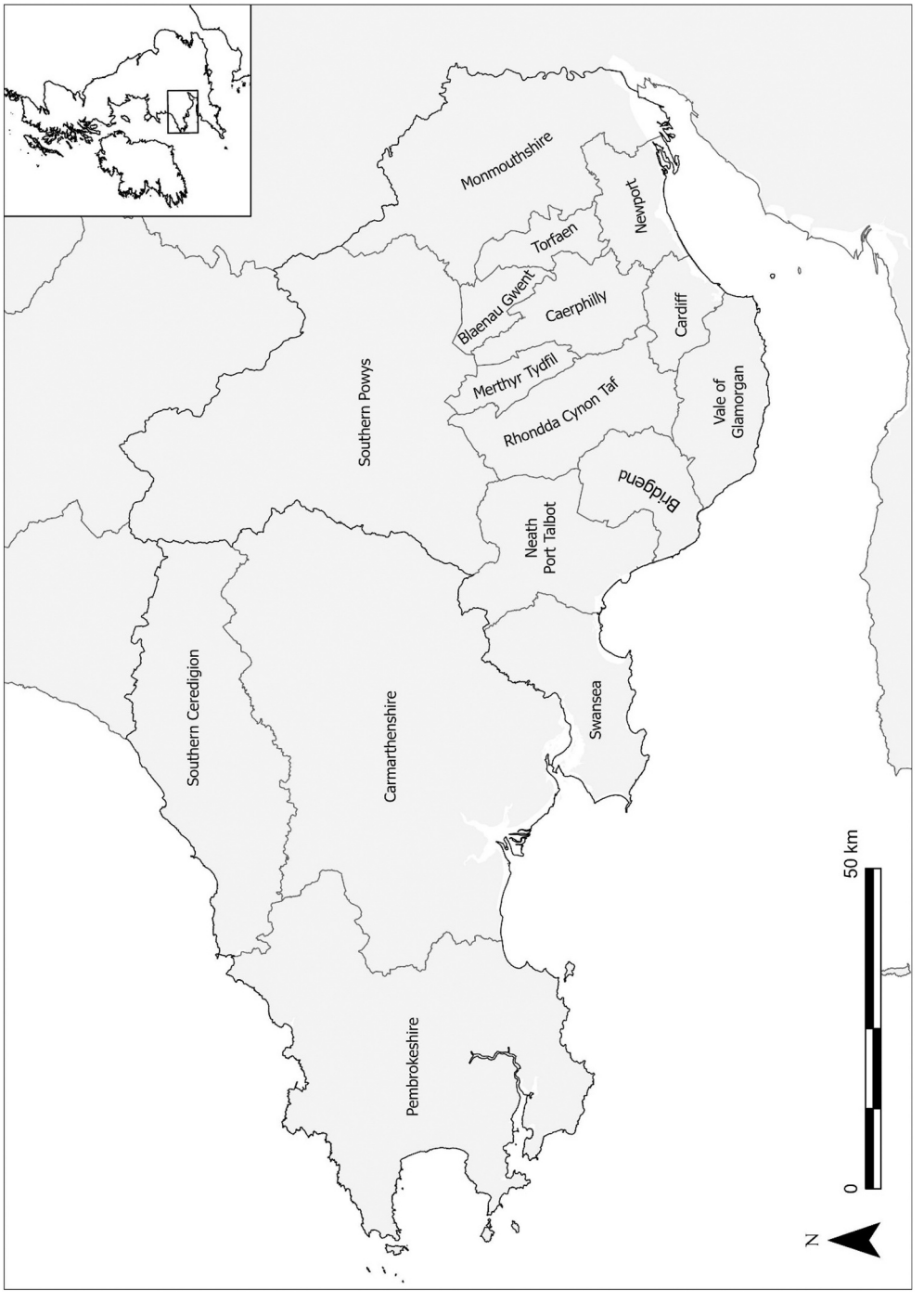

Figure 1. Map of south-east and west Wales (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

Table 1. Chronological overview of the Middle–Late Bronze Age in southern Britain (after Needham et al. 1997; Roberts et al. 2013).

Period	Date (cal BC)	Metalworking Assemblage/phase
Middle Bronze Age	1550–1400	Acton Park
	1400–1275	Taunton/Cemmaes
	1275–1150	Penard
Late Bronze Age	1150–1020	Wilburton
	1020–920	Blackmoor/early Ewart Park
	1000–800	Ewart Park

assemble this database included a thorough review of past published works, particularly previous volumes of *Archaeologia Cambrensis* and the *Bulletin of the Board of Celtic Studies*, as well as finds included in Northover's unpublished study on *Bronze Age Metalwork from Wales and The Marches*. Access to unpublished treasure reports on hoards, produced as part of the treasure reporting process in Wales, as well as the artefacts and hoards themselves, was an integral part of data collection for this project. Worth noting is that 64% of all hoard finds (n = 65/102) and 59% of all single finds (n = 279/473) from the study area have been reported since 1999, coinciding with the onset of the Portable Antiquities Scheme in Wales (PAS Cymru) and the introduction of the *Treasure Act* 1996 (Griffiths 2023, 2). Whereas many older finds were recorded with only vague details of their findspots, the quality of data for new discoveries tends to be much higher, with good photographs, details of object types and accurate findspot locations. Many of these new finds are also easily accessible and free to access digitally via the PAS web database (https://finds.org.uk/database).

Hoards are defined here as two or more precious metal or base-metal objects that were placed together in the ground, usually within a small pit feature. Also included in initial searches were groups of objects that were probably once buried in direct association and have since been scattered via post-depositional processes (e.g. through the actions of ploughing), as well as objects that were found in close association but not from the exact same findspot (e.g. placed or thrown onto an ancient land surface). In every instance where multiple objects were discovered in proximity to each other, the circumstances of their discovery and descriptions of their context were investigated in detail, to assess whether they might be classified as a hoard. These details are often severely lacking with regards to older finds and so a distinction has been made between 'more certain' and 'less certain' hoard finds (cf. Wilkin 2017, 16–17; Needham 2017a, 115). This distinction is not overly laboured, but it is important to accept that fundamental distinctions of context can have a significant impact on interpretations. In those sections of this paper that provide more detailed analyses and discussions, the 'less certain' category provides a means of minimizing the danger of biases that derive from problematic accounts of recording or discovery. The research data behind this paper can be found in the project database, which will be made available from the end of the project via the Archaeology Data Service (accessible via: https://doi.org/10.5284/1122317).

The data presented within this paper have been obtained from first-hand study of the objects themselves or from detailed recordings, illustrations and/or photographs of artefacts. The latter group is particularly important for those finds that were returned

Table 2. Number of findspots for each find context, divided by period. For the one M-LBA settlement, finds span the Middle and Late Bronze Age. The 45 M–LBA single finds are not closely datable to a known style of object.

Find Context	MBA	M–LBA	LBA	Total
Hoard	17	0	85	102
Single find	184	45	249	478
Settlement	0	1	0	1
Trackway	0	0	1	1
Funerary	3	0	0	3

to their finders after they had been recorded (by museum curators or through the Portable Antiquities Scheme) and/or were disclaimed through the Treasure process. For every object studied, the typology,[3] chronology, condition, general completeness and current location were recorded, along with information about the findspot and circumstances of discovery. For hoards discovered up to the end of 2022, each object was assessed for evidence of manufacture, preparation, use and damage – separated into deliberately inflicted damage and uncertain/other damage (following Knight 2021a, 2022). Hoard finds that were reported during 2023 are included, but only basic details were recorded (e.g. location data, number and types of objects present) due to time constraints and because they are still within the early stages of the legal treasure reporting process. A full assessment of preparation, use-wear and damage for all single finds was beyond this paper's scope and so priority was given to studying single finds that provide context and opportunity to identify meaningful relationships with the hoarding record, such as dispersed scatters (e.g. Swansea Bay and Penllyn) or more unusual artefact types, such as hair-rings.

When, what and where: the basics of the dataset

To comprehensively understand hoards and the objects deposited within them, it is necessary to outline the basic elements of the metalwork record in south-east and west Wales. In total, 1429 metal objects were recorded within this research project dataset. Table 2 shows a breakdown of find types, whilst Tables 3 and 4 provide, respectively, a breakdown of the number of Middle and Late Bronze Age objects by their type. In Table 3, hoard finds are separated into three categories – landscape hoards, cave hoards and funerary-related hoards – to highlight the various archaeological contexts in which hoards of this period have been found.

Middle Bronze Age metalwork

Table 3 shows very clearly that single finds of metalwork account for the vast majority (n = 185/259) of objects that were deposited during the Middle Bronze Age. Palstaves and weapons (i.e. dirks, spearheads, rapiers and swords) are especially common and represent, respectively, 60% (n = 111/184) and 34% (n = 63/184) of all single finds reported from the study area. By comparison, 68 objects (20 gold and 48 bronze) are known from 17 hoards, the majority of which date to the Taunton and Penard Assemblages. Personal ornaments (i.e. armlets/bracelets and torcs) and palstaves are

Table 3. Number of Middle Bronze Age object types by find context. The percentage frequencies for each object type is also expressed for landscape hoards and single finds.

Object Type	Landscape hoard (*n* = 14)	Cave hoard (*n* = 2)	Funerary-related hoard (*n* = 1)	Single find	Settlement (*n* = 1)	Funerary (*n* = 3)
Adze				1 (0.5%)		
Armlet/bracelet (bronze)	2 (3.5%)	1				
Armlet/bracelet (gold)	7 (12.3%)				1	
Arrowhead	1 (1.8%)					
Awl		1				
Gold bead		1				1
Chisel		1		1 (0.5%)		
Dirk	2 (3.5%)			18 (9.7%)		
Dirk/rapier fragment				6 (3.2%)	1	
Hair-ring						1
Ferrule	2 (3.5%)					
Finger ring (gold)	2 (3.5%)			1 (0.5%)		
Flanged axe				2 (1.1%)		
Knife	1 (1.8%)					
Mould-piece (copper alloy)				1 (0.5%)		
Palstave	18 (31.6%)	1		111 (60.0%)	1	
Pin	1 (1.8%)			1 (0.5%)		
Rapier		1		3 (1.6%)		
Razor		1				
Ring			1			
Saw		1				
Socketed axe	1 (1.8%)					
Spearhead	2 (3.5%)		1	35 (18.9%)		1
Sword	3 (5.3%)			1 (0.5%)		
Bronze torc	5 (8.8%)				1	
Gold torc	9 (15.8%)			1 (0.5%)		
Uncertain fragment (gold)	1 (1.8%)			3 (1.6%)		
Uncertain fragment (copper alloy)			1			
Totals	**57**	**8**	**3**	**184**	**4**	**3**

Table 4. Number of Late Bronze Age object types by find context. For landscape hoards and single finds, the percentage frequencies of object types are also expressed.

Object Type	Landscape hoard (n = 85)	Single find	Settlement (n = 1)	Trackway (n = 1)
Anvil	1 (0.1%)			
Armlet/bracelet (bronze)	14 (1.6%)	1 (0.4%)		
Armlet/bracelet (gold)	3 (0.3%)	2 (0.8%)		
Axle cap	1 (0.1%)			
Casting jet	69 (8.0%)			
Chape	4 (0.5%)	1 (0.4%)		2
Chisel	2 (0.2%)	8 (3.3%)		
Dirk/rapier	1 (0.1%)			
Ferrule	10 (1.2%)			
Hair-ring		6 (2.4%)		
Horse gear	6 (0.7%)		2	
Ingot (copper alloy)	27 (3.1%)	1 (0.4%)		
Ingot (copper)	40 (4.6%)	1 (0.4%)		
Knife	7 (0.8%)	6 (2.4%)		
Lock-ring		1 (0.4%)		
Palstave	14 (1.6%)	4 (1.6%)		
Pin	3 (0.3%)		1	
Ring	6 (0.7%)			
Sheet metal	4 (0.5%)			
Sickle	3 (0.3%)	1 (0.4%)		
Socketed axe	479 (55.4%)	169 (68.1%)	3	
-Ribbed	344 (40.0%)	86 (34.7%)	1	
-Faceted	25 (2.9%)	14 (5.6%)	2	
-Plain	58 (6.7%)	25 (10.1%)		
-Uncertain	52 (6.0%)	44 (17.7%)		
Socketed gouge	9 (1.0%)	6 (2.4%)		
Socketed hammer		6 (2.4%)		
Spearhead	70 (8.1%)	15 (6.0%)		
Sword	70 (8.1%)	20 (8.1%)		
Winged axe	2 (0.2%)	1 (0.4%)		
Uncertain/other	21 (2.4%)		1	1
Totals	**866**	**249**	**7**	**3**

particularly numerous within hoards of this period, representing, respectively, 41% (n = 28/68) and 28% (n = 19/68) of all objects from hoards of this period.

Middle Bronze Age metalwork has only been found at one settlement site from the study area, at Llanmaes, Vale of Glamorgan, which saw occupation from the Middle Bronze Age to the Earliest Iron Age (Gwilt et al. 2016). These include a gold strip with a perforation at one end and a bronze ribbon torc fragment, as well as fragments of a Transitional palstave and a Group IV dirk or rapier that were first reported by metal detectorists (Lodwick 2010; Gwilt et al. 2016, 312; Gwilt, pers. comm.). An additional two finds are possibly related to settlement activity, including a single find of an incomplete tanged chisel (or trunnion tool) that was incorporated in the rampart of an enclosure at Broadway, Pembrokeshire (Williams and Mytum 1998, 87, fig. 62:1). The Llantwit Major Community hoard (VOG-H10; Vale of Glamorgan) was possibly deposited within a boundary ditch feature, but this remains to be proven through further investigation of the findspot (Gwilt, Lodwick, and Davis 2010).

A small fragmentary hoard of three bronze artefacts dating to the Taunton or Penard Assemblages, inserted into an Early Bronze Age cairn at Pen-Y-Fan, Powys (POW-H11), represents the only known example of a funerary-related hoard from the study area (Cooper, Garrow, and Gibson 2020, 152; Gibson 1997, 13, Figure 12). Two further

hoards – from Ogof-yr-Esgyrn, Powys (POW-H9) and Priory Farm Cave, Pembrokeshire (PMB-H6) – have been separated because of their further 'containment' within caves (Laws 1908; Mason 1968). The discovery of human remains close to the locations of these two cave hoards lends some credence to their treatment as funerary-related hoards, particularly in the case of Ogof-yr-Esgyrn where two bones have been radiocarbon dated to 1390–1130 cal. BC (UB-6550, 3008 ± 38 BP; UB-6551, 3008 ± 38 BP), overlapping with the date of the deposition for the hoard (McManama-Kearin 2008). At Priory Farm Cave, the skull of an adult female and a child's maxilla were found within the cave and some distance away from the entrance, where the hoard was reportedly found (Laws 1908). Radiocarbon dating of additional fragmentary human remains, discovered subsequently within the cave, have produced dates of 3516–3352 cal BC (OxA-22988, 4631±BP) and 350–55 cal. BC (OxA-22989, 2133±BP) (Schulting 2020, 15). More recent excavations at the entrance to Priory Farm Cave revealed a shallow shell midden that produced four human teeth, one of which has returned a radiocarbon date of 1050–860 cal. BC (OxA-12746; 2814 ± 29), post-dating the deposition of the hoard by approximately 200 years (Schulting 2020, 13–15). Although the precise details of the relationship between these hoards and the human remains is unclear, it is possible that these deposits of metalwork were entangled with funerary or funerary-related practices (cf. Peterson 2019, 87–94). The compositions of these two cave hoards are also unusual as they contain small tools, including the awl and razor from Ogof-yr-Esgyrn and the saw and chisel from Priory Farm Cave (Laws 1908, 115; Mason 1968, 36, Figure 6) – objects that are otherwise absent from all other hoard deposits within the study area. The over-representation of these small tools within cave hoards suggests, tentatively, that their exclusion from other archaeological contexts may have been the result of deliberate selection strategies.

Late Bronze Age metalwork

A total of 1125 metal objects (1112 base-metal and 13 gold/precious metal composite objects) are known to date to the Late Bronze Age (Table 4) in the study area, representing a substantial increase in the quantity of metalwork from the preceding Middle Bronze Age. Hoard finds account for almost 80% (n = 866/1125) of all metalwork deposited during this period, with all but five belonging to the Ewart Park Assemblage. Of these five non-Ewart Park hoards, only the Llandyfaelog Community (CRM-H6; Carmarthenshire) and Llantarnam Community (TOR-H2; Torfaen) hoards are not securely dated to any known Assemblage (Gwilt and Griffiths 2023; Gwilt and Lodwick 2011); the remaining three hoards – Mawr Community (SWN-H1; Swansea), Penllyn Community (VOG-H12; Vale of Glamorgan), and Princetown (BGW-H2; Blaenau Gwent) – possibly belong to either the Wilburton or Blackmoor Assemblages (Gwilt, Lodwick, and Davis 2015; Knight and Gwilt 2018; Savory 1972).

In terms of the objects present, socketed axes represent just over half of all objects known from hoards, followed by spearheads, swords and casting jets. By comparison, socketed axes represent just over two-thirds of all finds found singly from the study area followed, again, by spearheads and swords, suggesting broad similarities between the selection of objects for burial within hoards and as single finds. Interestingly, it seems that certain tools – namely socketed gouges, knives, and, to a lesser extent, sickles –

could occasionally be deposited within hoards and as individual deposits, whereas others – mainly chisels and socketed hammers – were very rarely or never deposited alongside other objects. It is likely that many of these tools would have been used for several crafts, but all six of the socketed hammers considered here (Figure 2) have broad heads that would have been especially suited for working sheet metal or striking other objects (Fregni 2014, 92–94). Outside of the study area, in north-east Wales, one socketed hammer was recovered from a Late Bronze Age occupation deposit located behind the rampart of The Breiddin hillfort, Powys, along with numerous other pieces of metalwork, clay fragments of crucibles, and clay mould fragments (Musson 1991,

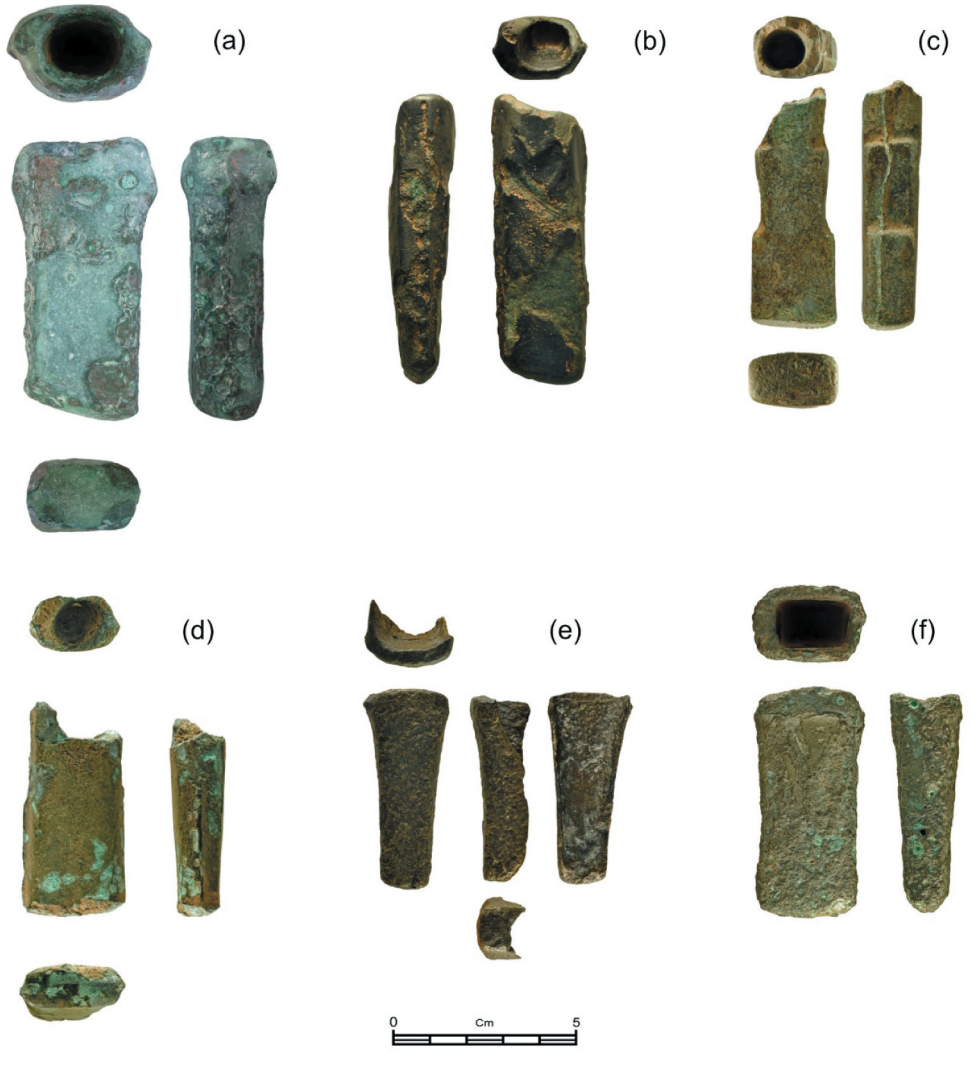

Figure 2. Socketed hammers from the study area: (a) Ferry Point, Carmarthenshire (photo: author); (b) Argoed Community, Caerphilly (PAS NMGW-475C27); (c) 'Pembrokeshire' (Lodwick unpublished); (d) 'Usk area', Monmouthshire (PAS NMGW-EE007C); (e) Sketty Community, Swansea (PAS NMGW-46A3A3); (f) Brecon Community, Powys (PAS NMGW-475C27) (Images: (a) ©Carmarthenshire Museum, (b–f) © The Portable Antiquities Scheme).

133–34, 136, 178; figs. 56 and 60). Taken together, it is possible that socketed hammers were deliberately excluded from hoards and were, instead, buried in or close to places where bronze metalworking occurred.

Although socketed hammers may help to identify sites where metalwork was being produced, extremely few finds of this period have been discovered from settlements and none from funerary contexts. Again, all seven of the finds from a settlement context come from the site at Llanmaes, including five objects that were discovered by the metal-detectorists who initially discovered the site. The five metal-detector finds from Llanmaes – two faceted socketed axe fragments, a complete South Wales Type ribbed socketed axe, and two wagon/harness fittings – were the first to be discovered from the site and may relate to a contemporary settlement (Gwilt, pers. comm.). Alternatively, these finds may have been curated and buried at a later date, perhaps within the Earliest to Early Iron Age midden deposit that was deposited over the underlying Late Bronze Age to Earliest Iron Age settlement (Gwilt et al. 2016, 300). The two additional finds from Llanmaes – a gold foil fragment, possibly from a 'hair-ring', and a bronze roll-headed pin – were discovered during the archaeological excavations at the site, found on a metalled surface to the immediate north-north-west of the midden excavation trench (Gwilt et al. 2016, 300–301). In Pembrokeshire, a single socketed axe fragment was discovered during the excavation of the Porth-y-Rhaw promontory fort, but from a much later Iron Age context (Crane and Murphy 2010). This socketed axe fragment is, here, recorded as a single find because it most likely represents a residual deposit that was disturbed and redeposited during later occupation of the promontory.

Distribution patterns and biases to consider

Figures 3 and 4 show the distributions of Middle and Late Bronze Age finds, excluding seven single finds whose findspots could not be narrowed down to a Community level. In general, metalwork belonging to both periods has been found across much of the study area, but several patterns are discernible at this broad level. Middle Bronze Age hoards are concentrated in the uplands (i.e. land at or above 150 m) of south-east Wales and several other areas, including the central Tywi Valley in Carmarthenshire, Swansea Bay, and the Vale of Glamorgan and Rhondda Cynon Taf. By contrast, Late Bronze Age hoards are heavily concentrated in the lowlands of south-east Wales and along several river valleys such as the Ely, Taff, Rhymney, and Usk. West Wales has relatively fewer hoards (n = 13/85), but there are localized concentrations along the southern coast of Pembrokeshire, the Tywi estuary, and the Black Mountain range – towards the boundary of the two study regions. Although distributed far more widely across the study area, nearly 82% (n = 390/478) of all single finds have been reported from south-east Wales, mostly from the lowlands and along the major river valleys. Figures 3 and 4 are also helpful for demonstrating that there were certain areas and periods where individual deposits of metalwork were being made, repeatedly, within certain locales. For example, both the central Tywi Valley in eastern Carmarthenshire and St David's Head in southern Pembrokeshire have relatively strong signatures of Middle Bronze Age metalwork, but far fewer single finds dating to the Late Bronze Age. Some areas, such as

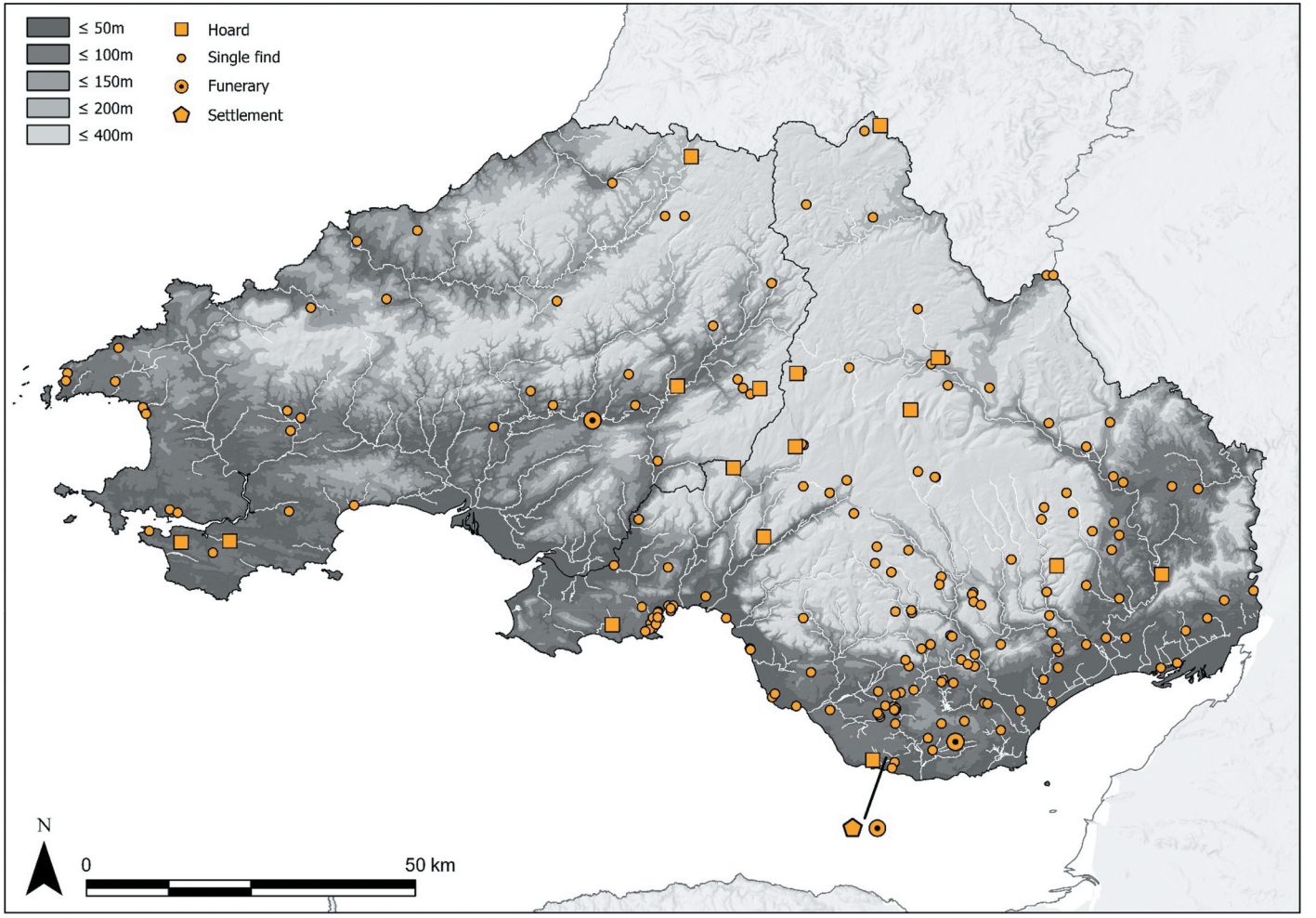

Figure 3. Distribution of Middle Bronze Age metalwork in the study area (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

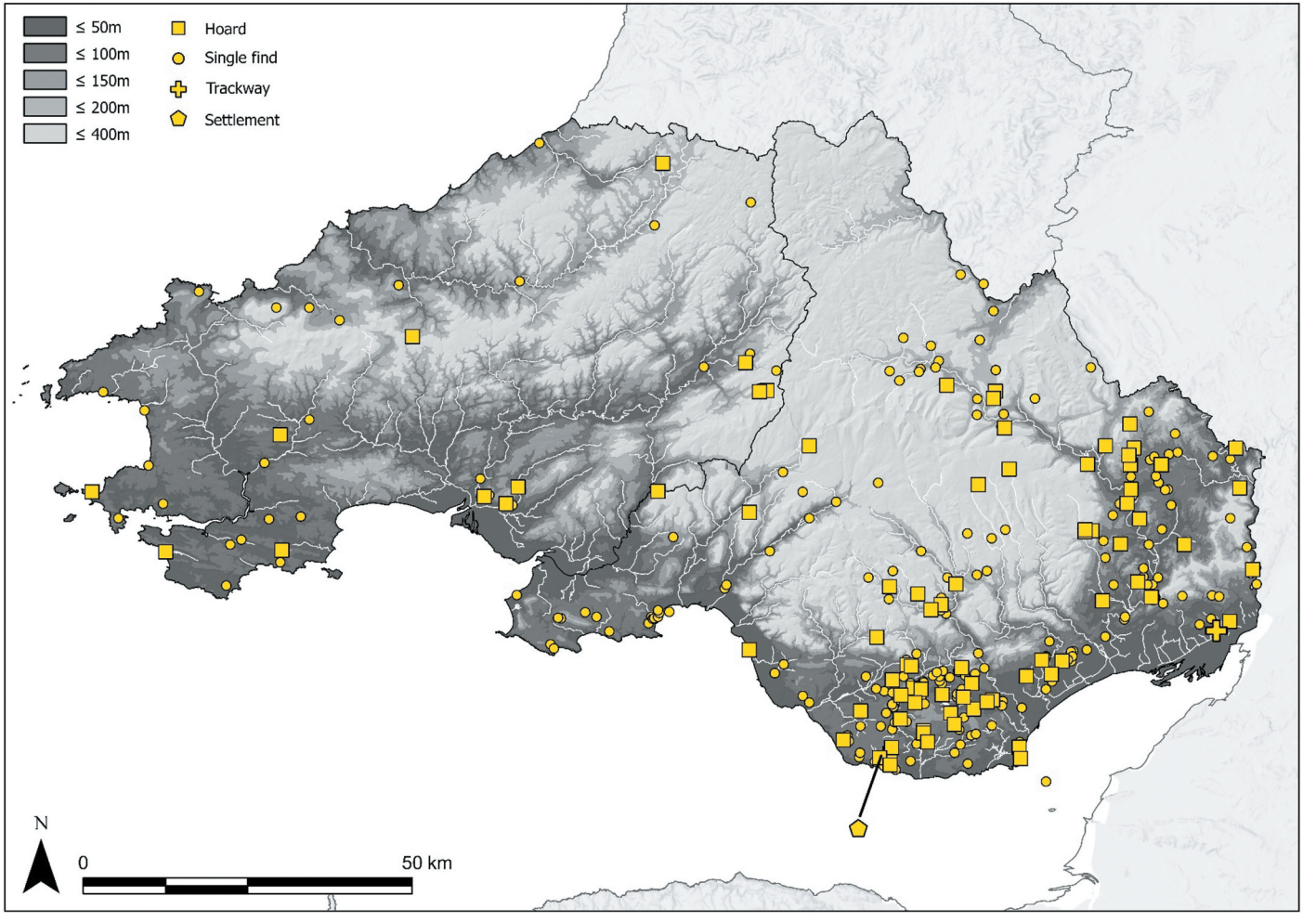

Figure 4. Distribution of Late Bronze Age metalwork in the study area (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

Swansea Bay and Penllyn, Vale of Glamorgan, were the focus for repeated depositions of single finds throughout the Middle–Late Bronze Age. In the case of the latter area, there are also numerous finds dating to the Early Bronze Age and Iron Age that indicates a remarkably long-lived sequence of deposition (Graves-Brown 1997, 11–12). The areas of Swansea Bay and Penllyn are both explored in more detail below.

Before moving on to discuss any patterns further, it is worth briefly exploring some of the biases that will have had an impact on the material record from the study area. First and foremost, it is essential to remember that the vast majority of metalwork would have continued to circulate or would have been recycled (Northover 1982; Rohl and Needham 1998). The conclusions that we draw are thus based on the surviving archaeological record, which comprises those objects that were not recycled and were, instead, selectively chosen for permanent deposition, or lost and forgotten (Fontijn 2020, 22–23; Needham 2001). Secondly, it is important to remember that there will be some recovery biases that influence some of the patterns observed throughout this paper. For example, Figures 3 and 4 are useful for demonstrating that there are certain areas where virtually no M–LBA metalwork has been found – for example, along the Llynfi Valley in south-east Wales or large parts of Pembrokeshire in west Wales. This is not the place to investigate these issues in detail, but it is important to appreciate that some areas will have strict constraints on metal-detecting, which has been the primary method of discovery for Bronze Age metalwork in England and Wales over the past few decades. Lowland areas with arable land that are close to major urban centres, such as the Vale of Glamorgan and Monmouthshire, will have seen much higher levels of metal-detecting activity and reporting of finds than the uplands or estates managed by the National Trust, Ministry of Defence, or the Forestry Commission, where metal-detecting is prohibited or strictly controlled (Griffiths 2023, 4; Robbins 2014).

As demonstrated in Table 5, it is clear that the rate of discovery for Middle and Late Bronze Age metalwork has increased significantly, per year, for both regions since 1999, when the Portable Antiquities Scheme in Wales (PAS Cymru) was introduced. More recent discoveries account for 60% of all finds of metalwork from south-east Wales (n = 234/390) and 50% for west Wales (n = 44/88), which might be taken as evidence for similar levels of metal-detecting and reporting of finds in both regions. For the Middle Bronze Age, the relative increases of single finds are similar across the study area, with increases of 92% for south-east Wales and 86% for west Wales. However, a marked contrast is seen for the Late Bronze Age in south-east Wales where there has been an increase of 170% in the number of single finds reported post-1999, compared with a 90% increase in west Wales –

Table 5. Summary of the number of Middle–Late Bronze Age single finds discovered pre- and post-1999, by case study region.

	South-east Wales		West Wales	
Period	Pre-1999 (n = 156)	Post-1999 (n = 234)	Pre-1999 (n = 45)	Post-1999 (n = 44)
MBA	75	69	21	19
M–LBA	3	32	3	7
LBA	78	133	20	18

a contrast that is further emphasized when Middle–Late Bronze Age finds are added. Overall, these observations would suggest that there is a greater intensity of metal-detecting and reporting of finds in the south-east than there is in west Wales. It may be that future discoveries will fill in some under-represented areas, especially for large parts of west Wales, but, conversely, it is clear that many of the patterns reported on here, particularly for south-east Wales, are reflective of genuine later prehistoric depositional activity.

Clearly, not all of the evidence outlined in this section can be addressed, in detail, within the rest of this paper. Rather, the focus will be on developing our understanding of hoarding as a distinct sphere of practice within the study area, whilst also shedding some light on the relationship between hoards and other depositional contexts where metalwork has been found, mainly single finds. The following section is divided according to the main types of objects that were deposited during the Middle and Late Bronze Ages – specifically ornaments, weapons, axes and metalworking debris. There will inevitably be some crossover, but each section will focus on teasing out the evidence for potentially interesting interpretive themes (e.g. the manipulation and arrangement of ornaments, deliberate fragmentation, selection and association of certain styles of objects), whilst also exploring regional and chronological differences in attitudes towards the collection and deposition of metalwork.

Ornament Horizon(s): material differences and arranged deposits

During the Middle Bronze Age, a new range of copper-alloy and gold ornaments were produced and deposited in hoards across Britain, mainly between c. 1400–1150 BC (Roberts 2007; Smith 1959; Wilkin 2017). More recent studies have made a cautious distinction between earlier hoards with bronze ornaments (1400–1275 BC), which were mainly deposited in central southern England, and later hoards of gold ornaments (1300/1275–1150 BC), which were deposited more widely across Britain (O'Connor, Roberts, and Wilkin 2017; Roberts 2007; Wilkin 2017). Many of these ornaments were deposited with signs of intentional damage and/or manipulation, including the threading, looping, and nesting of bracelets, torcs, and finger-rings (Knight 2022, 66–78; Wilkin 2017, 29–34). Their manipulation and deposition may have provided a means of managing personal identities during a period when cremation was the main method of choice for burial, and metalwork was more often than not removed from the funerary sphere (Cooper et al. 2022, 216). The fragmentation and complex spatial arrangement of ornaments in Late Bronze Age hoards has also been noted in several studies (e.g. Casaly 2021; Davies 2012), but the deposition of ornaments during this period is usually discussed in the context of material-specific studies, mainly around goldwork (Eogan 1994; Northover 1995; Taylor 1980). The evidence from the study area provides an opportunity to compare the intentional manipulation, destruction and organization of ornaments within hoards during the Middle and Late Bronze Age, as well as the significance of more recent discoveries of 'hair-rings'.

Ornaments and ornament hoards

From the study area, just over half of all Middle Bronze Age hoards (n = 9/17) contain ornaments, in addition to three single finds and two grave goods. As a group, the nine ornament hoards of this period are quite diverse in terms of their contents (Table 6). Five consist of only gold ornaments, whilst the two cave hoards from Ogof-yr-Esgyrn and Priory Farm Cave each contain, respectively, one gold bead and one copper-alloy bracelet alongside other bronze artefacts. The Raglan Community hoard (MON-H20; Monmouthshire) consists of a single gold wire fragment that was probably once part of a plain gold wire torc, in addition to a small semi-worked gold fragment that cannot be identified to any known class of finished gold artefact (Gwilt and Mumford 2024). Most of the gold ornament hoards belong to the Penard Assemblage, but the Capel Isaf hoard (CRM-H1; Carmarthenshire) of four cuff-armlets and a small, twisted gold fragment, probably from the terminal of a ribbon torc, is potentially even earlier in date (Savory 1977). The low levels of copper composition amongst its five artefacts are typical of Early Bronze Age goldwork, suggesting a relatively early date of manufacture that straddles the end of the Early Bronze Age and beginning of the Middle Bronze Age (c. 1600–1400 BC) (Davis and Gwilt 2020, fig. X.3). A folded over gold strip with perforated terminals, similar to the two 'locking' strips on one of the Capel Isaf cuff-armlets, was discovered sealed beneath a metalled surface at the Llanmaes settlement site (Gwilt et al. 2016, 301–302). Surface metallurgical analysis of this strip, using a Scanning Electron Microscope (SEM), indicated that it has an approximate composition of 0.5% copper content, suggesting that it too was manufactured towards the beginning of the Middle Bronze Age (Lodwick 2010).

In the context of Britain, over two-thirds of ornament hoards of Middle Bronze Age date consist of copper-alloy objects only and only 9% contain a mix of gold and copper-alloy objects (Wilkin 2017, 18). The hoard from Llantrisant Fawr Community (MON-H14l; Monmouthshire) is the only known example from the study area where both gold and copper-alloy ornaments have been found together (Gwilt, Lodwick, and Davis 2014), suggesting that, for the most part, it was important to keep ornaments made of different materials apart from each other. Although the chisel, saw, and twisted bronze bracelet from the Priory Farm Cave hoard are of the Taunton/Cemmaes Assemblage, the palstave blade fragment that was found within this hoard is of a metal composition that is more typical of the Penard Assemblage, implying that most of the objects within this hoard were already quite old when they were buried. With this in mind, the Llantrisant Fawr Community is, so far, the only ornament hoard from the study area that can be securely dated to the Cemmaes/Taunton Assemblage; it comprises a minimum of eight objects that were discovered as 15 separate fragments, including five non-refitting fragments of bronze bar-twisted torcs, fragments of Liss and Ramsgate bracelets, a Picardy pin and a decorated gold strip (see Rowlands 1976 for the classificatory scheme used for Middle Bronze Age ornaments). Additional artefacts include a palstave and dirk with two surviving copper-alloy rivets, further contributing to the unusual overall makeup of the hoard. Whilst many of the ornaments included within the Llantrisant Fawr Community hoard would not seem out of place in a contemporary hoard from central southern and south-western England, they are particularly unusual within the context of the study area (Roberts 2007; Wilkin

Table 6. Middle Bronze Age ornament hoards from the study area. Abbreviations: CM, cut mark; Cl, coiled; E, entangled; F, fragmented; S, straightened terminal (s); T, threaded. N.B. One additional hoard was still going through the legal process for Treasure and so cannot be discussed in detail here.

Ref. No.	Hoard Name	No. of objects/ fragments	Ornaments present	Other objects present	Pre-depositional damage/ manipulation of ornaments	Key reference(s)
CRM-H1	**Capel Isaf**	5	4 × gold cuff-armlets, 1 × ribbon torc terminal fragment	–	E, F	Savory (1977); Savory (1980)
MON-H14	**Llantrisant Fawr Community**	11	1 × gold decorated strip fragment, 5 × bronze bar-twisted torc fragments, 1 × bronze Liss Type bracelet (2 × refitting fragments), 1 × bronze Ramsgate Type bracelet (2 × fragments), 1 × bronze Picardy pin	1 × palstave, 1 × dirk (with two rivets)	U, CM, F	Gwilt, Lodwick, and Davis (2014)
POW-H6	**Llanwrthwl**	4	3 × gold flange-twisted torcs, 1 × gold bar torc	–	Cl, CM, F	Savory (1958,1971,1977,1980)
CPY-H1	**Newbridge Community**	2	2 × gold penannular bracelets of twisted wire, double-backed	–	E	Gwilt et al. (forthcoming)
POW-H9	**Ogof-yr-Esgyrn**	4	1 × gold bead	1 × tanged razor, 1 × awl, 1 × rapier	–	Mason (1968); Savory (1980); McManama-Kearin (2008)
PMB-H6	**Priory Farm Cave**	4	1 × bronze bar-twisted bracelet	1 × palstave, 1 × tanged chisel, 1 × saw	T	Laws (1908); Grimes (1933); Savory (1980); Schulting (2020)
MON-H20	**Raglan Community**	2	1 × gold bar torc fragment	1 × gold semi-worked fragment	CM, F	Gwilt and Mumford (2024)
PMB-H7	**'Tier's Cross'**	3	1 × gold flange-twisted torc, 2 × gold bar torcs	–	Cl, S	Aldhouse-Green and Northover (1996b)

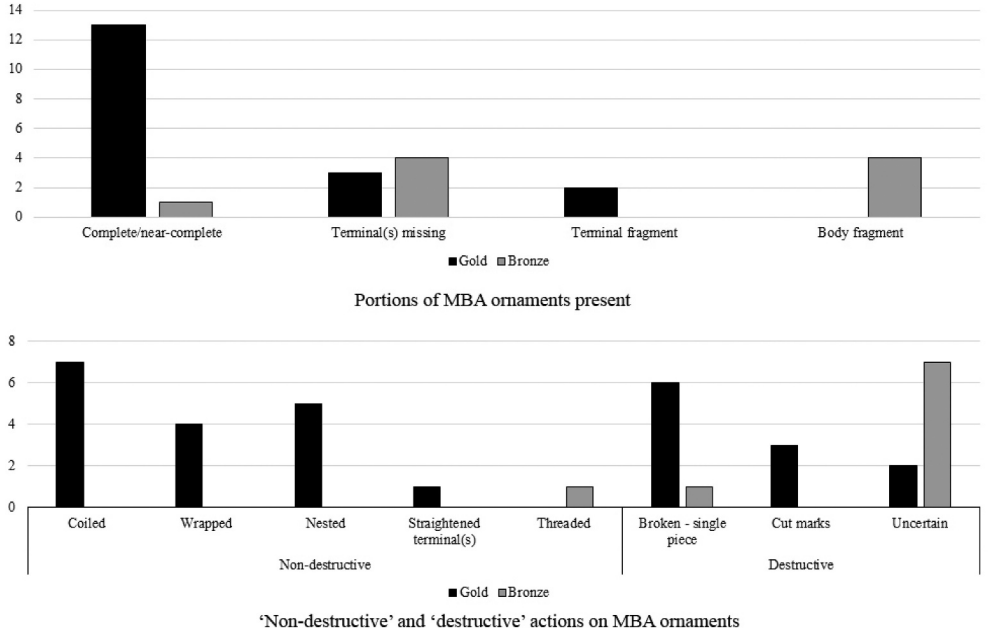

Figure 5. Surviving portions of and occurrences of 'non-destructive'/'destructive' indicators on ornaments from Middle Bronze Age hoards in the study area (n = 28).

2017). Only three other finds of bronze ornaments that are typical of the Taunton/Cemmaes Assemblage are known from the study area: a twisted bronze bracelet from the Priory Farm Cave hoard, a single Picardy pin from Mumbles, Swansea, and a possible bronze ribbon torc fragment associated with the Middle Bronze Age settlement phase at Llanmaes (Gwilt et al. 2016, 303). The dearth of bronze ornaments suggests a limited appetite amongst local communities for Continentally-inspired traditions, especially in the metalwork deposition sphere.

Of the 28 ornaments deposited within hoards of the Middle Bronze Age, many appear to have been subjected to a number of destructive and non-destructive processes prior to their burial (Figure 5). With the exception of the bronze bracelet from Priory Farm Cave, which is missing one terminal end and was found 'passing through the hole' of a saw, the post-deposition damage to the copper-alloy ornaments from the Llantrisant Fawr Community hoard mean that it is not possible to be entirely certain what condition these objects were buried in. What is, however, apparent is that gold ornaments could be deliberately manipulated in several ways prior to their deposition in the ground. All seven of the 'coiled' ornaments are torcs, which probably relates to their function and how they may have been worn on the body, whilst the flange-twisted torc from the 'Tier's Cross' hoard (PMB-H7; Pembrokeshire) is the only example of its type to have had its terminals straightened so that they are not in the typical 'hooked' form (Aldhouse-Green and Northover 1996b, 38, Figure 1). Five of the 'wrapped' and 'nested' gold ornaments come from the Capel Isaf hoard, which was originally reported to have been found buried underneath one end of a large glacial erratic slab 'in a tight mass' and 'wrapped around each other' (Savory 1977, 37). Two of the cuff-armlets from

this hoard are slightly crumpled but another two show no signs of surface damage, suggesting that they may have been bundled together loosely in a similar manner to the Woolaston hoard, Gloucestershire (Wilkin 2014). By contrast, other gold ornament hoards of the Middle Bronze Age were crushed and deposited together in a tightly entangled bundle, including the hoards from Heyhope, Powys and Priddy, Somerset, which belong to, respectively, the succeeding Taunton and Penard Assemblages (Savory 1958, 7–8, 55–56, Pl. II.C; Minnitt and Payne 2012; Knight 2022, 77).

Focusing on the Llanwrthwl hoard (POW-H6; Powys), all four of its gold torcs were coiled in a manner that suggests they were once wrapped around the arm or leg of a person(s). One large flange-twisted torc is complete, whilst the other three were deposited with one of their terminals missing or damaged. It is unclear whether the terminals of the two smaller flange-twisted torcs were deliberately or accidentally damaged in antiquity, but the plain rod torc has a pinched body across the position where its terminal has been removed, suggesting that it was deliberately cut off in antiquity. Following the removal of its terminal, the broken end of this plain torc appears to have been hooked over, essentially creating a new hooked terminal that may have extended its use-history. This particular treatment appears to have been restricted to the plain torc, but it is possible that the other torcs also had extended histories. The marking of its burial with a large slab of local stone, reportedly found resting on its edge and projecting from the surface of the field, is similar to the Capel Isaf hoard and Early Bronze Age lunulae in Ireland, where many have been found beneath boulders or recognizable parts of the landscape such as outcrops or megalithic tombs (Becker 2013, 251; Savory 1958, 52). The account of discovery for the Llanwrthwl hoard is, however, of further interest as the four torcs appear to have been buried in pairs beneath this large stone slab, separated by a smaller stone (Savory 1958, 52). Both pairs were said to have consisted of torcs of 'unequal size' which, considering the wide range of lengths and weights (44.4–214.8 g) of the four objects, means that we cannot be certain which torcs were paired together (Savory 1958). Their burial under a large stone would have served to both conceal and mark where the hoard was buried, meaning that it is possible that the two pairs were buried some time apart from each other or perhaps retrieved on multiple occasions. The physical separation of the two pairs would have been a performative act that may have helped to physically express the status of the relations between people. More importantly, this was done in a manner that was opposite to many other ornament hoards of this period, when objects were more frequently linked together rather than separated.

While ornaments were an integral part of most Middle Bronze Age hoards, they are far less frequent in Late Bronze Age hoards from the study area, appearing in only 8% (7/85) of hoard finds. Notably, 74% of all ornaments from hoards of this period (n = 14/19) come from just two finds: the Llanfrynach Community (POW-H3; Powys) and Llangeitho Community I (CDG-H1; Ceredigion) hoards (Knight et al. 2018; Gwilt, Griffiths, and Enright 2023). The vast majority of ornaments buried within hoards of this period are also made of bronze (n = 17/19), with just two examples of gold ornaments coming from the Michaelston-super-Ely (CDF-H3; Cardiff) and Llanfrynach Community (POW-H3; Powys) hoards (Aldhouse-Green and Northover 1996a; Knight et al. 2018). There is also relatively little evidence for the non-destructive manipulation of ornaments during this period (Figure 6), which is

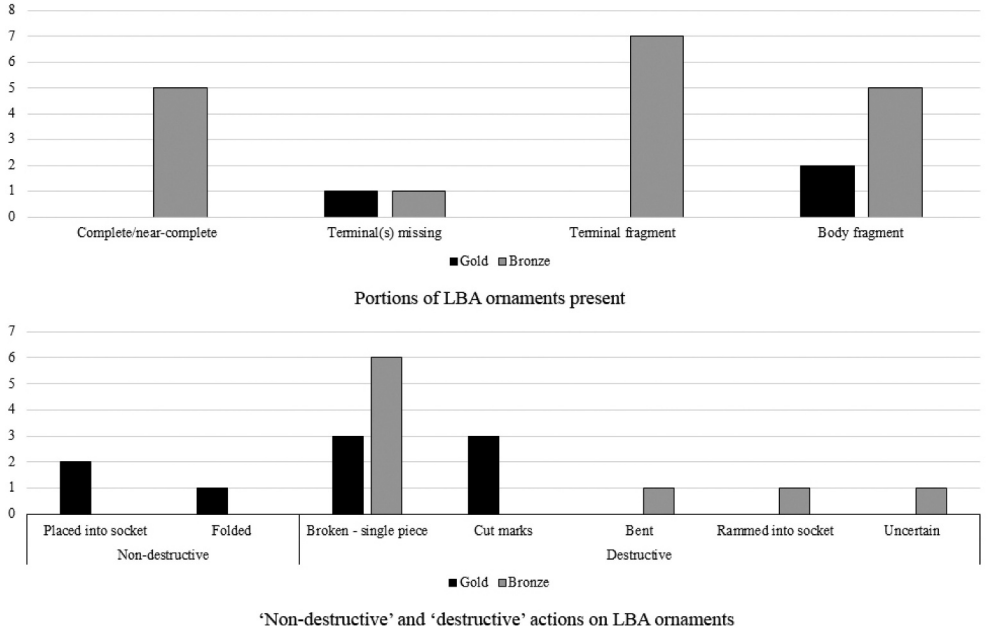

Figure 6. Surviving portions of and occurrences of 'non-destructive'/'destructive' indicators on ornaments from Late Bronze Age hoards in the study area (n = 19).

unsurprising considering that bronze is both harder and less malleable than gold. It is, however, still possible that fragments of ornaments were part of controlled and meaningful events that occurred prior to or during deposition. Although rare, there are two instances from the study area where ornaments have been found within the sockets of other objects. The first is the Michaelston-super-Ely hoard (CDF-H3; Cardiff), where fragments of a gold bracelet and gold ingot were found loosely placed within the socket of a non-local form of ribbed socketed axe (Aldhouse-Green and Northover 1996a) of Croxton/Southern English Class B3 Type (Needham 1990; Northover, n.d.). The second example is in the Llanddeusant Community I hoard (CRM-H3; Carmarthenshire), a medium-sized hoard of 20 bronze objects where a fragment of a C-sectioned bronze bracelet and two fragments of sheet metal were found securely wedged within the socket of a fragmented South Wales Type socketed axe – a form that is far more typical of the region (Figure 7; Gwilt, Griffiths, and Enright 2022). Both of these hoards are representative of practices that are seen more widely across Late Bronze Age Europe. Deposits that combine gold objects and socketed axes tend to be small in size, suggesting that they potentially represent deposits made by individuals, whilst the socketed axes tend to be deposited in a complete and usable condition (Dietrich and Mörtz 2019, 284–285; Gwilt et al. 2005, 42). By contrast, the blocking of socketed axes with bronze objects (not just ornaments) tend to form minority elements of larger deposits, perhaps representing the contributions of individuals to hoards that were gathered by communities (Dietrich 2014).

Figure 7. An incomplete socketed axe from the Llanddeusant Community I hoard, Carmarthenshire, which contains fragments of a bracelet and sheet metal enclosed within its socket (photo: author, courtesy of Carmarthenshire Museum).

Single finds of 'hair-rings' do, however, provide some indication that the deposition of precious metal ornaments continued to hold some significance during the Late Bronze Age. In total, six hair-rings of probable Late Bronze Age date are known from the study area, with five known from the lowlands of south-east Wales and one recent discovery from Llangadog Community, Carmarthenshire, located along the Tywi Valley (Figure 8; Gwilt, Griffiths, and Mumford 2023a). Traditionally dated to the Ewart Park Assemblage, some authors suspect that the origins of hair-rings can be traced back as early as the Penard Assemblage (Northover 2000, 302). A seventh example of a hair-ring was recently discovered from St Nicholas and

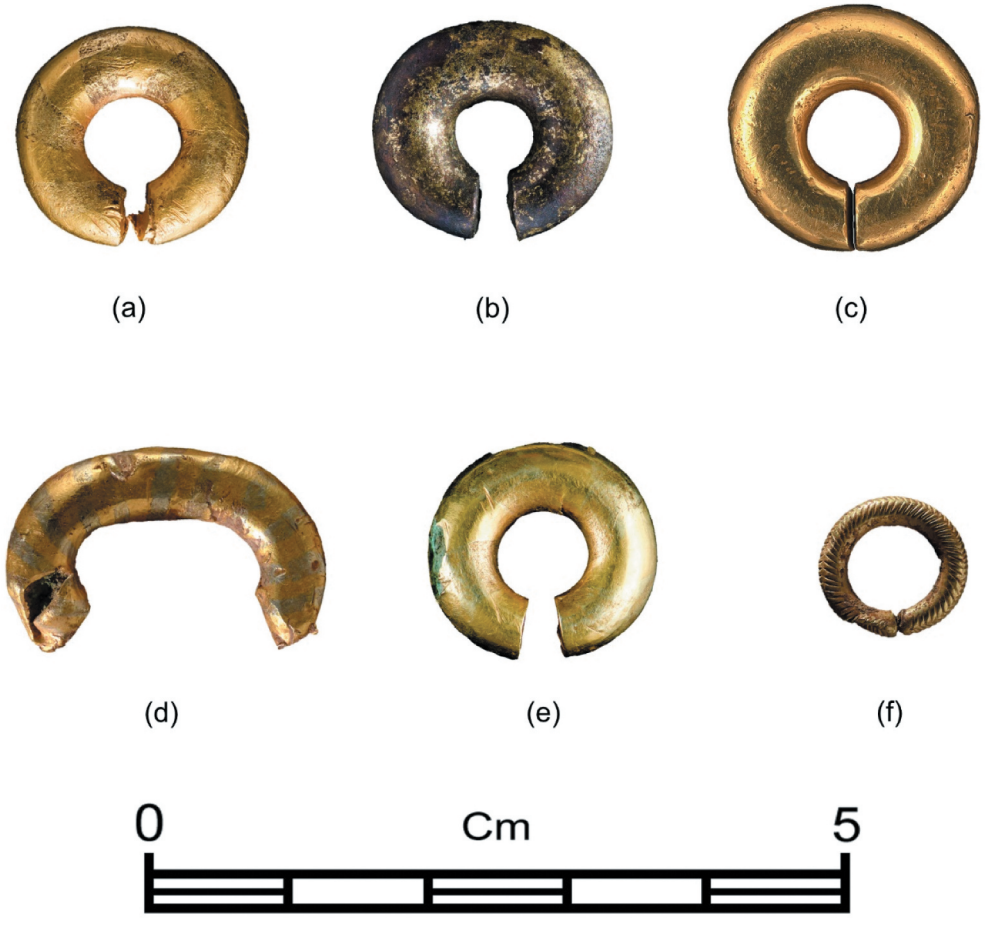

Figure 8. Hair-rings from the study area: (a) Port Eynon, Swansea; (b) Brynmill, Swansea; (c) Llangadog Community, Carmarthenshire; (d) Michaelstone-y-Fedw Community, Newport (PAS NMGW-EE007C); (e) St Donats Community, Vale of Glamorgan; (f) St Nicholas and Bonvilston Community, Vale of Glamorgan. (Images: (a, b, f) © Amgueddfa Cymru – Museum Wales, (c) © Carmarthenshire Museum and Amgueddfa Cymru – Museum Wales; (d) © Newport Museum and Art Gallery/Amgueddfa Cymru – Museum Wales). NB. There is no available photographic/illustrative record for the hair-ring from 'Carmarthenshire', whose current whereabouts are unknown.

Bonvilston Community (VOG-FC2; Vale of Glamorgan), associated with a cremation burial and the charred remains of a wooden 'toothed' artefact, probably a comb (Gwilt et al. 2023; Griffiths, Lodwick, et al. 2024, 281). A sample of cremated human bone from this burial produced a radiocarbon date of 1294–1123 cal. BC at 93.0% confidence (SUERC-102071 (GU59526)), corresponding well with the late Penard and early Wilburton Assemblages (Griffiths et al. 2024). Equally early are the dates of 1290–1040 cal. BC and 1373–1019 cal. BC obtained from contexts associated with hair-rings from Rathgall (Co. Wicklow) and Ballypriorbeg (Co. Antrim) (Eogan 1997; Raftery 2004). The distribution of these artefacts extends across much of Britain and Ireland, with the dataset from the study area appearing relatively modest in comparison with large parts of central southern and south-eastern

England. It is worth noting, however, that no hair-rings were known from the study area prior to 1999, indicating a growing body of evidence. Although Late Bronze Age hair-rings were rarely or never associated with human remains in Britain (cf. Becker et al. 2020), it is possible that they belonged to a spectrum of body-less deposits during this period.

Violence begets violence(?): depositional landscapes and patterns of damage

As was touched upon in the introduction to this paper, very few weapons were associated with human remains between 1550–800 BC. During the preceding Early Bronze Age in Britain, the dagger had been the most numerous form of weapon, with the majority buried in funerary contexts and often associated with other metal objects, including pins and other daggers (Cooper et al. 2022, 98; Needham 1988). By the Middle and Late Bronze Ages, new forms of weaponry – including dirks, rapiers, swords and spearheads – were being produced and deposited in much greater numbers, mostly in hoards or as single deposits. The relationship between these two groups of finds led Bradley (1998) to consider the possibility that some hoards and watery deposits may have been part of the Middle–Late Bronze Age funerary process. The prevalence of human remains, particularly unburnt skulls, and the high proportion of damaged weaponry within some British rivers, namely the River Thames, have both been used to support this hypothesis (Bradley 2017, 234; York 2002, 91). More recently, Knight has rightly stressed the complexities involved with the idea that metalwork was commonly destroyed and deposited in rivers (2022, 148). He highlighted that metalwork from some British rivers was deposited with no or very little damage (cf. Cowie and Hall 2010; Pendleton 1999, 7–1), suggesting that destruction was not essential to this practice, whilst in other regions it appears that no or very little metalwork was deposited within the rivers themselves, but instead within the surrounding landscape (Knight 2022, 148–9; Mullin 2012; Poyer 2015). The relationship between destruction and place is explored here, with a greater emphasis on single finds in the Middle Bronze Age and hoards in the Late Bronze Age.

Weapons and weapon hoards

Weapons are relatively uncommon in Middle Bronze Age hoards from the study area, with only 12 examples known from six hoards. Two of these hoards belong to the Cemmaes/Taunton Assemblage, three to the Penard Assemblage and one may belong to either of these Assemblages. These relatively modest numbers contrast strongly with the 57 single finds of Middle Bronze Age weapons that have been found across the study area, mainly in south-east Wales (Figure 9). Of particular note are the 15 single finds of Middle Bronze Age weapons that have been reported from Swansea Bay, mostly along the western shore (Table 7). With the exception of two finds, all of the discoveries from Swansea Bay were reported through PAS Cymru, offering an unprecedented insight into depositional practices within this locality. The broad date range of these objects suggest that there was a long tradition of depositing weapons within this landscape, possibly with origins towards the end of the Early Bronze Age (c. 1600–1150 BC), as indicated by the presence of Group II dirks (Burgess and Gerloff 1981, 45). Most of the

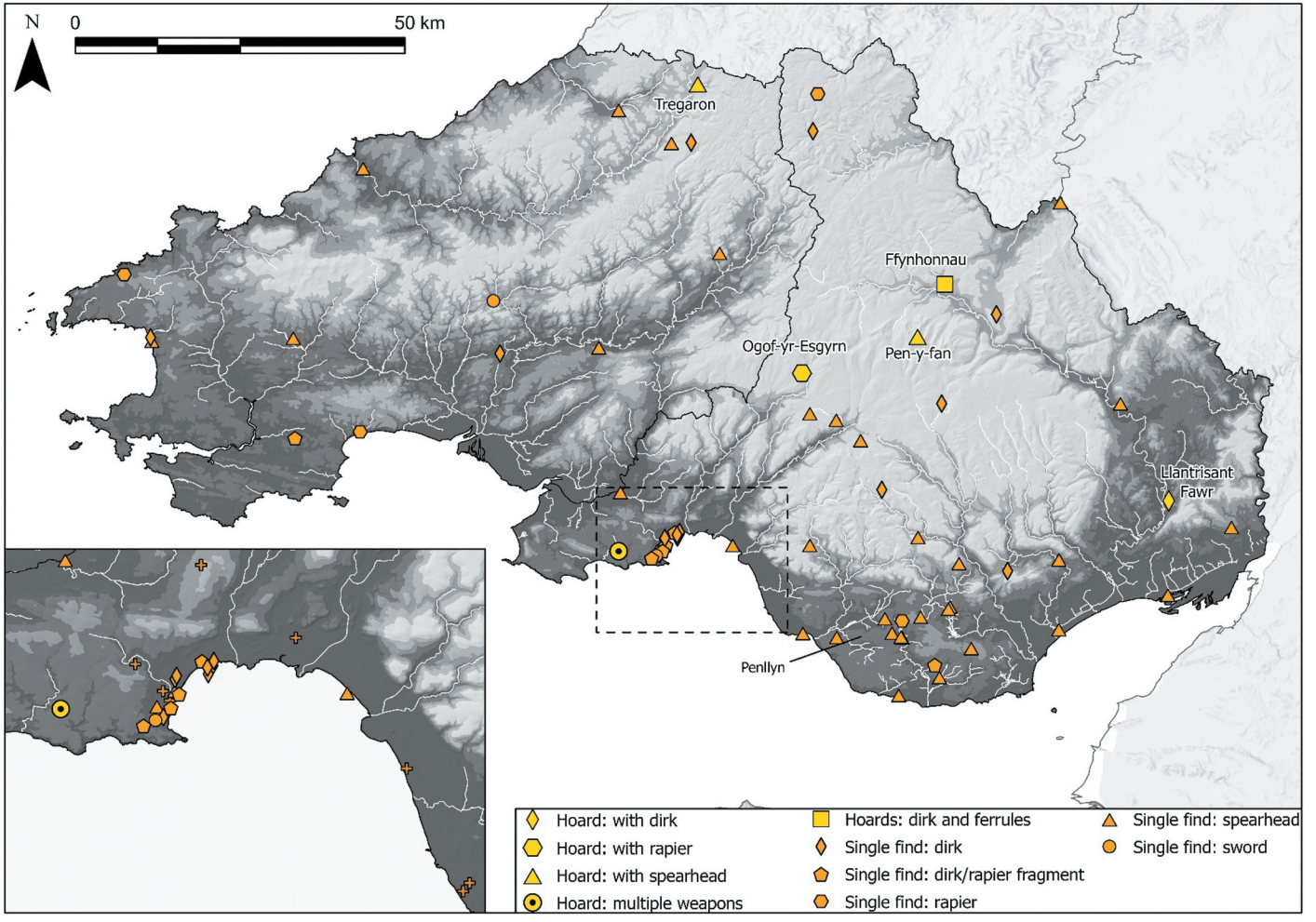

Figure 9. Findspots of Middle Bronze Age weapons from the study area (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

Table 7. Single finds of Middle Bronze Age weaponry from Swansea Bay. The classification of objects follows those presented by Burgess and Gerloff (1981), Colquhoun and Burgess (1988) and Davis (2012).

Ref. No.	Findspot	Object	Portion present	Preparation	Use-wear	Deliberate damage	Reference(s)
SWN-SF44	Black Pill	Uncertain dirk/rapier	Lower blade-tip	Reworked; uncertain	Uncertain	Uncertain; probably none	Gwilt (1997)
SWN-SF38	Castle I	Group II dirk	Butt damaged	Bevelled edges; casting material removed; sharp tip	Uncertain	None	PAS NMGW-3A90AA
SWN-SF2	Castle II	Group II dirk	Butt missing	Casting material removed; uncertain	Uncertain	Uncertain	PAS NMGW-709985
SWN-SF3	Castle III	Group II dirk	Butt damaged	Casting material removed; uncertain	Uncertain	None	PAS NMGW-1677F1
SWN-SF4	Castle IV	Group IV Type Appleby dirk	Complete	Bevelled edges; casting material removed; bevelled edges; sharp tip	Asymmetrical blade	Uncertain, probably none	PAS NMGW-4811C9
SWN-SF43	Castle V	Group IV dirk/rapier	Lower blade/tip	Uncertain	Uncertain	Uncertain, probably none	PAS NMGW319
SWN-SF16	Mumbles I	Group IV dirk/rapier	Lower blade/tip	Reworked; uncertain	Uncertain	Uncertain, probably none	PAS NMGW3182
SWN-SF17	Mumbles II	Group IV dirk with Group II affinities	Butt damaged	Bevelled edges; casting material removed; uncertain	Uncertain	None	PAS NMGW-A91D12
SWN-SF20	Mumbles V	Group 6 side-looped spearhead	Loop and socket mouth damaged	Bevelled edges; casting material removed; sharpening/polishing striations	None; uncertain	None	PAS NMGW-F14218
SWN-SF22	Oystermouth I	Uncertain dirk/rapier	Lower blade/tip	Uncertain	None; uncertain	Uncertain, probably none	Gwilt (1997)
SWN-SF21	Oystermouth II	Type Ballintober sword	Complete	Bevelled edges; casting material removed; sharp tip	Notched lower blade	None	Green (1985)
NPT-SF12	Sandfields West	Group 4 side-looped spearhead	Socket damaged	Bevelled edges; casting material removed; hafted; sharp tip	None	None	PAS NMGW-2C36F4
SWN-SF34	Sketty IV	Possible Group IV dirk	Butt damaged	Reworked; uncertain	Uncertain	None	PAS NMGW-487432
SWN-SF33	Sketty V	Group II dirk	Butt and blade damaged	Reworked (?); uncertain	Uncertain	None	PAS NMGW-F0B7C3
SWN-SF35	Swansea Bay V	Group 9 basal-looped spearhead	Complete	Bevelled edges; casting material removed	Notched blade; tip damaged (?)	None	PAS NMGW-D1D308
SWN-SF42	West Cross I	Uncertain dirk/rapier	Lower blade/tip	Reworked; uncertain	None; uncertain	Uncertain, probably none	Gwilt (1998)

objects are dirks (n = 7/16) or fragments of dirks/rapier (n = 5/16), some of which display evidence for having been reworked, in addition to spearheads (n = 3) and a sword. Ten of the weapons were deposited in a complete or near-complete state, with the latter often exhibiting damage across fragile areas that are prone to accidental damage (e.g. sockets or butt ends). Apart from the breaking of the dirk/rapier fragments, which may have been accidental or associated with their reuse, none of the weapons were obviously damaged in a deliberate fashion. Evidence of use-wear is also visible on several of the weapons including along the blade edges of the Ballintober Type sword, which was discovered sticking out of the foreshore muds in 1979 (Green 1985).

The Swansea Bay weapons were deposited across a relatively wide area of the foreshore, approximately 5 km in length, which would indicate that we are looking at a depositional landscape rather than a 'cult place' (Fontijn 2020, 135–136; Needham, Parham, and Frieman 2013, 142–150). In recent decades, areas of submerged forest and wooden trackways have also been identified across the same stretch of the foreshore. Samples of worked timber from wooden trackways have produced radiocarbon dates of, respectively, 2140–1930 cal BC (3660±BP; Beta:257022) and 1040–910 cal BC (2820 ±BP; Beta:294872), contemporary with Early and Late Bronze Age activity (Sherman 2011). Analysis of environmental evidence from peat deposits overlying the Oystermouth trackway suggests that the local environment was dominated by areas of shallow freshwater, possibly interspersed with areas of slightly higher dry ground (Sherman 2011, 16). A more expansive investigation of this environment would be needed in the future, but the evidence thus far suggests that the foreshore was once a dynamic 'waterscape' (Yates and Bradley 2010). The broad date range of the material deposited along the shoreline suggests that a single shipwreck is not to blame for much of the material being deposited here. The deposition of complete or fragmentary, reworked weapons suggests that this landscape had martial connotations, perhaps realized by the histories of the site. The occurrence of other unusual finds of Middle-Late Bronze Age metalwork help to further define this landscape from other parts of the study area, including a Picardy pin of the Taunton Assemblage, which, at 270 mm in length, is exceptionally long for its type (SWN-SF15; Johnson 2011). Other metalwork from the Late Bronze Age is also known from this area, including six tools, a socketed spearhead with incised decoration around its socket end, and an end-winged axehead of the Carp's Tongue/Boughton-Malherbe complex, one of only three certain examples from the study area (Gwilt, Lodwick, and Worrell 2013). Many of these objects are rare across the rest of the study area, whilst the dearth of weapons deposited in this area during the Late Bronze Age indicates that the criteria for selecting and burying metalwork here changed through time.

The deposition of complete/near-complete weapons is also parallelled within most Middle Bronze Age hoards from the study area. Of the six hoard finds that include weapons, two are known to include fragmentary examples. The first of these, the Pen-y-fan hoard, has already been noted above, whilst the second is the Penard hoard (SWN-H2; Swansea), which was discovered approximately 6 km to the west of the Middle–Late Bronze Age assemblage from Swansea Bay. Reported to have been discovered 'at the bottom of a chasm in the rock, about three feet below the surface' (Dillwyn 1840, 53), the Penard hoard, after which the Penard Assemblage is named in Britain, is a

weapon-dominant association of five sword fragments (belonging to three separate objects), one pegged spearhead, a bronze barbed-and-tanged arrowhead, and a socketed axe (Figure 10). With the exception of the socketed axe, none of the objects are complete, but it is possible that the spearhead was originally buried in a complete/near-complete state before being damaged post-deposition. The barbed-and-tanged arrowhead, a probable Continental import (Northover n.d. 196), is missing one barb and has a slightly flattened tip, possibly as a result of use and suggesting that it had been fired and recovered prior to its deposition. In addition to the arrowhead, the three swords were also likely to have travelled long distances before they were deposited. The two hilt and upper blade fragments are of the Ballintober Type, which has a distribution that is concentrated in the north of Ireland and the Thames Valley (Colquhoun 2015; Colquhoun and Burgess 1988), whilst the long and slender blade piece is of the Type Rosnöen, a form of sword that occurs in north-western France in considerable numbers, but is rare elsewhere (Briard 1965, Fig. 56; Colquhoun and Burgess 1988, 15, Pl. 115). The presence of rivets within the two Ballintober hilt fragments suggests that they may have been attached to handles when deposited, while some of the blade edges possess U-shaped notches that are relatively shallow and were probably caused during use in antiquity. Many of the break-edges across the sword fragments are straight with no associated marks, patterns of breakage, which suggest that the swords had been heated to a sufficient temperature before being struck and fragmented (Knight 2018, 150; 2022, 23–25). This high degree of fragmentation is unusual not only within the context of the study area (despite the small sample size), where the contents of most Middle Bronze Age hoards are typically represented by complete or near-complete objects, but also when compared with other contemporary hoards from Britain. Out of the 87 associations that were recently recorded by Needham in his analysis of the Penard Assemblage, only 13% (n = 11/87) contained equal or greater quantities of fragments than complete/near-complete objects from the whole of Britain (2017, Table 3, Appendix 1). Interestingly, contemporary hoards from northern France have been reported to contain a greater quantity of fragmented material (Nallier and Le Goffic 2008, 155, Table 1), suggesting that the hoard represents an import of not only material but also elements of hoarding practice.

By the Late Bronze Age, the deposition of weaponry within hoards is more common. A total of 158 weapons and weapon fittings were deposited within 42 hoards of this period, including 48% of hoards from south-east (n = 35/73) and 62% of hoards from west Wales (n = 8/13). The almost-equal numbers of swords and spearheads in Penard-Ewart Park hoards from the study area provides a useful lens through which we can compare how the two artefact groups were treated and deposited (Figure 11). Swords are most commonly represented as blade fragments within hoards, which is perhaps unsurprising considering that multiple blade fragments may be obtained from a single sword. It is important, however, to note that it is relatively rare to find multiple fragments from the same sword buried within one hoard; in fact, refitting fragments of individual swords were only encountered in 10 instances, from seven hoards (Figure 11, bottom-left). The only complete sword to be deposited within a hoard comes from the Mynydd March Hywel hoard (NPT-H4; Swansea), which sadly lacks any detailed record of the circumstances of its discovery. The two swords that were near-complete when they were deposited, within the Pant-y-Maen and Tal-y-Garn II (VOG-H20; Vale

Figure 10. The Penard hoard, Swansea (photo: author, ©Amgueddfa Cymru – Museum Wales).

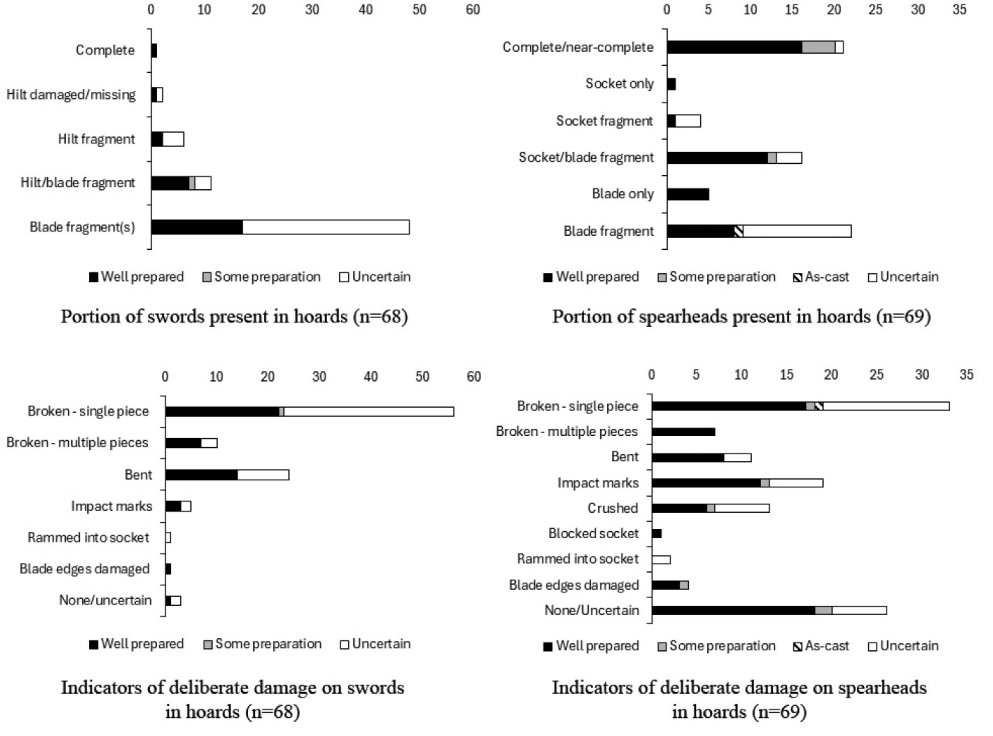

Figure 11. Frequency of portions and deliberate destructive indicators on swords (n = 68) and spearheads (n = 69) from Penard-Ewart Park hoards, sub-divided by level of preparation in antiquity.

of Glamorgan) hoards, were also deposited as multiple refitting fragments. By contrast, spearheads were more frequently deposited whole (n = 21), although blade fragments are marginally more common (n = 22). In terms of damage, almost two-thirds of spearheads (n = 43/69) and nearly all swords (n = 64/67) show signs of having been deliberately damaged prior to deposition (Figure 8, bottom-left and right). Excluding the Mynydd March Hywel hoard, it seems that fragmentation was essential to the process of collecting and burying swords within the study area.

The data presented in Figure 11 also highlight that, like ornaments, swords and spearheads were often deposited in a 'well prepared' condition, with prepared blades and no or very little trace of manufacture left visible. However, occasionally these weapons were deposited with only 'some preparation' – i.e. with traces of casting seams or manufacture still clearly visible. Differentiating between objects that were well prepared from those that saw only limited preparation is a subjective, but necessary, distinction that is helpful for distinguishing instances where there may have been a lack of desire to remove evidence of manufacture. Out of the six weapons deposited with 'some preparation', three were found as part of the St Nicholas hoard (VOG-H17; Vale of Glamorgan), suggesting a slightly more unusual selection process (Gwilt 2003). This is a relatively large hoard from the study area that contains 38 objects (represented by 42 fragments) including socketed axes, other sword fragments, casting jets, ingot fragments, specialized tools and a fragment of a decorated plaque.

The blades of the two spearheads from the hoard were well-prepared and one shows signs of definite use-wear, but the prominence of the casting seams down both sides of the sockets are uncharacteristic of the wider evidence from the study area. In comparison, one of the swords included within the hoard – a hilt/upper blade fragment from an Ewart Park-type sword – appears to have been subjected to very little preparation before it was broken; there is no evidence that the blade edges were worked, prominent casting flash is still visible across the terminal end, one of the central rivet holes is unfinished, and both surfaces of the hilt have a rough and unpolished surface. While the two spearheads were perfectly functional and, perhaps, made and prepared in haste, the sword was seemingly part way through being prepared for use before it was deliberately broken.

Of the 20 swords and 15 spearheads that have been found as single finds from the study area, 25% (n = 5/20) and 40% (n = 6/15) were, respectively, deposited complete/near complete with no clear evidence for deliberate damage (Figure 12). Although modest in number, blade fragments of swords and spearheads have been reported with some frequency from the lowlands of central south-east Wales (i.e. Vale of Glamorgan, Cardiff, Rhondda Cynon Taf, and Caerphilly) and the central-upper reaches of the Usk valley. In both areas, fragments and complete/near complete weapons have been found adjacent to or overlooking river tributaries, especially in Penllyn and along the River Thaw. Although the number of single finds of weapons from the study area is relatively modest, it is worth noting that just over half of all these finds (n = 18/35) have been

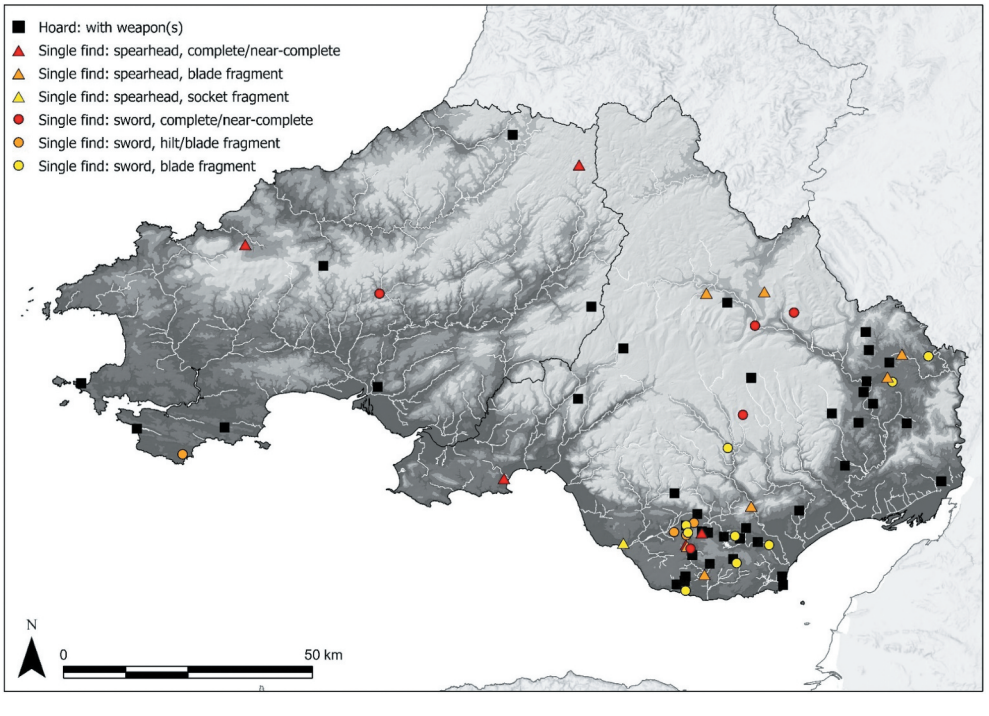

Figure 12. Findspots of Late Bronze Age weapons from the study area, with an emphasis on the completeness of single finds. One complete spearhead from 'Breconshire' is not depicted on the map (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

reported since 2004 through the PAS. With the exception of the complete, decorated pegged spearhead from Swansea Bay and a heavily corroded sword from Bedlinog, Merthyr Tydfil, that may have been deposited complete/near-complete (Lodwick 2021), all of these recent finds are of fragments and 63% of them were probably/definitely deliberately broken (n = 10/16). At a broad level, these observations suggest that the rationales that governed the deposition of swords and spearheads in hoards were also broadly true for Late Bronze Age single finds of weapons, suggesting that they both represent part of a relational whole (Fontijn 2020).

Of the 42 Late Bronze Age hoards that contain weapons and weapon fittings, only seven contain more than five weapons and only two contain more than 20 – one of which is the Pant-y-Maen hoard (PMB-H5; Pembrokeshire), referenced at the beginning of this paper. Discovered around 1859 within a boggy hollow along the western bank of the Afon Pedran, the hoard contains approximately 30 objects, mostly spearheads, followed by ferrules, swords, annular rings (now lost), and a chape (Figure 13; Barnwell 1864; Griffiths 1957). With the exception of one small spearhead with a slight damaged socket end and rough blade edges (which may have damaged by post-depositional processes), all of the weapons are heavily damaged. Many of the weapons appear to have been broken after they had been heated to a sufficient temperature, resulting in relatively clean breaks with minimal bending. Such activities may have been carried out by metalworkers, perhaps as part of the scrapping process, but this does not explain why some of the weapons appear to have been damaged whilst they were cold or beyond what would have been functionally appropriate. The near-complete sword, which is missing the uppermost section of its hilt, had its blade bent into a U-shape before it was broken into three large fragments (Knight 2022, 24). Sections of the lower blade edges (towards the tip of the sword) are also folded to around 90 degrees from the straight, suggesting that the edges were battered with a blunt ended tool. The two large spearheads (Figure 13, top-right) also have battered blade edges, whilst the smaller of the pair was stabbed with a narrow, pointed object and has two deep impact marks along the midrib that may have been caused by an axehead. It is unclear why certain weapons were subjected to certain processes of destruction and others were not, but their different histories of use and meaning may have played some part in their selection for destruction and burial. Several of the more complete specimens display evidence for having been used in interpersonal combat, including asymmetrical blades, slightly notched blade edges and missing or blunted blade tips. These were well-used weapons that were probably damaged during the course of interpersonal violence.

The Pant-y-Maen hoard represents the westernmost example of a broader practice of destroying and burying large hoards of weapons in wetland environments during the Late Bronze Age (Burgess, Coombs, and Davies 1972; Mörtz 2018). Although this was a widespread ideology that was practiced by communities in most parts of Britain, with a relatively dense concentration in the central Welsh Marches, decisions around what objects to include and how to destroy them varied. For example, several of the weapons within the Peelhill (Lanarkshire) and Bradley Fen (Cambridgeshire) hoards show evidence of exposure to high temperatures, resulting in distortion or partial melting, as well as deep notching along the edges

Figure 13. The Pant-y-Maen hoard, Pembrokeshire (photo: author, courtesy of Carmarthenshire Museum).

of blades that are consistent with heavy blows from a bladed object, perhaps an axe (Knight et al. 2018, table 4.21; Mörtz et al. 2021, 358). The deep notching of spearheads and swords is seen in many other weapon hoards from Britain, including those from Blackmoor (Hampshire), Bradley Fen (Cambridgeshire) and Broadness (Kent) (Colquhoun and Burgess 1988, Pl. 158–9), but the burial of partly melted weapons appears to have been limited to larger assemblages like Duddingston Loch (Edinburgh) and Peelshill (Mörtz et al. 2021, 371). Most of the notching on the Pant-y-Maen weapons appears to relate to use-wear, and none of the objects display any evidence of having been subjected to extensive treatment with fire. Furthermore, although blue-green patina and corrosion products linked with burning have been observed on bronze objects from Middle–Late Bronze Age hoards (Gwilt 2004, 121), no objects from the study area showed signs of having been exposed to temperatures high enough to cause partial melting. It is also interesting to note the apparent lack of evidence for deep notching on any bronze objects from the Middle–Late Bronze Age, with the possible exception of the mid-lower blade fragment of an Ewart Park sword that was discovered next to the River Ely (CDF-SF18; Cardiff) (Colquhoun and Burgess 1988, 86, No. 442, Pl. 65). Although Late Bronze Age people in west Wales were aware of the broader practice of destroying groups of weapons and depositing them in wetland contexts, perhaps following a violent conflict between groups of people, it seems that destruction may have been carried out in ways that were locally acceptable.

Tools of the trade: the efficacy of axes

It has long been recognized that axes represent one of, if not the most, important forms of metal object to be deposited in the Bronze Age (Evans 1881, 27; Bradley 1998, xvi–xviii, 118–119; Fontijn 2002, 247–258; Griffiths 2023, 14–15, Figures 9–11). They were deposited in great numbers all across north-western Europe and occur in the largest variety of contexts, with the exception of burials (Becker 2013, 244; Fontijn 2020, 37–8). As was seen in Tables 2 and 3, they also occur in far greater numbers than any other tool (e.g. knives, chisels and gouges), warranting their treatment as a separate category. Regionally distinctive forms of palstaves and socketed axes were also produced during the Middle–Late Bronze Age, suggesting that they may have also captured and promoted aspects of regionality during this period. South-east Wales has, in particular, long been recognized as the focus for the use and deposition of a particular style of socketed axe in the Late Bronze Age – the south Wales or Stogursey Type (e.g. Fox and Hyde 1939; Burgess 1968; Needham 1981; Northover, n.d.; Gwilt 2004). South Wales Type axes form a core component of the Llantwit-Stogursey tradition, a term used to emphasize the similarities between the contents of Ewart Park hoards from south-east Wales and south-western England. In defining this tradition, Burgess emphasized the 'domestic' character of hoards from both regions, with faceted axes and Late Palstaves also highlighted as occurring frequently, alongside rarer instances of tools such as socketed gouges and tanged chisels (1968, 21). While the focus of this section is on the interrogation of what Fontijn has termed the 'right appearance' for objects that were selectively chosen for burial, it will also use this opportunity to take a fresh look at the Llantwit-Stogursey tradition and to assess its validity in the light of recent discoveries.

Axes and axe-hoards

Although the study area contains no palstave hoards that can be assigned to the Acton Park Assemblage, Figure 14 provides a useful demonstration of the ebbs and flows in palstave deposition during the Middle Bronze Age of the study area. It is immediately apparent that Acton Park palstaves (i.e. Groups I and II) dominate the picture, with 55 single finds reported to date from across the study area, contrasting strongly with the 28 single finds of Cemmaes/Taunton palstaves (i.e. Groups III and IV). Based on data published by Knight (2021b), the relative proportions of Acton Park and Cemmaes/Taunton palstaves that have been reported from south-western England appears to be the reverse of the study area, with 23 single finds of Acton Park palstaves (i.e. Groups I and II) and approximately 57 single finds of Taunton palstaves (i.e. Groups III and IV, plus south-western Type). Interestingly, the differences between the deposition of Cemmaes/Taunton palstaves in the study area and south-western England become even more pronounced if we incorporate hoard finds into this equation. In the study area, a total of 40 palstaves were deposited between c. 1400–1275 BC, which pales in comparison to the 125 palstaves that are known from south-western England. The situation is, again, reversed during the period c. 1275–1150 BC, with only eight Transitional palstaves recovered from south-western England, in contrast to the 29 (seven from four hoards, plus 22 single finds) from the study area. These fluctuating patterns might be indicative of changes to the supply of metalwork in both regions, with

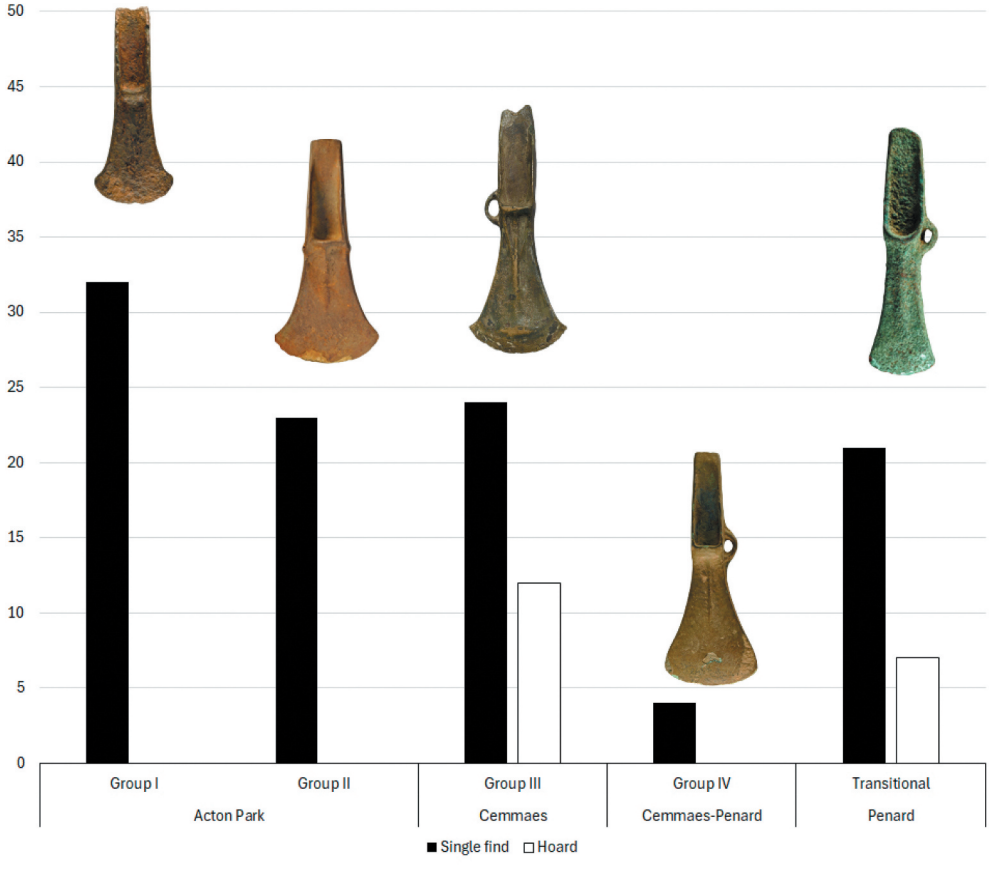

Figure 14. Frequency of Middle Bronze Age palstaves discovered within hoards and as single finds from the study area. The typologies used here follow those of Schmidt and Burgess (1981) and Knight (2018, vol. 3, 202–3). The type-objects are as follows: Group I (PAS NMGW-C40459; © The Portable Antiquities Scheme), Group II (PAS NMGW-5CA325; © The Portable Antiquities Scheme), Group III (Castell Madoc; photo: author, © Y Gaer), Group IV (PAS NMGW-609095; ©The Portable Antiquities Scheme), Transitional (PAS NMGW-0BA169; © The Portable Antiquities Scheme).

periods of low-scale deposition possibly reflecting times when there was poor access to replacement metal, but this does not fully explain all of the patterns observed in this section. Considering that the evidence for the deposition of single finds of palstaves is strongest during the Acton Park Assemblage, it might not be coincidental that there are no bronze hoards from the study area that date to this period, a point that will be returned to below.

In addition to ornaments and weapons of this period, palstaves of the Middle Bronze Age were also often deposited in a complete/near-complete condition. Of the 104 single finds of palstaves from the study area that date to this period, 50% (n = 52/104) were complete and 47% (n = 49/104) exhibited only slight damage to the cutting edge, flanges or butt end; the remaining 3% (n = 3/104) were discovered with either their butt ends or blades missing. Of course, it is possible that the underrepresentation of fragments

within this dataset is exaggerated by our inability to recognize whether smaller, undiagnostic fragments (such as cutting edge or butt fragments) may have once belonged to palstaves of the Acton Park Assemblage or any other Assemblage for that matter. To date, only 10 of these small palstave fragments have been reported from

Figure 15. Late Bronze Age socketed axes and palstaves from the study area. **Ribbed**: (a) South Wales Type, (b) Croxton type/Southern English ribbed B3, (c) St Arvans Type; **Faceted**: (d) Class D/ Type Meldreth, Variant Aylsham, (e) Type Gillespie; **Plain**: (f) Type Portree, (g) Class A/South-eastern type, (h) **Late Palstave**. (images: (a–c, g–h) © Amgueddfa Cymru – Museum Wales; (d) © Carmarthenshire Museum, (e, f) © MonLife Heritage (Abergavenny Museum)).

across the study area, eight of these in recent decades through PAS Cymru. Although modest, these figures suggest that there was significant under-reporting of palstave fragments prior to the introduction of the Portable Antiquities Scheme.

Towards the centre of the study area and straddling the two regions of south-east and west Wales are two palstave-only hoards: the Crynant Community (NPT-H1) and Cwmllynfell hoards (NPT-H2) (Northover, n.d.; Sell 1984; H72; Gwilt and Griffiths 2024). The findspots of both hoards are near stream tributaries for major rivers, suggesting that their deposition may have been linked with the routes along which people and things travelled. The three palstaves from the Crynant Community hoard are heavily corroded, but visual comparison confirms that they share the same typological traits, proportions, and dimensions, suggesting that they were made from the same mould (Gwilt and Griffiths 2024). In comparison, three of the five Group III palstaves from the Cwmllynfell hoard were certainly made from the same mould or pattern, whilst a fourth example is very similar in form and was deposited in (or close to) an as-cast condition, with its casting flash untrimmed. The fifth palstave was broken across its upper blade, perhaps deliberately so, and it too appears to have a very similar appearance to the other palstaves. In his analysis of the Cwmllynfell hoard, Northover also observed that all five of the palstaves were made of a very similar metal composition, with tin contents in the 11–14% range, occasional traces of antimony, and substantial iron impurities (n.d. 180). Taken together, it would seem that this particular hoard was intimately linked with the actions of one metalworker or workshop.

As we saw in Tables 3 and 4, the dominance of axes within the Late Bronze Age depositional record is clear. Late Palstaves are present in relatively small numbers, but socketed axes account for the greatest proportion of objects that have been discovered in hoards and as single finds. Basic distinctions have been made between the bulk of the socketed axes that have been found in the study area – separated into those with 'ribbed' decoration and those that have 'faceted' or 'plain' bodies (Figure 16). The use of the term 'plain' is somewhat misleading, particularly as many of these socketed axes often have one or multiple bulbous ridges around the mouth (more commonly referred to as 'mouldings'), along with a singular example of a socketed axe with wing-decoration from the St Fagans II (CDF-H7; Cardiff) hoard. However, what unites the axes within this 'plain' group are the absence of vertical ribs along their outer faces – a form of cast decoration that is visible on many socketed axes found in parts of Britain during this period (Lawson 2018; Needham 1990; Schmidt and Burgess 1981). Of the 344 ribbed socketed axes in hoards and 86 examples found singly, 241 and 63, respectively, may be confidently identified as belonging to a particular style of axe, widely known as the south Wales or Stogursey Type (Burgess 1968, 21; 2012; Needham 1981; 1990, 38–41; Northover n.d., 259–60). A variant of the South Wales Type, named here for the first time as the St Arvans Type, forms the second largest group of ribbed socketed axes from the study area (27 from hoards and four single finds). St Arvans Type axes often occur as minority elements within hoards in the study area, with the exception of the eponymous hoard from Monmouthshire (MON-H5), where they outnumber all other styles of socketed axe (Savory 1980, 121, No. 280). Unlike South Wales Type axes, which were always cast using four-runner technology, St Arvans Type axes were cast with a different form of mould assembly that is more akin to those of other forms of

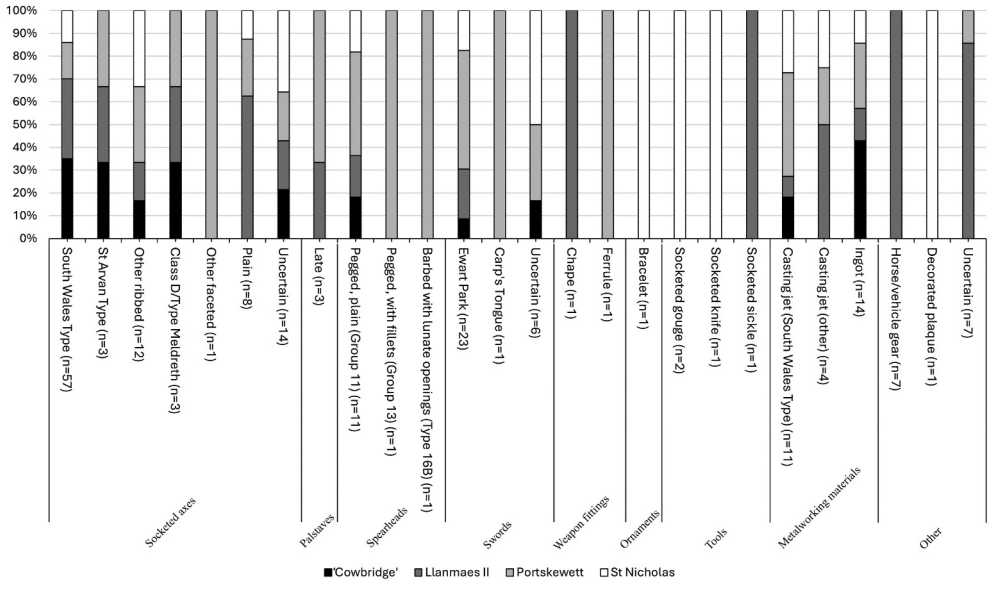

Figure 16. Proportion of object types present within the 'Cowbridge' (n = 40), Llanmaes community II (n = 60), Portskewett community (n = 57), and St Nicholas (n = 38) hoards.

socketed axe during this period (cf. Needham 1990, 22–36, Figures 2–6) and, as other authors have noted previously (Gwilt and Macdonald n.d.; Northover n.d., 265–6), they also tend to have slightly deeper collars and the loop never springs from the top of the mouth. The reasons for the similarities and differences between South Wales Type and St Arvans Type axes are difficult to explain, but it is possible that a shortage of stone moulds (which, it appears, South Wales Type axes were frequently cast with) meant that St Arvan Type axes were made using different materials.

Socketed axes appear within all but five hoards of this period, with almost equal numbers of socketed axe-only (n = 28/85) and socketed axe-dominant (n = 27/85) hoards. As to be expected from Figure 3 and Figure 4, their distribution is heavily concentrated in south-east Wales, with occasional outliers in west Wales. Many of the socketed axe-only hoards are relatively small and comprise between 2–5 (n = 20/28) or 6–9 axes (n = 8/28), whilst most socketed-axe dominant hoards tend to be larger and number between 6–10 (n = 10/27), 11–20 (7/27) or 21–60 objects (n = 4/27). A recently discovered hoard of approximately 60 objects from Llanmaes Community II (VOG-H8; Vale of Glamorgan) contains the most individual socketed axes (n = 33) within one hoard. This new hoard is the largest (and probably also the heaviest) reported from the study area but has a broadly similar composition to the 'Cowbridge' (VOG-H3), St Nicholas, and Portskewett Community hoards (Griffiths, Gwilt, et al. 2024; Gwilt 2003; Lodwick and Gwilt 2002). As four of the largest hoards from south-east Wales – representing, collectively, nearly 30% of all objects from hoards of this period in the region (n = 195/670) – direct comparison of the 'Cowbridge', Llanmaes Community II, Portskewett Community, and St Nicholas hoards provides a useful lens for exploring the similarities and differences in the character of their make-up (Figure 17). What is immediately apparent is the significant diversity of types represented and not

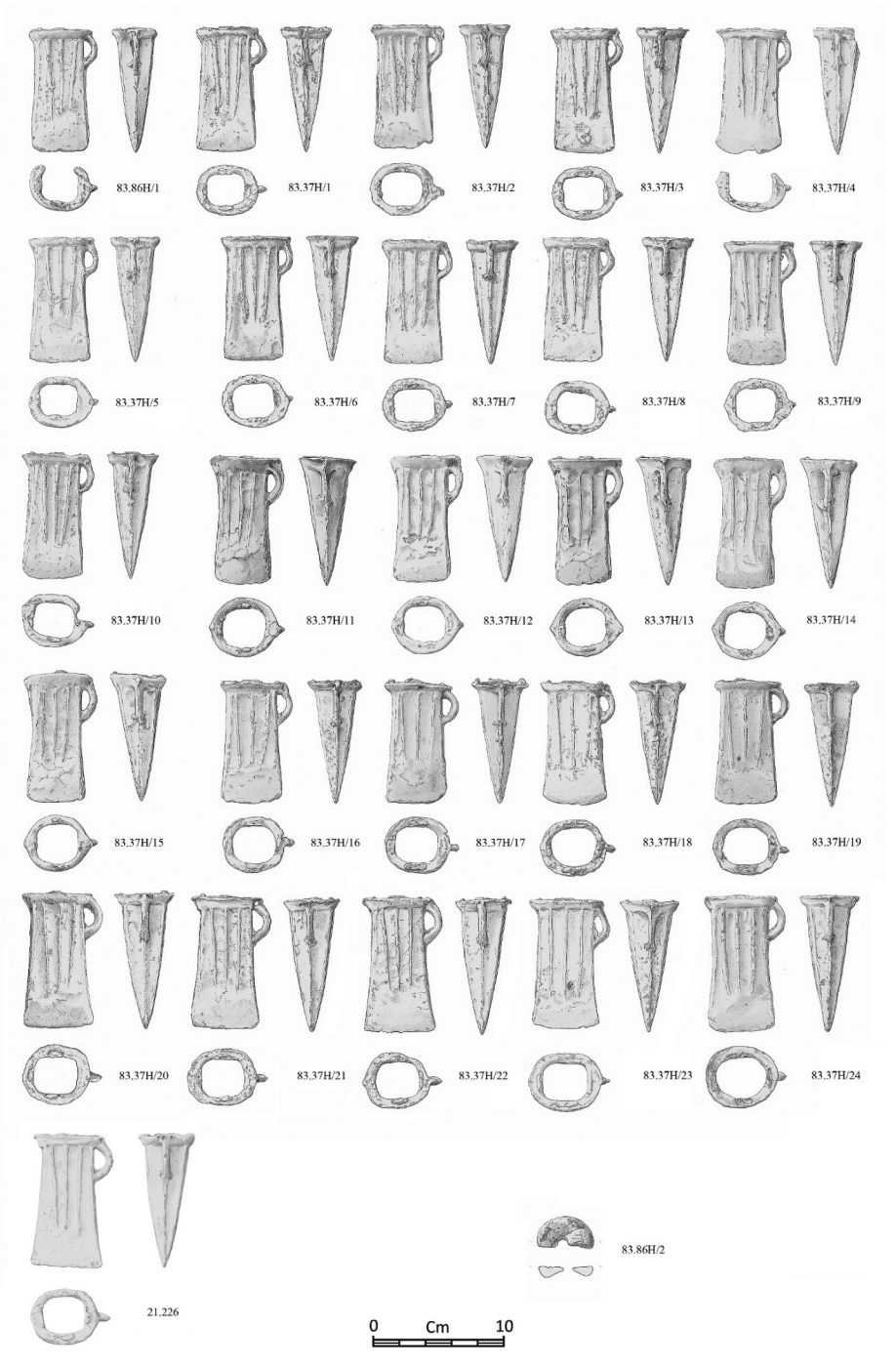

Figure 17. Illustrations of the objects within the 'St Mellons' hoard, Cardiff (CDF-H8) (illustrations by Tony Daly, ©Amgueddfa Cymru-Museum Wales).

represented within these four hoards. Out of the 26 object types represented, here, only six are present in all four hoards: South Wales Type axes, other forms of non-local ribbed socketed axes such as Llanarth (Northover, n.d., 267) and Croxton types (Figure 15g), uncertain socketed axes (which are all undiagnostic fragments), Ewart Park sword fragments, Plain Pegged spearheads of Davies' Type 11 (Davis 2015), four-runner casting jets (a by-product of the casting of South Wales Type axes) and ingots. By contrast, 12 of the 26 object types are only present in one of these four hoards, suggesting a certain degree of flexibility over what might be deposited alongside the six core components that were noted previously. Overall, these observations present a much different picture of the Llantwit-Stogursey tradition than that outlined by Burgess (1968), 21; see above), with sword fragments, spearheads and casting material featuring more prominently.

Faceted axes are found in 27% of all Late Bronze Age hoards from south-east Wales (n = 20/73) and 15% of hoards from west Wales (n = 2/13). They typically occur as single examples (n = 19/22), with instances of paired faceted axes in hoards being relatively rare (n = 3/22). By contrast, Late Palstaves almost always occur as singular examples within hoards of this period, but there are fewer recorded instances of them from south-east (n = 11/73) and west Wales (n = 1/13) when compared with faceted axes. Late Palstaves are always associated with South Wales Type axes, whereas faceted axes are *almost* always associated with South Wales Type axes from the study area, with the one exception being the Michaelstone-y-Fedw Community hoard (NEW-H1; Newport) (Gwilt and Griffiths 2021a). Interestingly, hoards that contain faceted axes *and* Late Palstaves are very rare, limited to only four associations in south-east Wales: the Portskewett Community, Pontypridd Community (RCT-H5; Rhondda Cynon Taf), Llanmaes Community II, and Sully and Lavernock Community hoards (VOG-H18; Vale of Glamorgan) (Gwilt and Griffiths 2022, Griffiths, Gwilt, et al. 2024; Gwilt et al. 2024). The scarcity of associations between faceted axes and Late Palstaves is difficult to interpret, but it is unlikely that they would have both performed the same function. The slender and hollow bodies of faceted axes makes them better suited for fine, controlled woodworking, whereas the thicker and heavier bodies of palstaves would have made them durable and, perhaps, more appropriate for heavier duty work, such as felling trees and chopping logs, as well as carpentry.[1] Both tend to be deposited in a well-prepared condition with evidence of their casting (i.e. casting seams and runner stubs/scars) thoroughly removed which, when compared with the poorly finished South Wales Type axes, suggests that they may have been imported into the study area. Slender faceted axes are not concentrated in any one region in Britain, but those from northern England and Scotland tend to have deeper trumpet mouldings or collars that are more alike those found in the study area, suggesting the existence of north–south exchange routes during this period (Needham 1990; Schmidt and Burgess 1981). It is also possible that the lack of associations between Late Palstaves and slender faceted axes carries chronological implications, but this is somewhat complicated by the observation that both types appear to have first emerged during the Wilburton Assemblage (Schmidt and Burgess 1981, 158–60, 210–11).

South Wales (or Stogursey?) type axes

In 1981, Needham suggested that South Wales Type axes should be renamed to Stogursey Type axes, in acknowledgement of their widespread distribution throughout southern England, the only region where moulds for the type are known. At the time, the Stogursey hoard from Wick Park, north Somerset, contained the largest number of axes of this type (McNeil 1973), but more recent discoveries have significantly altered this picture (Figure 17). The evidence for the production of South Wales Type axes will be discussed in the following section, but it is clear that the main distribution of this type is in south-east Wales. To date, South Wales Type axes have been reported within 78% (n = 53/68) and 54% (n = 7/13) of all hoards from, respectively, south-east and west Wales, in addition to 63 single finds found across the study area. South Wales Type axes make up a significant portion of the largest hoards from south-east Wales (Figure 16). Additionally, these axes are also a crucial part of other hoard assemblages in south-east Wales, as well as those that have been reported from eastern Carmarthenshire and south-western Herefordshire. At the time of writing, only four hoards contain more than 10 examples of South Wales Type axes: the first is the Stogursey hoard, which contains at least 13 axes; the second and third are the 'Cowbridge' and Llanmaes Community II hoards (see above), which contain, respectively, 20 and 21 examples; and finally, the St Mellons hoard (CDF-H8; Cardiff), which has 26 examples (Figure 17; Stanton 1984). The Stogursey hoard was recently reviewed by Knight (2022, 108–114), who echoed Northover's observation that the hoard is atypical in the context of south-western England, possessing certain features that are more commonly seen in hoards from south-east Wales (n.d., 261). With this in mind, it is possible that the Stogursey hoard, which is located just across the Bristol Channel, represents an intrusive act by a community from south-east Wales (Knight 2022, 111).

Figure 18 depicts the distribution of all finds of South Wales Type axes from Wales, southern England and the Midlands, including records that were published by Needham (1981), Schmidt and Burgess (1981), Pearce (1983), Knight (2022) and the PAS (using search terms such as 'South Wales', 'South Welsh', 'Stogursey' and 'three rib'). Interestingly, when compared with previously published maps depicting the distribution of these axes (cf. Needham 1981, Figure 10; Bell 2013, figure 17.5), it seems that recent discoveries have significantly increased the number of South Wales Type axes in the study area, but have done relatively little to alter their overall distribution elsewhere in southern Britain. The exceptions to this rule are south-western Herefordshire and western Cornwall. For the former area, it is possible that depositional practices were more aligned with the communities of south-east Wales, rather than those of the West Midlands. In the latter area, at least eight Cornish hoards are known to contain South Wales Type axes as minority elements, suggesting that the movement of artefacts occurred by sea, through the Bristol Channel and along the coast of the South-West Peninsula. Occasional finds of these axes in northern France indicate that these connections extended further still, with possible links between communities in south-east Wales and the near Continent (Burgess 2012, 241–9). With these observations in mind, it is worth picking-up on the debate around the naming convention for these socketed axes. As will already have been gathered, the term South Wales Type is here preferred over the Stogursey Type for two reasons. Firstly, it is abundantly clear

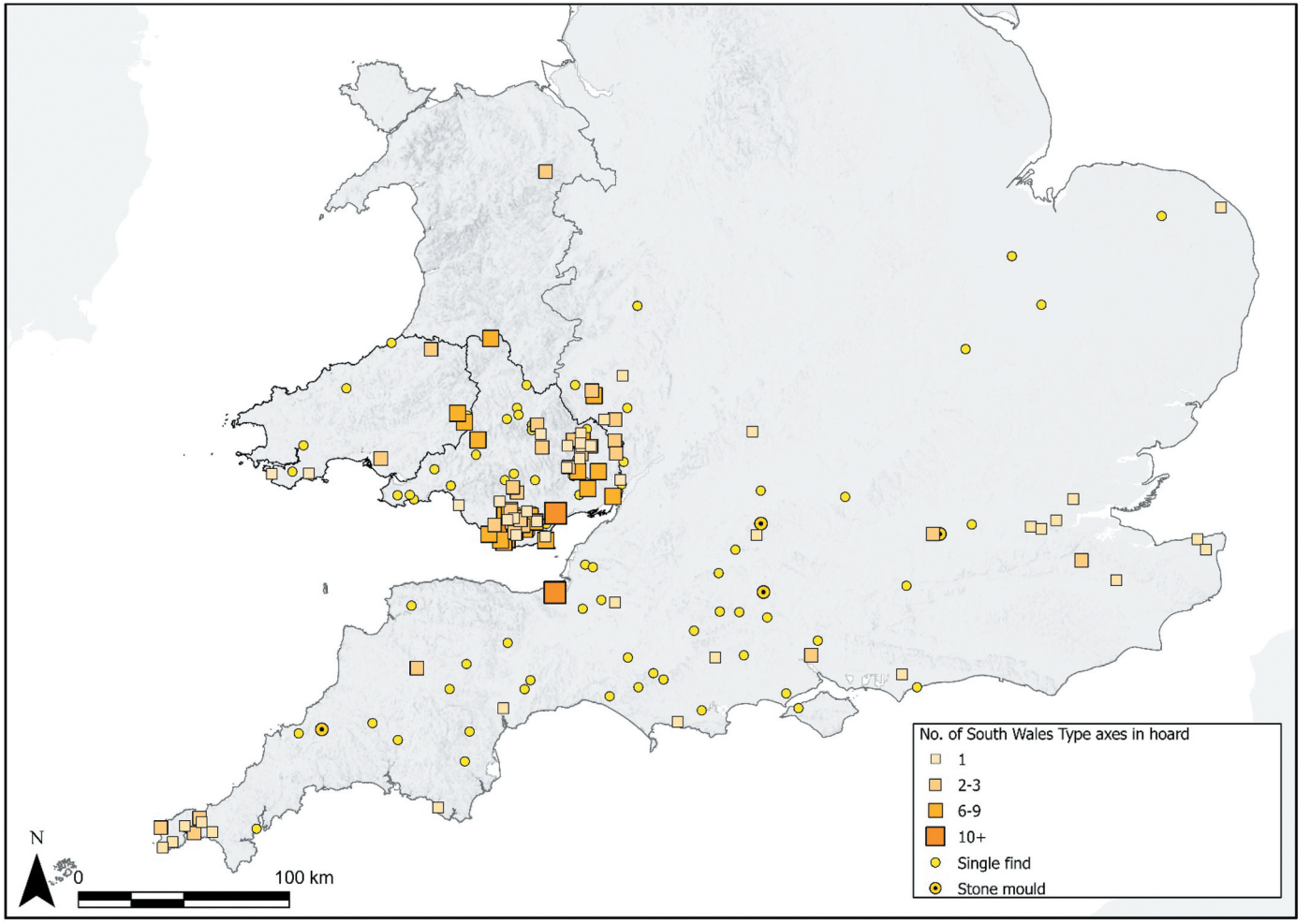

Figure 18. Distribution of all South Wales Type axes recorded from southern Britain (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

that their deposition was more pronounced in south-east Wales and eastern Carmarthenshire than anywhere else in southern Britain, an observation that has only been amplified by more recent discoveries of hoard and single finds. Secondly, the intrusiveness of Stogursey hoard in its regional context, as noted above, makes the terming of these axes as 'Stogursey Type' inappropriate. In the future, it might be appropriate to introduce a new naming convention for these axes that acknowledges their distribution across both sides of the Bristol Channel, but this should only follow a detailed analysis of all South Wales Type axes. Thirdly, although there are still no known stone moulds for the type from south-east Wales, the presence of four-runner casting jets in many hoards of this period (see below) provide some evidence to suggest that South Wales Type axes were being cast in the region. The continued absence of South Wales Type moulds in south-east Wales is unusual and, in many ways, difficult to understand, but it is essential to note that no moulds of this period – whether of clay, stone, or bronze – have ever been reported from south-east Wales, suggesting that the moulds were deliberately excluded from certain depositional events, namely hoards and single finds.

Decoration on socketed axes is often seen as an integral part of their classification into typologies (e.g. Schmidt and Burgess 1981, 183–4). With regards to the ribbed decoration on South Wales Type axes, past authors have commented on how the ribs may converge, run parallel or slightly diverge from one another, but these differences have never been investigated empirically (Needham 1990, 38; Northover, n.d., 259; Burgess 2012, 238). Decoration on socketed axes is often seen as an integral part of their classification into typologies, but the reiteration of certain decorative motifs might provide further insight into regional or sub-regional manufacturing and depositional practices. From the study area, 98% (n = 297/304) of all South Wales Type axes had three longitudinal ribs, but rare examples with two (n = 2) or four (n = 4) ribs are also known. Parallel ribs were the most common form of decoration amongst axes of this type (139 in hoards and 32 single finds), followed by converging ribs (78 in hoards and 30 single finds). Five examples were recorded from three hoards as having parallel ribs on one face and converging ribs on the other, though there is no clear evidence that any of them were cast using mismatching moulds. Seven examples which display more irregular patterns of ribbing were also noted, including five socketed axes from the St Mellons hoard that were cast from the same stone mould and have three crooked, slightly converging ribs on each face (see Figure 17, Nos. 83.37 h/11–15).

The sufficiently large numbers of South Wales Type axes with converging or parallel ribs means that distributional trends can be confidently identified (Figure 19; Table 8). That South Wales Type axes only occur as minority elements within many hoards from Pembrokeshire and Ceredigion has already been mentioned, and there is little evidence to suggest that certain styles of decoration within the type were, here, preferred over others. Towards the eastern boundary of the study area and along the Usk river valley (Monmouthshire, Torfaen and southern Powys), a much greater proportion of South Wales Type axes with parallel ribs occurs than anywhere else in the study region, both in terms of hoards and single finds. By contrast, 65% of hoards (n = 17/26) from the lowlands of central south-east Wales (Vale of Glamorgan, Cardiff, Rhondda Cynon Taf and Caerphilly) contained a mix of converging and parallel ribs with variable quantities of each, most often with parallel ribs outnumbering the latter (n = 10/17). Only in three

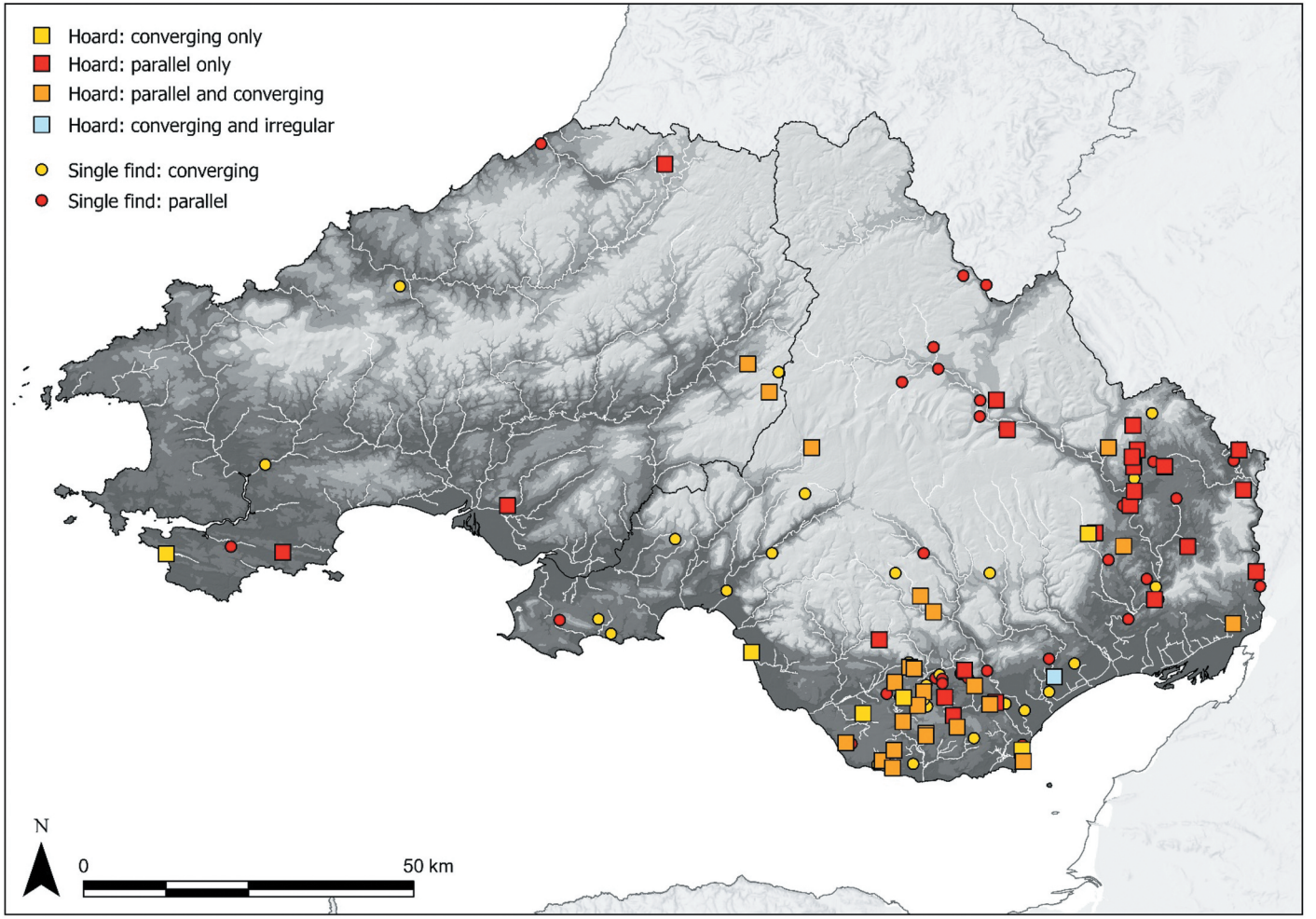

Figure 19. Distribution of types of ribbed decoration on South Wales Type axes in south-east and west Wales. Not depicted are the Beaufort and Glebe Wood hoards, whose contents are mostly lost, or the Llancarfan Community III hoards, where a fragment of a South Wales Type axe is obscured within the socket of another axe (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

Table 8. Occurrence of different styles of South Wales Type axes for hoards (H) and single finds (SF) in central south-east Wales (Vale of Glamorgan, Cardiff, southern Rhondda Cynon Taf) and along the Usk Valley (Monmouthshire, Torfaen, southern Powys).

	Central SE		Usk	
Rib style	H % (n = 134)	SF % (n = 25)	H % (n = 52)	SF % (n = 19)
Parallel	49%	44%	79%	84%
Converging	44%	56%	14%	16%
Other	7%	0%	7%	0%

hoards – the Cowbridge, St Mellons and Llancarfan Community I (VOG-H4; Vale of Glamorgan) hoards – do South Wales Type axes with converging ribs outnumber those with parallel ribs (Figure 20; Gwilt 2006; Lodwick and Gwilt 2002). These patterns are important for two reasons. First, the spatial trends in the distribution of certain styles of South Wales Type axes suggests that differences in ribbed decoration held particular meaning and that later prehistoric people engaged with these objects in subtler ways than our own. Secondly, the presence of both converging and parallel ribbed South Wales Type axes within many hoards suggests that there is not an obvious chronological dimension to their development, with, for example, one style developing at an earlier/later stage of the Ewart Park Assemblage than the other. With this in mind, it is tempting to suggest that different styles of ribbed decoration corresponded with contemporary workshops or metalworkers, perhaps representing sub-regional

Figure 20. The Llancarfan Community I hoard, Vale of Glamorgan (VOG-H4) (photo: author, ©Amgueddfa Cymru – Museum Wales).

manufacturing traditions within south-east Wales. These patterns will be discussed further below, but it is clear that communities in the Usk Valley favoured the deposition of South Wales Type axes with parallel ribs, whereas communities in central south-east Wales tended to favour a mix of parallel and converging ribs.

Is it all waste? The selective deposition of metalworking tools and debris

Metalwork has long been central to accounts of social and economic change in later prehistory, but there has been comparatively less attention paid to the physical evidence left behind from the different stages of metalworking – ingots, casting jets and moulds. Far from being randomly discarded, Webley, Adams, and Brück (2020) have highlighted that much of this material may have also been governed by selective practices. For example, stone moulds are often found at a distance from known Bronze Age settlement sites, in seemingly significant places in the landscape (Webley, Adams, and Brück 2020, 113–5). They were also often deposited incomplete within hoards, suggesting that they were buried with no intention of recovery (Webley, Adams, and Brück 2020, 115). Although moulds are conspicuously absent from the study area, the presence of casting jets and ingots – mainly within Late Bronze Age hoards – provides an opportunity to relate this evidence to some of the practices that we have explored so far in this paper and what it can tell us about metalworkers and their role in the wider selection and burial of metalwork.

Ingots, casting jets, scrap and a mould-piece

Unlike the other themes explored within this paper, no objects that can be directly associated with metalworking have been found in any Middle Bronze Age hoard, to date, from south-east or west Wales. Just outside of the study area, a single-runner casting jet was possibly associated with five Transitional palstaves from Nantmel, Powys, suggesting that casting debris could occasionally be buried within hoards of this period (Gwilt et al. 2010).[2] The copper alloy awl from Ogof-yr-Esgyrn may have been utilized for metalworking, possibly for producing decoration on sheet metal, and the tanged chisel from Priory Farm Cave may have also been used in metalworking, perhaps to cut off casting flash. Both object types are, however, likely to have served multiple functions that were not solely tied to the metalworking process, and for this reason they will not be discussed here in any further detail. The only object from this period that can be directly tied to the metallurgical process is a near complete bronze mould-piece from Penderry Community, Swansea (Lodwick 2018), used to cast palstaves of a similar form to those that were found in the Cwmllynfell hoard – located roughly 18 km away. The mould valve was reported to have been found in an area which had been subject to disturbance in the nineteenth century, whilst there is little evidence for contemporary activity within the locality. This should, perhaps, come as no surprise considering that bronze moulds are almost exclusively found in hoards or as single finds across Britain, and very rarely in watery contexts (Webley, Adams, and Brück 2020, 115).

In contrast, objects like ingots and casting jets occur much more frequently within Late Bronze Age hoards. Since 1997, casting jets and ingots have been found within 34

Late Bronze Age hoards from the study area, all discovered through metal-detecting; by comparison, only four hoards discovered between the years 1886–1983 were found to contain similar material. Such patterns suggest that the introduction of the *Treasure Act* 1996, its revision in 2002 and the onset of the PAS in England and Wales have not only resulted in an increase in the number of hoard finds being reported (Griffiths 2023; Murgia, Roberts, and Wiseman 2014; Wiseman 2018), but have also resulted in a greater awareness and chance of retrieval for objects which might otherwise have been overlooked. Nine single finds of casting jets have also been reported from the study area in recent decades. While these casting jets can likely be dated to the Late Bronze Age based on their frequent occurrence in securely dated hoards, they are all of undiagnostic forms and have been, here, assigned a broad Middle–Late Bronze Age date.

To date, ingots have been discovered from 19 hoards, and casting jets from 29 hoards of Late Bronze Age date (Figure 21). They have been found alongside each other in 10 hoards, often as minority elements within larger mixed hoards. In south-east Wales, only two hoards were reported to have contained more than four casting jets: the Grosmont Community II hoard (Monmouthshire; MON-H4), which contains six examples, and the St Fagans Community hoard, which contain seven examples (Gwilt and Griffiths 2021b; Gwilt, Griffiths, and Mumford 2023b). In addition to the casting jets and two ingot fragments (one of copper and one of leaded bronze), the Grosmont Community II hoard also contains seven fragmented socketed axes and a sword blade fragment (Figure 22). The only near-complete object is missing the entirety of its cutting edge, whilst the majority of the objects have straight break edges with limited evidence of deformation, suggesting that they are the result of 'hot-shorting' (Knight 2022, 16). However, two of the objects within the Grosmont II hoard – both fragments of socketed axes – appear to have been broken while cold and have been heavily damaged through repeated hammering with a blunt ended tool, suggesting that this collection of material represented multiple metalworkers with variable access to skills or knowledge. The offset socket apertures that are visible along the cutting-edge fragments, created as a result of being cast with misaligned cores, suggest that some of the objects had also been cast by someone with a limited metalworking skillset. The St Fagans Community hoard (CDF-H7; Cardiff) is similar in terms of its overall composition to the Grosmont Community II hoard although, with 38 fragments, it is just over twice the size and contains minor quantities of more rare object types, such as a pocket chape, ring fragments and a socketed gouge. Virtually all of the deliberately fragmented objects within the St Fagans Community hoard appear to have been hot-shorted, perhaps suggesting that this hoard was formed during a particularly intense fragmentation event. Medium- to large-sized hoards from the study area rarely contain high proportions of fragmented material and/or casting debris, suggesting that the material for the Grosmont Community II and St Fagans Community hoards was selected in relation to the people who were intimately involved with the metalworking process.

Although there is no way to be certain whether many of the objects within the Grosmont II Community hoard were locally manufactured or brought from elsewhere, the presence of a copper ingot fragment suggests directed trade with a metalliferous region or down-the-line exchange with communities who were themselves in contact with such regions. All but nine of the 69 ingots that are known from hoards in south-

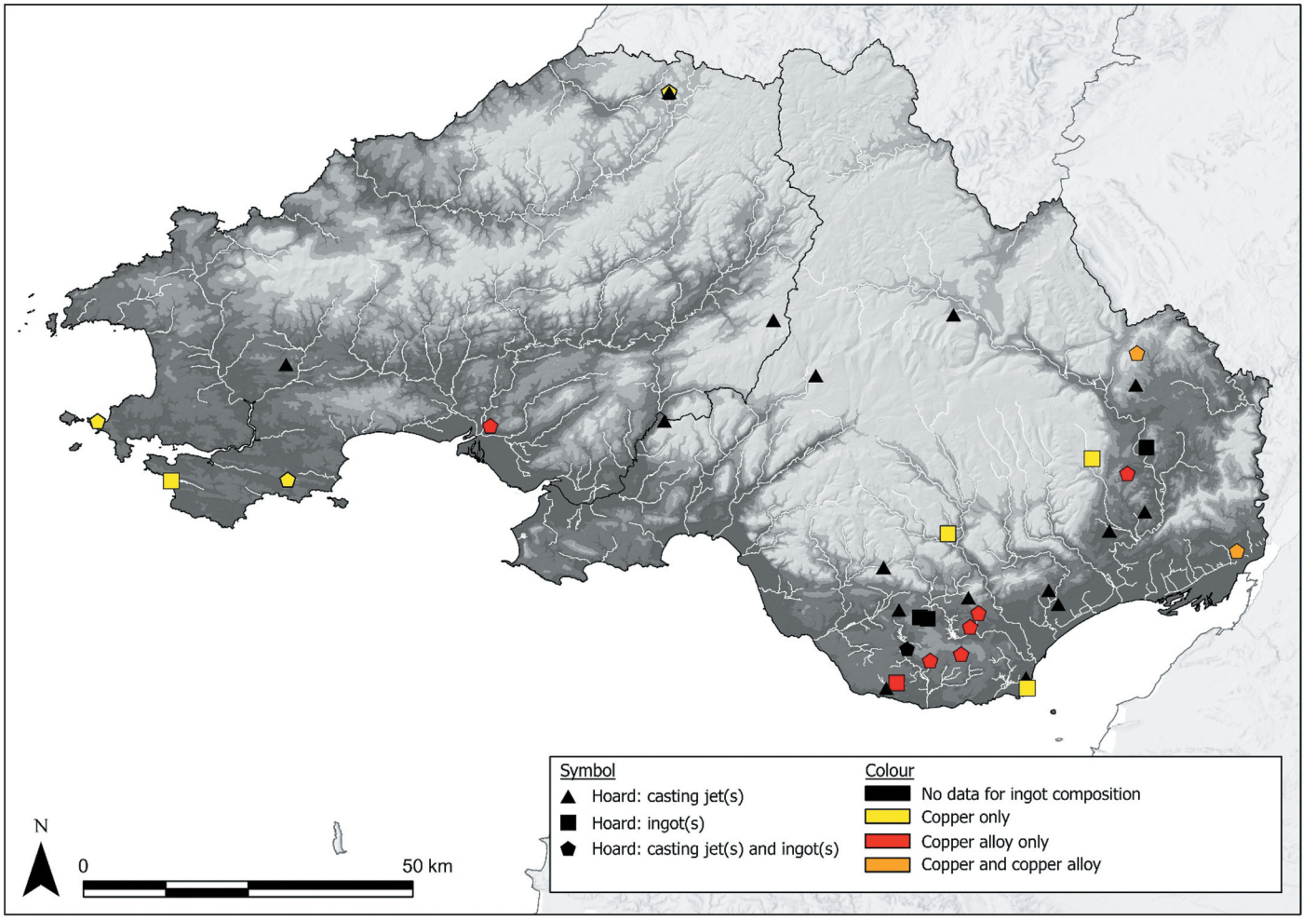

Figure 21. Distribution of Late Bronze Age hoards with casting jets and ingots (*contains Ordnance Survey data licensed under the Open Government Licence v3.0*).

Figure 22. The Grosmont Community II hoard, Monmouthshire (MON-H4) (photo: author, courtesy of MonLife Heritage (Abergavenny Museum).

east and west Wales have been subject to XRF analysis: 42 have been identified as being of copper, 17 of leaded bronze and one of tin/lead alloy. Only six fragments of copper ingots from four hoards are known in south-east Wales, where the majority are instead made of copper-alloy (Figure 21). This might suggest a regional economy that was more reliant on the exchange and recycling of bronze objects, but it is also possible that they were selected for their particular symbolic connotations.

Interpreting bronze ingots and casting debris is particularly difficult because they rarely possess features or qualities that might inform us of where they came from, or what objects may have been recycled to create them. By comparison, the appearance of copper ingots within a non-metalliferous region, such as the study area, suggests exchange relations with copper-producing communities. Most of the copper ingots from the study area have been discovered in west Wales, including: 22 fragments from the Freshwater West hoard (PMB-H1), seven fragments from Manorbier Community hoard (PMB-H3), five fragments from Marloes and St Brides Community hoard (PMB-H4), and one complete ingot from the Llangeitho Community I hoard. The three hoards from southern Pembrokeshire also contain objects that are more commonly found within the Carp's Tongue/Boughton-Vénat hoards of south-eastern England and north-western France, including undiagnostic Carp's Tongue sword blade fragments, bag-shaped chapes and perforated knives (Figure 23; Adams 2017; Brandherm and Moskal-Del Hoyo 2014). The high degree of

Figure 23. The Marloes and St Brides Community hoard, Pembrokeshire (PMB-H4) (©Amgueddfa Cymru-Museum Wales).

fragmentation that is often seen in Carp's Tongue/Boughton-Vénat hoards is also seen in this small group of hoards from Pembrokeshire, as all but seven of the 56 pieces from the three hoards were deliberately broken into small fragments. Relatively small quantities of copper were possibly still being produced from sources in north Wales during this period, as evidenced by the Late Bronze Age dates for the Pentrwyn copper smelting site (Williams 2013, Table 1), but it is likely that most copper would have come from continental sources. Further research on their metallurgical composition may offer clues as to the source of the copper in these hoards, and possibly directions of influence. However, it seems that Atlantic sources of copper became especially important between c. 1000/950 and 800 BC (Costa, Brun, and Mille 2020, 1497, Figure 3). At least some of this material is likely to have made its way from north-western France to west Wales, probably via western Cornwall, where numerous hoards of a similar character to those found in Pembrokeshire have been discovered (Knight 2022, 103–104). As noted in the previous section, the presence of South Wales Type axes within several of these western Cornish hoards, such as the St Michael's Mount hoard, suggests that communities in south-east Wales were not isolated from these Atlantic exchange networks. Apart from the rare presence of Carp's Tongue sword fragments in south-east Wales, of which there are seven fragments from six hoards and two single finds, it would seem that the material and practices associated with the Carp's Tongue/Boughton-Vénat Complex were simply not adopted with much enthusiasm by communities in south-east Wales. Careful attempts may have been made so that the values expressed by locally made objects were not overshadowed by the novelty or external value of north-western European metals, regardless of whether they were in a raw or finished form.

Considering that both ingots and casting jets are, now, a recognized feature of the Late Bronze Age depositional landscape, it is worth coming back to the case of the South Wales Type axe and the continuing archaeological invisibility of moulds in the study area. Knowing what kinds of objects were fed by casting jets is often difficult to determine, especially as there was a wide range of different object types, sizes and techniques available to Late Bronze Age metalworkers. However, an exception to this are those casting jets that have four relatively wide and equally spaced runners, positioned at 90 degrees angles to one another (see Figure 22, second row from the bottom). These casting jets were used to feed South Wales Type axes, the only form of socketed axe that was cast using a four-runner technology (Needham 1981; Northover, n.d., 259). The locations in which these runner jets have been discovered are heavily concentrated in south-east Wales, with 11 hoards containing 23 examples. Rare discoveries of these four-runner casting jets are known from south-western England, including seven examples from the Stogursey hoard and one probable example from a settlement context in Kenidjack Castle, Cornwall (Pearce 1983, 411–12; Knight 2018, RCM-F018b). Outside of the study area and south-western England, casting jets of this form do not appear to be a feature of Late Bronze Age hoards (Needham 1990, 54–6; Griffiths 2023, Appendix 1). Despite the absence of moulds from the region, the repeated and growing association of four-runner casting jets in hoards of this period offers some indication that South Wales Type axes were produced in south-east Wales.

Discussion

Historically, people have been quick to explain why hoards of metalwork were buried, sometimes at the expense of the objects themselves. The approach taken in this research has been to avoid any preconceptions around why hoards were buried, focusing on the data and adopting an open mind as to what Middle-Late Bronze Age communities may have considered relevant when they selected and buried valuable metalwork. This paper was structured so that a two-pronged investigation of this material could be carried out. First, it charted broad scale changes in the chronology, make-up and distribution of metalwork from all archaeological deposits from the study area. This provided a firm empirical foundation for the second section, which allowed for a more detailed investigation into significant changes to (and commonalities within) the character of the evidence over a relatively long period. Thought now turns to how it is possible to bring together these different strands of evidence, considering how the distribution of ideas and material culture relates to regional and sub-regional, local identities.

Connections and absences

The period c. 1550–1400 BC presents a complex picture for the study area. The dearth of Acton Park hoards is not entirely unusual considering that they are either absent or rare in many regions of Britain (Griffiths 2023, Table 2; Needham et al. 1997, 84). One relatively straightforward explanation would be that communities were more reliant on recycling during certain periods and that this necessitated a greater retention of metalwork and/or a higher rate of recovery. For non-metalliferous regions, interruptions to the supply of raw metal might have had a significant impact on the overall quantity of metalwork which was in circulation, meaning that fewer objects were available for permanent deposition (Needham 2001). However, this strategy does not appear to have extended to the deposition of single finds of palstaves which, although modest in number (n = 55), appear to have been deposited in much greater relative numbers within south-east Wales than many other regions across southern Britain (Williams and Le Carlier de Veslud 2019, Figure 7). Many of these shield-patterned palstaves are likely to have been made with copper that originated from the Great Orme (Conwy) mine, which appears to have experienced a particularly intense period of copper extraction during this period (Williams and Le Carlier de Veslud 2019, 1188, Figure 6). In his discussion of the wider European picture, Fontijn suggested that local and foreign objects may have gained increased significance from the beginning of the second millennium BC onwards, when pan-European exchange became increasingly more important (2020, 36). Whereas Early Bronze Age axes were decorated after they were cast (Needham 2017b, 3), Acton Park palstaves were the first widespread form of axe to have their decoration applied at the casting stage. Perhaps it was their supra-regional appearance and the values that they represented which meant that Acton Park palstaves had to be kept apart from other objects and buried individually.

From the above, it would seem that the shape and origins of objects have the potential to highlight agency within not only hoards, but also other depositional contexts. The relationship between local and supra-regional styles of objects has been explored in some detail with regards to the deposition of Bronze Age metalwork

(Cooper et al. 2022, 98–101; Fontijn 2008; Fontijn and Roymans 2019; Sørensen 1987). These relationships need to be addressed on a case-by-case basis, steering away from catch-all explanations and focusing first and foremost on the relationships between things. For example, the explanations offered in relation to the deposition of Acton Park metalwork cannot be readily applied to the Taunton/Cemmaes period (c. 1400–1275 BC), when the situation in the lowlands of south-east Wales appears to have been significantly different. Although there is likely to have been some chronological overlap between different styles, it appears that significantly fewer Cemmaes/Taunton palstaves were deposited within both hoards and single finds (n = 29) as there were during the Acton Park period (n = 47). With the exception of the Llantrisant Fawr Community hoard and two single finds, bronze Taunton ornaments are also significantly under-represented in the study area. By contrast, significant numbers of palstave and bronze ornament-hoards are known across large parts of southern England – including Somerset, which is situated just across the Bristol Channel and visible from many locations in south-east Wales (Rowlands 1976; Roberts 2007, Figure 4; Wilkin 2017; Knight 2022, 96–121). Similar styles of ornaments have been found associated with human burials during this period in Continental Europe, with pins and neck rings regularly associated with females, and weapons and palstaves with males (Traherne 1995; Wilkin 2017, 24). These gendered associations may have traversed the Channel into southern England where, instead of burials, hoards became the arena for which these ideas around identity became entrenched.

How then are we to understand the almost total absence of Taunton Assemblage bronze ornaments from south-east Wales? As outlined by Webley (2015) in his discussion of cross-channel connections in the Iron Age, it may be necessary to look beyond the evidence for metalwork and shift our focus towards other forms of 'domestic' material culture. In addition to the bronze ribbon torc fragment, the Middle Bronze Age settlement at Llanmaes also produced large sherds from a decorated vessel of the Trevisker tradition. Both were found set into a metalled surface and their deposition can be dated to c. 1400–1275 BC (Gwilt et al. 2016, 303–4), contemporary with the deposition of many bronze ornament-hoards across southern England. Trevisker wares appear to have originated in Cornwall, before later spreading more widely across south-western England and into south-east Wales (Quinnell 2012, 147). Earlier forms of this ceramic group appear almost exclusively within funerary contexts during the Early Bronze Age, but later Trevisker wares continue to be deposited within settlement contexts well into the latter stages of the Middle Bronze Age. In addition to Llanmaes, similar fabrics have been noted from several settlement sites in south-east Wales, including Five Mile Lane, Coed y Cymdda (both Vale of Glamorgan), Trelai Park (Cardiff) and Chapeltump II (Monmouthshire) (Deacon 2023; Quinnell 2012). Numerous examples have been discovered from settlements in Cornwall, south Devon and north Somerset – including the midden and settlement site at Brean Down (Quinnell 2012, Figure 1; Woodward 1990), but this might be because relatively more archaeological excavations have been carried out in this region. Further discoveries of Trevisker wares from south-east Wales may allow for regional variations to be more clearly defined (Quinnell 2012, 167), but the similarities in style and depositional contexts for later forms of Trevisker Ware suggest greater contact between communities in south-east Wales and south-western England than the metalwork record might

otherwise suggest. It seems probable that communities across the study area were simply not interested in expressing the ideas that were synonymous with the deposition of bronze ornaments. By contrast, gold ornaments could be deposited within hoards or, more rarely, associated with funerary contexts, indicating a clear preference for particular materials. The significances behind their deposition will always elude us, but gold's meaning or 'value' was clearly important and may have derived from its material properties. The malleability of gold and its resistance to corrosion may have contributed to extended histories of objects, creating a chain of social relationships that may have enhanced their inalienability (Bradley 2017, 147; Weiner 1992). We saw how this was possible in the presentation of the Llanwrthwl hoard, where gold torcs with extended use-lives were paired into mini-hoards. The interlinking of gold ornaments in hoards within and outside of the study area, sometimes in a careful and reversible manner, indicates a further level of care that was afforded to these deposits. The potentially early date of deposition for the Capel Isaf hoard, which was reported to have also been discovered with its objects entangled with each other, suggests that this practice may have originated earlier than previously thought, providing a tentative link with Early Bronze Age funerary practices, but without the physical remains of the person(s) (Wilkin 2017, 36).

The organization of Ewart Park depositional practices

Given the recent findings that have been presented throughout this paper, it is appropriate now to examine some of the existing models that have, historically, been intimately connected with the Ewart Park Assemblage in the study area. Beginning with west Wales, a lack of known finds from this period made it previously impossible for scholars to speculate whether this region had its own distinct practices for collecting and depositing metalwork (cf. Northover, n.d., 281). However, recent discoveries have transformed this picture, allowing us to appreciate the special significance that metalwork deposits may have held for people during this period. The evidence from Carmarthenshire is discussed below, but the discovery of a small group of hoards in southern Pembrokeshire strongly suggests connections with communities in western Cornwall and north-western France (Knight 2022, 104). As well as providing insights into past people's understandings of objects, the composition and character of the Pant-y-Maen hoard demonstrates that those who deposited it were aware of the wider tradition of deliberately damaging, fragmenting and depositing weapon hoards in wetland contexts (Mörtz 2018). Although it is still too early to determine whether there was a distinct regional pattern to the deposition of hoards here, these local deposits demonstrate that they took place within an extensive network of relations.

The problems surrounding the 'Stogursey' aspect of Burgess' Llantwit-Stogursey tradition were discussed earlier, but it is important to remind ourselves that the eponymous hoard from Somerset is entirely at odds with other contemporary hoards deposited in the region (Northover, n.d., 261; Knight 2022, 108–114). Apparent from this study is that South Wales Type axes were present within the vast majority of hoards in south-east Wales (78%) and eastern Carmarthenshire (60%), often as significant or majority components. That this style of axe was heavily concentrated in south-east Wales is not a new observation (cf. Burgess 2012; Gwilt 2004; Needham 1981), but the

extension of their spatial distribution into eastern Carmarthenshire, particularly within the Black Mountain range, is a new and significant outcome of this analysis. Here, there are two axe-dominant hoards – the Myddfai and Llanddeusant Community II hoards – that are very similar in composition and character to contemporary hoards in south-east Wales (Briggs and Williams 1997; Gwilt, Griffiths, and Enright 2022). The Penwyllt hoard (POW-H10; Powys), found approximately 10 km to the south-east of this pair, may also belong to this upland group. The similarities in their contents, in close geographical proximity, likely reflect particular expressions of identity that are consistent with those in south-east Wales. The dearth of finds from the surrounding area might be reflective of recovery biases, but the greater frequency of Middle Bronze Age finds along the central and upper Tywi valley raises the possibility that there was a general taboo on depositing Late Bronze Age metalwork in parts of this landscape.

With the above geographical limits in mind, the 'Llantwit' tradition might be retained as a concept to describe similarities in depositional practices on the northern side of the Bristol Channel – extending from eastern Carmarthenshire, across the lowlands and many of the river valleys in south-east Wales, and into south-western Herefordshire. Apart from the deliberate selection and deposition of socketed axes, mainly South Wales Type axes in a complete or fragmented condition, faceted axes are also a relatively common association within the axe-dominant hoards, whereas Late-type palstaves are much rarer. As noted earlier, the rarity of associations between Late Palstaves and faceted socketed axes is very unlikely to have related to their everyday functions, suggesting that their disassociation from one another was chronologically or, perhaps more likely, symbolically significant. Previous interpretations of the Llantwit-Stogursey province emphasized its 'domestic' (Burgess 1968) or 'peaceful' (Northover, n.d., 271–2) character, but it is now clear that weapons were a common, if minor, component of hoards from this region. Furthermore, whilst spearheads were occasionally deposited in a complete condition within hoards, swords were almost always deposited as fragments. Further afield, in south-eastern England and north-western France, sword fragments are also frequently found within Carp's Tongue/Boughton-Vénat hoards, mostly from deposits buried in dryland contexts that have been interpreted as scrap-metal hoards (Brandherm and Moskal-Del Hoyo 2014, 33). Why these 'scrap-hoards' were never recovered has never been satisfyingly explained, especially with reference to deposits like the Boughton Malherbe hoard (Kent) which, at over 60 kg, represents a significant loss of material (Adams 2017, 40). Interpreting hoards as scrap also does not explain why other complete, perfectly usable objects were selected and buried alongside fragments of swords – objects that required a high level of skill to cast and which carried with them references to interpersonal violence (Webley, Adams, and Brück 2020, 32).

The repeated presence of casting jets and, to a lesser extent, copper-alloy ingots suggests that they were also readily incorporated within Llantwit hoarding traditions. In the absence of moulds, which may have been deliberately excluded from all depositional contexts in the study area during this period, these objects may have been carefully selected for their particular symbolic connotations with the casting process (Webley, Adams, and Brück 2020, 186). This is an entirely new observation that was simply not possible to establish prior to the bringing together of significant new finds, for which good contextual information is available. Furthermore, it is now possible to observe the

presence of two sub-regional groups within the 'Llantwit province' that each have their own distinct depositional signature, corresponding with the Usk valley and central south-east Wales. The variability in styles of ribbed decoration on South Wales Type axes and the patterns of their distribution may represent a complex mix of social relationships or potentially markers of sub-regional identity. Along the Usk valley, South Wales Type axes with parallel ribs were clearly selected over other decorative forms and often buried in small–medium sized hoards, potentially created by small, local communities. By contrast, in central south-east Wales, parallel and converging styles were often deposited together, with little preference for one style over another. It is perhaps no coincidence that the largest hoards from the study area are focused in this sub-region, suggesting more considerable aggregations of people and material. The bringing together of multiple groups of people may have transcended local manufacturing traditions and identity politics, leading to more aggrandized and mixed deposits of metalwork.

With the above in mind, it is worth reminding ourselves that groups of people increasingly came together from c. 1550 BC onwards. The evidence for Middle Bronze Age settlement in central south-east Wales (i.e. Vale of Glamorgan, Cardiff, Caerphilly, Rhondda Cynon Taf, Bridgend) is frustratingly limited and patchy, but it is possible that a system of transhumance was widespread in the region, involving the seasonal movement of people and livestock between inland and coastal locations (Bell 2013, 321–22). Tentative evidence for the construction of field systems is present in south-east Wales (Gwilt et al. 2016, 304; Makepeace 2006), but it appears that farming was less intensive here than it was in other areas of Britain, such as south-western and south-eastern England (Fleming [1988] 2007; Yates 2007). By contrast, some of the best evidence for the coming together of people into larger groups is during the Late Bronze Age, when traditions of constructing ringforts and hilltop enclosures appear to have been adopted across parts of southern Britain (Campbell 2022; Evans et al. 2016, 214–16; Musson 1991; Yates 2007). Although the best evidence for their construction is found outside of the study area, small numbers of enclosures from south-east Wales (Campbell et al. 2023; Owen-John 1988; Seaman and Lane 2019) and west Wales (Crane and Murphy 2010, 98; Murphy and Mytum 2011; Parker Pearson, Casswell, and Welham 2018) have been shown to have Late Bronze Age origins. The small-scale of excavation on these sites makes it difficult to determine fully the nature of their occupation or use, but their planning and construction would have required labour, large amounts of material and extensive support networks. As well as providing new opportunities, the coming together of groups of people would have introduced tensions within and between communities, regardless of whether these gatherings were permanent or temporary. Larger hoards, like those from the Vale of Glamorgan with a mix of styles of South Wales Type axe, may have provided an opportunity to reinforce community cohesion during fractious periods.

Conclusion

Both south-east and west Wales have long been recognized for the wide variety of objects and practices that were linked with the deposition of metalwork during the Middle and Late Bronze Age, including the hoarding of gold ornaments (Savory 1958,

1977) and the deposition of one of the most easily recognizable forms of ribbed socketed axe in Britain – the South Wales Type axe (Schmidt and Burgess 1981, 239). However, the past 25 years have seen an unprecedented increase in the frequency of hoards and single finds reported through Treasure and PAS Cymru. Coincidentally, the last major review and synthesis of the Middle and Late Bronze Age metalwork record occurred just before the introduction of the *Treasure Act 1996* and the onset of PAS Cymru (Northover, n.d.), meaning that much of this recent material discovered since was left unsynthesized, unpublished, and underappreciated within some wider studies. As has been shown throughout this paper, these new discoveries have transformed parts of the depositional record of south-east and west Wales, providing new insights into chronological, regional and sub-regional differences in attitudes towards the burial of metalwork. For example, this paper has ascertained in great detail the characteristics of Swansea Bay, which represents a significant domain for the deposition of single finds of weaponry in the Middle Bronze Age, as well as the long-term relationship between the burial of personal ornaments in hoards, funerary contexts and as single finds. Additionally, this study has also contributed significantly to the recasting of the Llantwit-Stogursey tradition, demonstrating how recent finds have furthered our understanding of one of the most distinct groups of metalwork deposition in Britain during the Late Bronze Age. The sub-regional patterning in the distribution of South Wales Type axes with parallel and converging ribs represents an original and unexpected outcome of this research, highlighting how later prehistoric people engaged with objects in subtler ways than our own.

A final point concerns the broader implications of this study. Adopting a comprehensive, regional approach to the production, circulation and deposition of Bronze Age metalwork addresses the limitations of narrow typological analyses and overly generalized interpretive accounts. Establishing a compelling narrative about a specific case study area, incorporating as much relevant data as possible, presents challenges – particularly when the chosen area has a less prolific and/or less well-documented depositional record. This was keenly felt in some places during the current study, specifically with regards to the deposition of metalwork in funerary and settlement contexts, but on the other hand it was possible to provide a geographically dispersed and materially rich account of other aspects of the metalwork record. This level of insight is only achievable by examining connections and differences across multiple dimensions within a sufficiently large area, creating more enduring and convincing accounts of people in later prehistory.

Notes

1. The six complete/near-complete Late-type palstaves from the study area range in weight from 328.5–415.2 g, compared to the range of 76.2–229.7 g for the 19 complete/near-complete faceted axes.
2. See also the Dundry hoard, North Somerset, which contains an unworked gold bar, a hammered gold fragment, two palstaves and several pieces of casting debris (Knight 2023, 78).
3. Various typologies are used within this paper for different object types, some of which are more complicated than others. For the classification of palstaves, swords and Middle Bronze Age ornaments, this paper uses the typological scheme set out by, respectively, Schmidt and

Burgess (1981), Colquhoun and Burgess (1988) and Rowlands (1976). Dirks and rapiers have been classified according to the scheme outlined by Burgess and Gerloff's (1981), which separates these weapons into four major groups. These groups are further subdivided into types and variants, which are not described here owing to the difficulties in accurately applying the subtle differences noted by Burgess and Gerloff. For spearheads of the Middle and Late Bronze Ages, this study follows the schemes recently outlined by R. Davis (2012, 2015). A comprehensive typology of socketed axes in southern Britain is still lacking and so this paper utilizes several classificatory systems, principally those used by Schmidt and Burgess (1981), Needham (1990) and Northover (n.d.).

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