



Kent Academic Repository

Weller, Simon W. (2014) *Bronze Age tin-bronze metalwork assemblages in Kent: Composition, distribution and context*. Master of Arts by Research (MAREs) thesis, University of Kent,.

Downloaded from

<https://kar.kent.ac.uk/47462/> The University of Kent's Academic Repository KAR

The version of record is available from

This document version

UNSPECIFIED

DOI for this version

Licence for this version

UNSPECIFIED

Additional information

Versions of research works

Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in *Title of Journal*, Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries

If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).

Bronze Age tin-bronze metalwork assemblages in Kent: Composition, distribution and context



Simon W. Weller BA (Hons)

Submitted for the Degree of
Master of Arts in Classical and Archaeological Studies

School of European Culture and Languages
University of Kent

June 2014

Illustration above: Early Bronze Age flat axe assemblage (Ripple I) near Deal, Kent
Photograph courtesy of Dover Museum

Abstract

Isle of Harty

Acknowledgments

I would like to thank my academic supervisors Dr Anthony J. Ward, FSA and Dr Steve Willis (University of Kent) for their invaluable help, support, advice and guidance with this project. I am also grateful to:

Graham Deacon, Enquiry & Research Services, National Monuments Record, English Heritage

Giles Guthrie, Collections Manager, Maidstone Museum & Bentsliff Art Gallery

Jennifer Jackson, Finds Liaison Officer, Kent

Gez Moody, Thanet Trust for Archaeology

Kim Norton, Education Officer, Dover Museum

Steven Nye, Assistant Curator, the Guildhall Museum, Rochester

Keith Parfitt, Canterbury Trust for Archaeology (CAT)

Mike Still, Assistant Museum Manager, Dartford Borough Museum

Dr Ben Richards, Franks House, British Museum

Dr Andrew Richardson, Canterbury Trust for Archaeology (CAT)

Dr C. E. Louise Turner, Rathmell Archaeology Limited, Ayrshire

Dr Natalia Weller, MD, MSc (University of Kent), for assistance with graphics, Microsoft Excel, and copious supplies of toasted cheese sandwiches

Dedication:

To the memory of Keith Muckleroy, a true pioneer of maritime archaeology

Contents

Chapter 1. Introduction.....	1
Illustration 1a. Relief map of the study area	Error! Bookmark not defined.
Illustration 1b. Relief map of the study area with principal sites mentioned in the thesis.....	Error! Bookmark not defined.
Illustration 1c. Principal rivers mentioned in the thesis.	4
Chapter 2. Methodology	9
Chapter 3. Distribution of Bronze Age tin-bronze metalwork assemblages in Kent	17
Illustration 3a. Lydd 3000 BC	20
Illustration 3b. Lydd 100 AD.....	21
Illustration 3c. Lydd 1250 AD	21
Illustration 3d. Map of recovery for ‘hoards’ and possible associations with Willerby and Arreton	23
Illustration 3e. Single and assemblage finds to 2004	32
Illustration 3f. Map of the North Kent and East Essex coastline (Mesolithic to Early Bronze Age).....	33
Illustration 3g. Conjectural coastline in the Neolithic / Early Bronze Age	34
Illustration 3h. Bronze Age metal work in Kent.....	36
Illustration 3i. Photograph of Pett Level Beach (East Sussex).....	38
Chapters 4. Issues with contextualising and Analysis	39
Illustration 4a. Graph 1. Frequency of assemblages by Bronze Age era	44
Illustration 4b. Graph 2. Frequency of items in assemblages by Bronze Age era	45
Illustration 4c. Graph 3. Profile of Middle Bronze Age assemblage artefacts	47
Illustration 4d. Graph 4. Profile of LBA assemblage artefacts	48
Illustration 4e. Graph 5. Profile of LBA assemblage artefacts	48

Illustration 4f. Graph 6. Assemblages by elevation (OD).....	49
Illustration 4g. Sword mould fragments from the Snodland site	64
Chapter 5. Kent assemblages in retrospect and current thinking	70
Illustration 5a. Frequency of assemblage finds by quarter century from 1700 AD.....	72
Chapter 6. Discussion	81
Illustration 6a. Distribution of Armorican socketed axes	85
Illustration 6b. Distribution of 'Carps Tongue swords in Western Europe.....	85
Illustration 6c. The Rossett 'hoard' with packed socketed axe head	97
Chapter 7. Conclusion	98
Bibliography	

Chapter 1

Introduction

1. Introduction

The present part-time MA by research project studying the Bronze Age assemblages of Kent was formulated in 2010 coincidental with the publication of a south-east of England regional project examining the siting of such assemblages in parts of Hampshire, Sussex, Surrey and Kent (Yates and Bradley, 2010) and the PhD Thesis by Turner (1998). Consequently, the current research has developed as a more focused study on the south-eastern extreme of that study area, in other words the present county of Kent. The intention has been to compile as comprehensively as possible a data-base on assemblages from Kent with a view to their analysis including approaches adopted by Yates and Bradley. This also presents the opportunity to expand upon their data with the additional corpus of research hereby presented in the following chapters, with more extensive contextual aspects.

Bradley had earlier written

‘All too often, studies of such deposits have been concerned with content rather than context. This is a tradition that can be traced at least as far back as the work of Sir John Evans.... (1998, p. 13)

1.1. This pertinent observation provides the principal steer for this investigation, the description, analysis, and discussion of assemblages with particular regard as to how the circumstances of deposition can help our understanding of the phenomena across the period.

1.1.1 The conventional Bronze Age for present purposes is taken as spanning the centuries from around 2600 to 600BC. The Early Bronze Age (EBA) being 2600-1400 BC, Middle Bronze Age (MBA) 1400-1200 BC and the Late Bronze Age (LBA), 900-600 BC (Pearce, 1984, 6), although Parker-Pearson (1994, 79) stretches these dates by an additional century either side. The boundaries of the present county in fact lend themselves in large measure to the definition of a study area which in the later 3rd to early 1st millennia BC had a natural coherence, defined by the Thames Estuary, to the north, seaways to the east and south, and the forests of the Weald to the west. These geographic boundaries are the same as defined by David Perkins in his unpublished PhD thesis ‘A Gateway Island’ (1999, pp. 16-17).

1.1.2 Louise Turner’s doctoral thesis on Bronze Age metal work in southern Britain (1998) covered some Kent material but this was not comprehensive in terms of the known assemblages in Kent at the time of submission. There have been many more groups recovered since then and the Portable Antiquities Scheme

(PAS) in particular has been an important development for the reporting of finds which are reflected in the present work.

1.1.3 In brief, a database of 70 assemblages has been compiled with regard to the content, volume and typology of the assemblages; the micro-topography of the find-spot; siting in relation to broadly funerary and ritual structures, also settlement; their distribution within the study area relative to the landscape and its features such as macro-topographical formations, water courses and the coast line. There will be consideration of the challenges of analysing the data in the context of a landscape which has changed significantly in the last 2500-3000 years in terms, for example, of tree cover, soil degradation and erosion, fluctuation in water-table and, of course, marine inundation (Moody, 2008, 30-34).

1.1.4 The information on assemblages ranges from antiquarian accounts, the earliest of which at Westgate [ds 15](ds= datasheet, see Chapter 2.2) dates to 1724, to a 2011 metal-detecting discovery complemented by controlled excavation at Boughton Malherbe [ds19]. Some of the discoveries are no longer extant and others have not benefitted from careful curation over the years. Hence the quality of the data for the circumstances of discovery is very variable, which poses issues for comparative analysis and there can be a traditional narrative attached to the material which will not now necessarily stand scrutiny.

1.1.5 By way of setting the scene for the presentation of the detail of the data to be analysed and discussed, there follows an outline of the present topography of the study area with consideration of how it may have changed since the period of the study; an outline of the current broad interpretation of the centuries encompassed by the conventional term “Bronze Age”, a consideration of how thinking regarding assemblages of the Bronze Age has evolved.

1.2 The study area

The modern area of study covers 1,537 square miles (3980.8 square kilometres), although the extent and character are very likely different to the area in the Bronze Age. The actual territorial study area has been divided into east and west sectors, defined for the purposes of this study as;

- Eastern sector: west of northerly grid line 059 (Sittingbourne to Winchelsea axis)
- Western sector: east of northerly grid line 059 (Sittingbourne to Winchelsea axis)

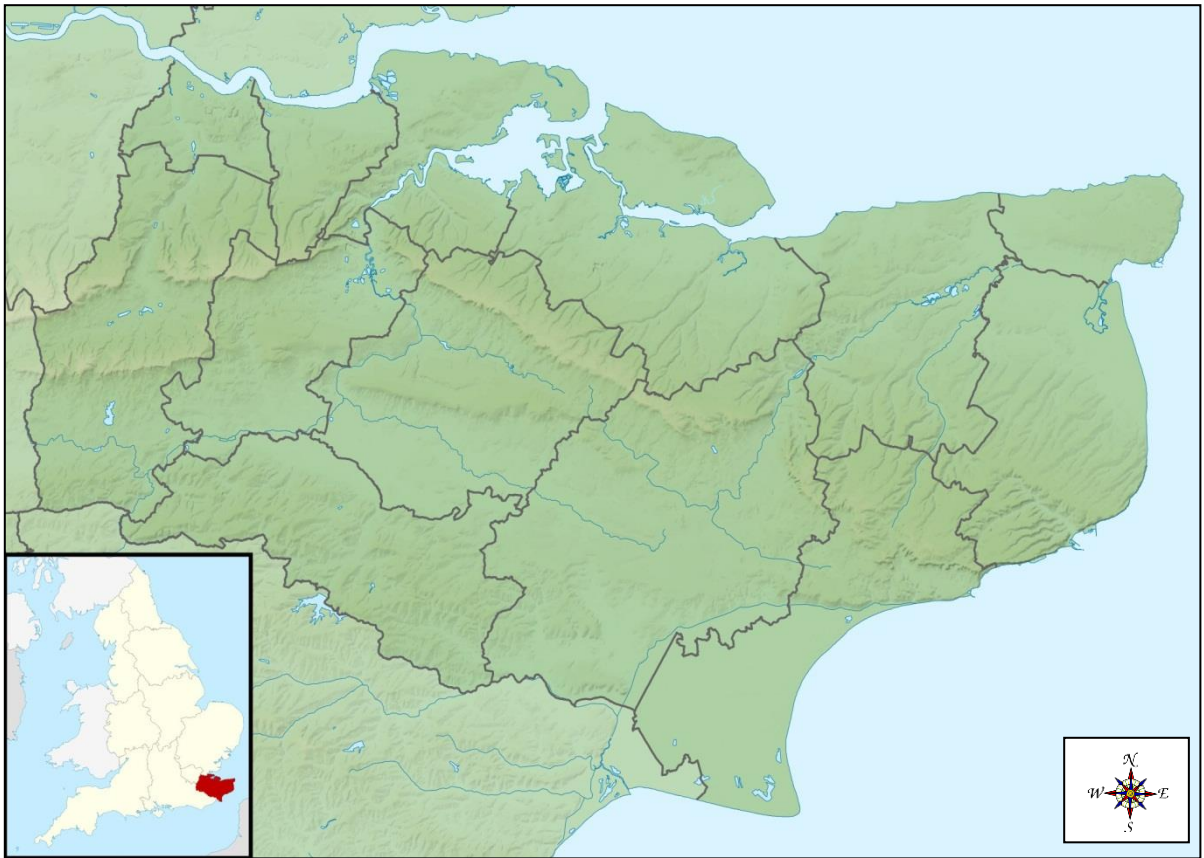


Illustration 1a. Relief map of the study area (darker green contrast)

1.2.1 Changes in the sea level, coastal erosion and expansion of land mass provided by silting and marsh development altered its availability and usage to the population. The Wantsum Channel that once separated the Isle of Thanet from mainland Kent to the east had started to silt up to what is now, a narrow stream (Moody, 2008, 43-44). The Lydd and Romney region underwent similar phases impacting upon the ecology and diversity of wildlife, travel and settlement. The north Kent coast and the Hoo Peninsula region saw particular changes in settlement patterns as the coastline evolved from the Mesolithic, Neolithic and through the early to late Bronze Age. The 'high-tide' mark of settlement and locations of metalwork assemblages along the northern coast of the subject area along the Whitstable Tankerton-Herne Bay axis as well as the Isle of Thanet could be representative of this.

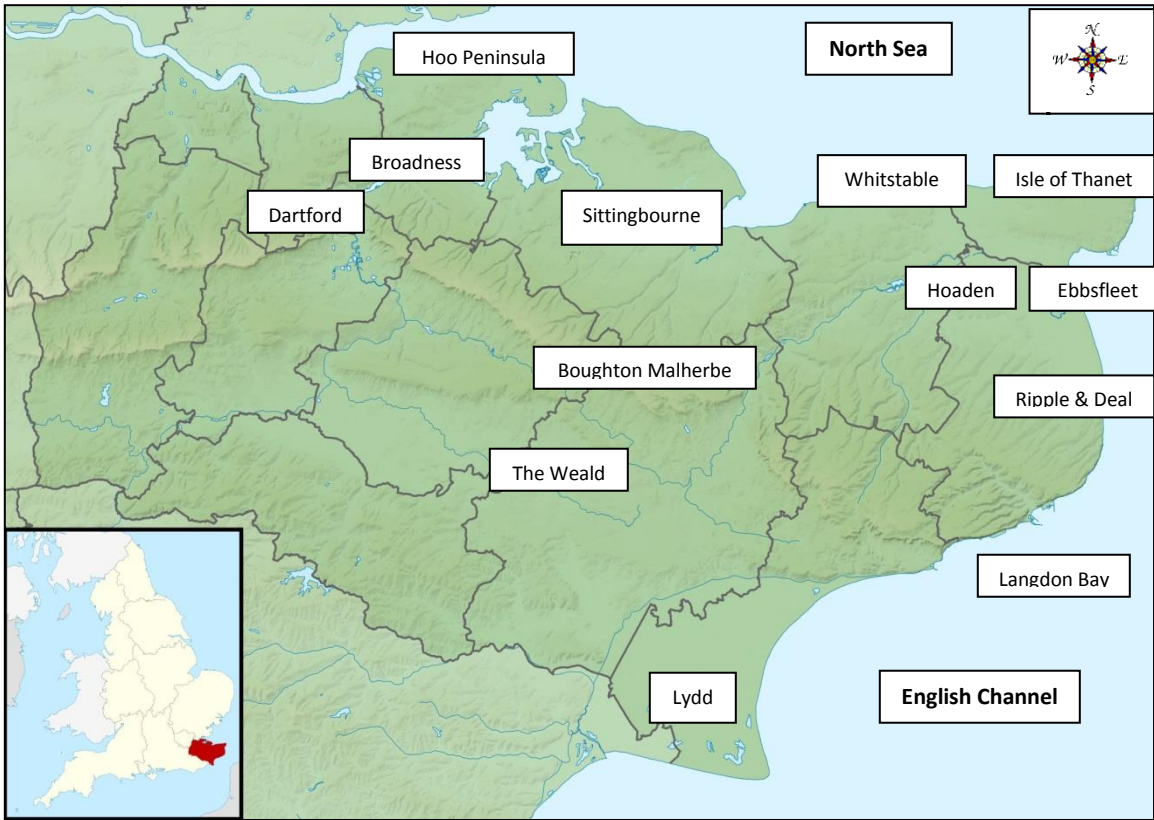


Illustration 1b. Relief map of the study area (dark green) with principal sites mentioned in the thesis

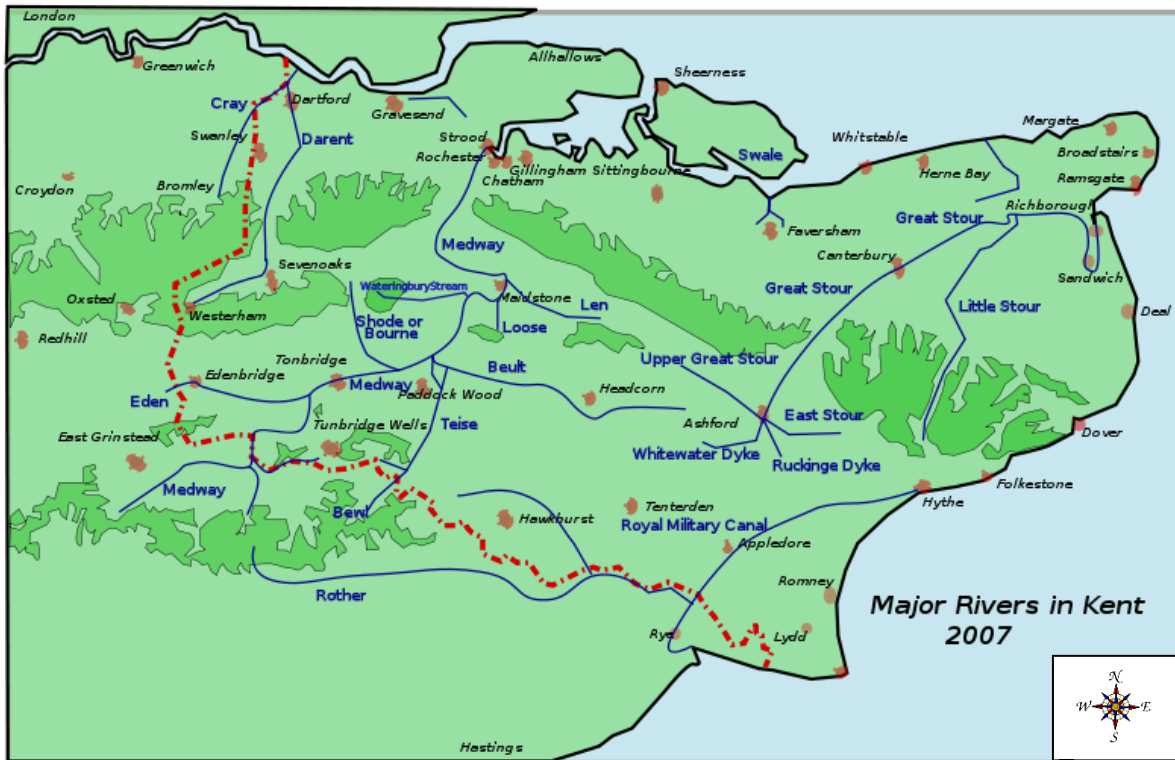


Illustration 1c. Principal rivers mentioned in the thesis. The hatched red line represents the western boundary of the study area

1.2.2 The river systems in the subject area may allude to the influences for deposition of metalwork assemblages and these major navigable arterial transport routes may also have been the primary catalyst for their distribution and importation. The Rivers Medway, Len, Upper Stour, Upper Great Stour and Lower Stour, Beult and Wantsum Channel were, and some still are, major waterways flowing from the hinterland. The River Darent and valley, however, to the far west of the subject area does not seem to have been used in such a manner due to the paucity of archaeological evidence for Bronze Age tin-bronze assemblages and settlement activity along its lengthy course.

1.3 Outline topography of the study area

The modern topography of the study area must be considered alongside the landscape features and coastline of the Bronze Age in order to fully appreciate the complexities of the deposition, distribution and context of tin-bronze metalwork assemblages.

1.3.1 The modern interior terrain has an undulating vista, with valleys and spurs created by rivers, streams, springs and floodplains resulting from the effects of a temperate climate, with south-westerly winds during most of the year with northerlies during the winter. The landscape is mostly given over to pasture which predominates with isolated patches of varying size of woodland (Ashford Forest and Blean Woods near Canterbury), gorse and scrubland, some of which is managed.

1.3.2 The geology of the study area is dominated by sedimentary deposits; predominantly chalk with concentrations of brickearth, Upper Greensand, gravel and clay. In some areas these are exposed where the thin layers of loess and clay based soil has been eroded (The Weald). The altitude of the topography ranges from sea-level to a maximum height of 260 metres (853 feet) at Ide Hill in the North Downs.

1.3.3 The coastal areas include the full spectrum of topographical and geographical features. Estuaries (Thames and Medway) on the northern coast of the subject area flow around small islands and Peninsulas, discharging into the North Sea. To the east the coast is low-lying and to the south-east the terrain rises to form cliffs interspersed with truncated valleys providing harbours (Dover and Ramsgate). Further west along the south coast of the subject area the coast is low-lying marsh flood plain, which has been gradually building due to sedimentary deposits and down-wash (Romney Marshes and Lydd). Coastal erosion has made a significant impact on all coastal topography and continues to do so, in the form of long-shore drift between Whitstable and Herne Bay (So, 1966, pp. 475-90) and landslides such as those at The Warren (Wear Bay) at Folkestone (Acland, 1869, pp. 48-51 and Hutchinson, 1965, note no. 35/36).

1.3.4 Significant civil engineering projects over the last two hundred years have also altered the topography by creating navigable waterways such as canals, reservoirs, flood defences, embankments and cuttings for highways and rail.

1.4 Technology, economy, culture and society c 2600 BC to 600 BC

The Bronze Age emerged from the Neolithic identified by the transition in more advanced technologies primarily in tool making which influenced changes in economy, culture and society (Barrett, 1994, 103). Although flint tools continued to be employed, the development of copper and tin-bronze metalwork signified a revolution in the range of type and typology tools, that were more resilient and hardwearing but more time consuming to produce. Settlement became less transient and developed into more permanent and substantial dwellings based within organised landscapes. Farming produced food surpluses, allowing the pursuit of more sophisticated practises in tool making, animal husbandry, construction, trade and exchange and ultimately exploration and warfare (Champion et. al. 1984, 139-140). Dwellings were seen to be constructed within enclosures for either defensive or animal coral purposes. Archaeological evidence for waterborne travel also indicates more advanced techniques in construction and navigation such as the Dover Bronze Age boat (Clarke, 2004).

1.4.1 This change in the style of living and human enterprise therefore had a significant impact on self-awareness, culture and the necessity for organisation, exemplified by the emergence of hierarchical social structures. The population increased significantly during the Bronze Age (Champion et. al. 1984, 139-140) and there were changes in human burial practice from excarnation in the Neolithic to cremation and inhumation in the Bronze Age, with some individuals being overtly revered in substantial monuments which also developed during this period in the form of ring-ditch barrows and even child cemeteries, whose location in the landscape was also significant (Bradley, 2007, 158-160).

1.5 Interpreting tin-bronze metalwork assemblages – an outline from antiquarianism to the present and the thematic focus of the present study

The earliest record of a tin-bronze metalwork assemblage from the subject area was published by the antiquarian Lewis in 1736 (extracts in Westgate [ds 15]) and the most recent being the high volume assemblage from Boughton Malherbe [ds 19] in December 2011 (PAS reference KENT-15A293).

The contrast in interpretation for the reasons for deposition, typology and context has varied greatly. Lewis's enigmatic account reached a well deduced conclusion to the Westgate MBA assemblage whereas

the LBA Boughton Malherbe assemblage has undergone a very detailed analysis by typology at the British Museum.

1.5.1 The principal influential scholars [protagonists] informing interpretation have included the antiquarian Sir John Evans in the 19th century followed by Vere Gordon Childe in the 20th century and latterly Colin Burgess and David Coombs, J. Hawkes, Peter Northover, and in the 21st century Timothy Champion and Richard Bradley (see Chapter 5.5).

1.5.2 The 'individuality' of assemblages by location, typology and context has also been discussed by the aforementioned with regard to their purpose; votive or ceremonial, founders 'hoards', boundary markers (Kuijpers, 2008) or, in the case of 'super-hoards' (author) possibly 'metalwork markets', or in the case of the late LBA, quite simply 'dumps' of material that were no longer practicable for re-cycling due to the poor quality of the metallurgical content (see Chapter 6, 'Discussion', 6.7.4)

1.5.3 Little metallurgical analysis is currently available for assemblages from Kent. The dissertation therefore focuses on detailed content of assemblages; number of artefacts, typology, whether damaged or undamaged specimens, metal type, non-metallic items, ingots and so on.

1.5.4 This dissertation will also compare assemblages to ascertain any marked similarities or differences by examining composition, typology and location, bearing in mind that assemblages have been deposited or 'lost' over several millennia. Moving from this comparison the dissertation will look at evidence for import and export of bronze material to and from Kent, and evidence for the manufacture of Bronze Age metalwork.

1.5.5 Reiterating Bradleys observation that 'Since so little is known about the circumstance in which this material was deposited, it is perhaps a moot point whether such chronologies can be entirely reliable, but in the present account they are followed for want of anything better' (1998, p. 13 this dissertation will focus particularly on the context of assemblages, when information is available. The difficulty with many of the assemblages recovered is that there is limited or no evidence for context. Few assemblages, with the exception of those such as Ebbsfleet IV and V [ds 30 and 31], Crundale [ds 26], Broomfield (Herne Bay) [ds 32] and Hoaden II [ds 36], were recovered in association with controlled excavations thereby yielding detail for this important aspect of study. However, some assemblages certainly reflect deposition using containers of one sort or another. The EBA assemblage from Aylesford [ds 1] and MBA assemblages from Birchington

[ds 4], Minnis Bay [ds 46] and Herne Bay I [ds 32] for example were containerised, using pottery or wickerwork.

1.5.6 There have also been some significant assemblages recently recovered in other parts of Southern Britain and later in the dissertation these will be briefly considered as supportive evidence for trade and exchange in bronze work, notably those from Salcombe in Devon (Needham, Parham and Frieman, 2013, 84-90) and three other riverine finds at Must Farm (Cambridgeshire) (Symonds, 2012), the Bronze Age boat from Dover (Clark, (Ed). 2004) and the Langdon Bay assemblage (Needham, Parham and Frieman, 2013, 58-84).

1.5.7 There are of course, many single finds of Bronze Age metalwork from Kent, but none that can for the present be associated with assemblages as such, and these are not referred to in the dissertation.

1.6 Structure of the thesis

Subsequent to this Introduction, the evidence for tin-bronze assemblages has been reflected in several ways, by examining distribution, analysis of the data and context of assemblages (when available). In addition, the dissertation considers previous thought and current influential scholarly theory, followed by a discussion and conclusions. In the first instance, the methodology for composing the corpus of data is as follows in the next chapter.

Chapter 2

Methodology

2. Methodology

2.1 The corpus of material within this paper was gathered from multiple sources. These consisted predominantly of primary and secondary historical sources related to tin-bronze metalwork assemblages in Kent, as well as various other records including objects recovered by metal-detecting as recorded through the Portable Antiquities Scheme, and personal conversations which elaborate on some individual assemblages.

Sources of data

2.1.1 The data were gathered from the usual range of sources - publications, unpublished sources, 'grey literature', theses, museums, regional archaeological trusts, and local government. Cross referencing authors and bibliographies also widened access to capture sources which contributed greatly to little known morsels of information. The sources of information were acquired between 2009 (pre-submission of research proposal) and mid- 2012 when writing-up began in earnest. Post mid-2012 publication has been taken into account as it has become available.

Ordnance Survey maps

2.1.2 Ordnance Survey maps have been provided to give a perspective to assemblage deposition locations. It is of course, difficult to suggest whether deposits were 'dry' or 'wet' in nature as the sea level has changed significantly in the last three millennia, but Ordnance Datum (OD) data and topographical detail have been provided in the Assemblage Datasheets. It is extremely problematic to calculate the sea levels between EBA and LBA in Kent, but clearly the sea level was higher than it is today, and alluvial deposits and coastal erosion has also had a significant effect on the potential hypothesis for deposition of assemblage.

2.1.3 The most important sources of information were

- ***National and Local Government sources***

Treasure Annual Reports, Department of Culture, Media and Sport (2003-4, 2004-5, and 2005-6)

The National Monuments Record (NMR)

Kent Historic Environment Record (HER)

Sturry Parish Council records

- ***Archaeological Trust and Historical Society newsletters***

Canterbury Archaeological Trust 'News from the trenches', 2004

Canterbury Archaeological Trust Annual Reports

Cliffe at Hoo Historical Society

Kent Archaeological Society Newsletters

The Victoria History of the County of Kent

- ***Museums***

Ashmolean Museum, Oxford

British Museum:

- The Portable Antiquities Scheme (PAS)
- British Museum's card index of Bronze Age metal work in Kent (Franks House, London),
- (British Association's card catalogue of Bronze Age implements (and also Barber 2003, p. 38)

Canterbury Museum

Dartford Borough Museum

Dover Museum

Folkestone Museum

Maidstone Museum

Quex Park Museum (Powell-Cotton)

Rochester Guildhall Museum

- ***Conference, seminar and occasional papers***

Canterbury Archaeological Trust Conference 2006

South East Research Framework resource assessment seminar

Occasional paper / British Museum No. 102

Papers celebrating 150 years of the Royal Archaeological Institute 1994

- ***Developer Funded archaeological sources***

Archaeological Solutions Ltd

Canterbury Archaeological Trust Ltd

Parsons Brinckerhoff Ltd – Report for PB Power for Scottish Power Ltd: '*Annex J of Gazetteer of Archaeological Interests at Damhead Creek 2*'. June 2009 (St Mary's at Hoo)

Trust for Thanet Archaeology

Wessex Archaeological Trust

- ***Theses consulted***

Hammond, I. D. 2010 '*In search of 'the people of La Manche' : a comparative study of funerary practices in the Transmanche region during the late Neolithic and early Bronze Age (2500 BC-1500 BC).*' PhD thesis, University of Kent

Pearce, S. M. 1982 '*The Bronze Age metalwork of south western Britain*' PhD thesis, University of Southampton

Perkins D.R.J. 1999 '*A Gateway Island*' Unpublished PhD thesis

Rohl, B. M. 1995 '*Application of lead isotope analysis to Bronze Age metalwork from England and Wales.*' PhD thesis, Oxford University

Turner, C. E. L. 1998 '*A Re-interpretation of the Late Bronze Age Metalwork Hoards of Essex and Kent*' PhD thesis, University of Glasgow

- ***Principal published sources consulted***

Antiquity 1980

Antiquaries Journal

Archaeologia Atlantica

Archaeologia Cantiana

Archaeological Journal

British Archaeological Reports (BAR)

Current Archaeology magazine

Kent Archaeological Review

Journal of the British Archaeological Association

Later Prehistoric Antiquities of the British Isles

Oxford Journal of Archaeology

Proceedings of the Prehistoric Society

Proceedings of the Society of Antiquaries of London

- ***Metal detecting groups records, publications and communications***

Thanet & Wantsum Metal Detector's Club

- ***National and local newspaper articles***

Kent On Line [internet]

http://www.kentonline.co.uk/kentonline/news/2011/december/10/bronze_age_hoard_unearthed.aspx

<http://finds.org.uk/news/stories/article/id/225>

This is Kent [Internet]

<http://www.thisiskent.co.uk/Pupil-discovers-trove-Bronze-Age-treasure/story-11996119-detail/story.html>

- **Personal Communications**

Mrs Leigh Lindsey, CSA. Hythe Library, e-mail of 30/3/2010

Dr Ben Roberts, Curator, Department of Prehistory and Europe, (British Museum) 2010-2011

Mrs Jacqui MacDonald, Whitstable Diving Group, pers. con. 2010

Mike Still, Assistant Curator, Dartford Borough Museum, e-mail of 23 March 2012

- **Historical Archival material**

Birchington Heritage Trust Newsletter August 2008, Issue 25

The History and Antiquities, as well Ecclesiastical as Civil, of the Isle of Tenet, in Kent (Lewis)

- **On-line data bases**

Archaeology Data Service catalogue [internet]

http://ads.ahds.ac.uk/catalogue/adsdata/arch-457-1/dissemination/pdf/vol03/vol03_05/03_05_123_130.pdf

British Museum Passport Antiquity Scheme (PAS) [internet] <http://finds.org.uk/>

University of York Archaeology Data Service [internet]

<http://ads.ahds.ac.uk/catalogue/adsdata/cbaresrep/pdf/048/04806001.pdf>

- **Excavation Reports**

Helm R. 2011 '*Archaeological excavation at Bogshole Lane, Broomfield, Herne Bay Assessment Report*', Canterbury Archaeological Trust

Greg Priestley-Bell. 2002 '*Archaeology South East Watching and Excavation Brief*' [internet]

<http://www.archaeologyse.co.uk/04-Projects/Kent/Highstead-Farm-Canterbury/index.htm>

Parfitt, K. 1995 Unpublished excavation report (Tilmanstone II)

Parfitt, K. 1995 Report on '*Bronze Age Palstaves from Ripple, near Deal.*' (Ripple I)

2.2 Collation of data

Data from these sources were collated on datasheets (Appendix 3) designed to capture the principal categories of information required for analysis. The final version of the datasheet (Figure 1 below) was produced after trialling versions on a sample of sources. Datasheets are referenced as [ds No.] format within text.

2.3 Addendum datasheets

An addendum has been added to the corpus after completion of data collection and its analysis in order to draw attention to hoards subsequently discovered in the field and also brought to attention by the Examiners (see Appendix 3). These are four in number and on the advice of the Examiners the distribution maps and analyses have not been reworked to take account of the additional hoards. However, a comment has been included in the Analysis (to be decided) discussing how these additional hoards conform to/amplify the analyses of the assemblages initially considered.

These additional assemblages are;

[ads 67] Aylesford II

[ads 68] Lenham Station (Lenham III)

[ads 69] Staple (Dover)

[ads 70] Stockbury (Maidstone)

Figure 1

Assemblage No. Assemblage name
1 of 1

Date of discovery

Finder(s)

Location

Grid Reference

OD

Nearest natural water source

Context

Circumstances of discovery

Current location of artefacts

References

Composition

Dating parameters

Author's comments

Pie chart illustration of assemblage composition

Illustrations and photographs

2.2.1 To facilitate referencing each datasheet has been placed in numerical/place name alphabetical order. All analytical tables retain this order. Some assemblages have over time acquired more than one identifying name. Therefore where this has occurred detailed comparison of the description of the content of the variously named assemblage has been used to eliminate duplication in data collection.

2.2.2 The datasheets reflect the immediate local area names as shown on Ordnance Survey maps, but include previously 'used names' to aid the reader. This has been done for the purposes of the present thesis and is not an attempt to definitively re-name assemblages that are in Museum's records, or are already well known elsewhere in the public domain.

2.2.3 There has been the particular challenge that there are some records of assemblages being deposited with a Museum but no amount of diligent research by curators and lateral thinking to inform cross-referencing has determined their current whereabouts. Indeed, some assemblages have missing items or have been broken up in to the care of several guardians. A Table of "lost" or incomplete assemblages is provided at Chapter 4, 4.1 Table A.

2.2.4 The datasheets have been analysed using Excel spread sheets to provide a detailed breakdown of variously Bronze Age era, typology of artefacts, geographical location (National Grid Reference (NGRs) where known)) and context.

2.2.5 Maps, based on the geological structure of Kent have been employed to illustrate distribution. These maps also provide information on current river systems and modern place names to assist the reader and are also cross-referenced with the datasheets.

2.2.6 In most cases scaled illustrations and photographs have been provided (where available) within the datasheets. Some of the assemblages photographed by the author do not give scale as many are behind sealed, environmentally controlled environs to which the Museums were reluctant to allow closer inspection of artefacts, for example at Dover Museum. Some pictures include objects and typed descriptors that can be visually compared to the artefacts.

The parameters for gathering data

2.2.7 Timothy Champion (1970) has suggested that the term 'hoard' or 'assemblage' as he prefers to describe them should consist of two or more items found together. Dr Ward (pers. com.) suggested that metal items in funerary contexts might not be included on the basis that their context is very specific and distinctive from the generality of assemblages to be studied. After consideration, however, this material has been included because some items may have been deposited post burial, for example at Sittingbourne, [ds 55]. These items also give a background to typology of artefacts and era as well as in the context of distribution of assemblages.

2.2.8 Single finds without clear context were also considered for inclusion in the corpus but it was felt that the amount of research required would have been excessive and that value of the information would have been limited. That is not to say that single finds are irrelevant. Their own distribution and typology may also have a synergy with assemblages, but their consideration requires a separate project.

2.2.9 Finds from metal-detecting also have question marks over them. Although many are very likely to have been honestly submitted to the Portable Antiquities Scheme (PAS) or held by individuals or groups, there is no validation pertaining to their recovery or content, so the data from these assemblages is very much taken 'on trust'. These have been included within the corpus of data.

2.2.10 In relation to 'precious metal' or 'prestige' Bronze Age metalwork, these records have been omitted (Ringlemere cup et al) from the corpus of this research as they have already been covered in detail by Needham, Parfitt and Varndell (Eds., 2006), and also a thesis (forthcoming) by John Smythe (UCL) which incorporates precious metals alongside tin-bronze assemblages in Kent.

Chapter 3

Distribution of Bronze Age tin-bronze metalwork assemblages in Kent

3. Distribution of Bronze Age tin-bronze assemblages in Kent

3.1 Synthesis of data

The data for Bronze Age tin-bronze metalwork assemblages in the subject area has been transposed to several maps, (Annex 2):

Map 1 – Main distribution

Map 2 – High volume tin-bronze assemblages in Kent

Map 3 – Assemblages in relation to rivers

Map 4 – Assemblages in relation to monuments

Map 5 – Assemblages in relation to settlements

3.1.1 This section examines

- possible association between assemblages and known Kent Bronze Age settlement and monument patterns
- distribution relative to possible overland routes of travel and communication
- location in relation maritime communication, river courses, estuaries, and coastlines taking into account the position of ancient coastlines , primarily along the north Kent coast where some finds have been recovered from the sea floor, and also along the south-west where assemblages have been recovered from Langdon Bay off Dover [ds 10] and west from Lydd [ds 2]

3.1.2 The distribution of tin-bronze assemblages in Kent can be compared to others in the South East of England (Turner 1998). In Essex where there is a concentration in the Colchester area and there are also many assemblages in Sussex and Hampshire, although more widely dispersed. Other authors have provided some distribution data in for assemblages in Kent Rowlands (1976), Perkins (1999), Turner (1998, p. 172), Barber (from Yates 2003), Yates and Bradley (2010), in the form of a variety of distribution maps, although these include single finds as well as assemblages. These older distribution maps (see below) have been included to demonstrate the progress of data gathering in the last thirty years or so, as a form of audit trail, which confirms particular assemblages and their locations as well as a basis for considering explanations for siting of such depositions.

3.1.3 The Main Distribution Map (Map 1), the Distribution of Assemblages in Relation to River Features Map (Map 3) and Distribution of Assemblages in relation to BA Settlement Map (Map 5) at Appendix 2) give a

basis for discussion on the storage of metal-work by deposition; and its importation and movement within the landscape. Most certainly, transport routes may explain certain aspects of distribution, either from navigable water systems or track-ways or droving routes.

3.1.4 Previous authors have not specifically considered whether materials were accumulated and deposited in response to circumstances of supply and demand in certain areas, where ‘control’ of such material may have been the monopoly of ‘high status’ individuals or groups, thus determining assemblage location. The MBA record certainly typifies this scenario from the evidence in the eastern sector of the subject area (the eastern and western sectors as defined in the Introduction). This will be expanded upon in Chapter 6, ‘Discussion’.

3.1.5 Any votive or ceremonial association with fresh water sources, or a location in relation to supplies of wood (charcoal) for metal working is subjective, but both could have implications for distribution and siting of assemblages. One of the most recent, ‘super-hoards’¹ from Boughton Malherbe [ds 19] is in a valley below a string of six natural springs to the north; and Crundale [ds 26] is on a flood plain adjacent to a fresh water stream which is unnamed on the OS sheet. The Stourmouth assemblage [ds 57] is on Stourmouth Stream; however this stream is probably a relatively recent course resulting from the silting of the Wantsum Channel (oxbow rivers and stream production) over the last two millennia so the association is more than likely fortuitous – but it does indicate how assessment of distribution needs to take account of subsequent topographical change.

3.2 Overview of assemblage distribution in Kent:

Distribution of EBA assemblages

The few confirmed assemblages at Aylesford I [ds 1] and Lydd [ds 2] and Buckland [ds 3] provide only a cursory glimpse of EBA artefacts. There are three assemblages from Aylesford, however only one (that is associated with a burial) has been included, as there is no detailed information on the second other than a ‘Hoard found in a globular pot with straight neck and having three horizontal grooves’ (Burgess and Coombs, 1979, 191). The third assemblage is a recent find given at the Addendum [ads 67].

3.2.1 The Aylesford I group is from an explicit funerary context, a crouched inhumation grave which is far inland and isolated from other assemblages and monuments, the closest other assemblage being that of the LBA cache at Offham [ds 49] and a cluster of monuments to the north-west at Snodland/Malling. The

¹ For ‘super-hoard’ or Childe’s ‘depot’ theory see Discussion at Chapter 6.14

Aylesford group and burial is adjacent to the modern course of the upper reaches of the river Medway. The Aylesford I metalwork group is of the Wessex tradition and there are no other associated groups in Kent.

3.2.2 The five flat axes from Lydd are in excellent condition, located in an area where no other assemblages have so far been discovered from any other Bronze Age era. Also there is no evidence for local settlement or monuments, the closest of these being at Hythe (LBA) and one earlier Bronze Age monument group.

3.2.3 The Lydd assemblage [ds 2] is a good case study for considering deposition in the context of later topographical changes, which were quite dramatic over a period of many centuries. It is conjectural as to what type of environment existed when the Lydd group was first deposited; the illustrations (a-c) below have a substantial intermission of data between 3000 BC and 100 AD although it is suggested that the land was dry, about 40 feet (12 metres) above sea level (Illustrations a. to c. below).

3.2.4 Today, the Lydd area is only 3 metres above current sea level and the assemblage was recovered from a gravel deposit which may have been very much closer to the ancient coastline or marsh area than it is today. The typology of the EBA assemblage at Lydd [ds 2] has been determined as Arreton Down phase; 'The Lydd group is the largest known in the British Isles and Ireland, and distribution of these type 4E axes are only so far recorded as single finds throughout, other Kent examples being single finds from Westbere and Sturry, Canterbury and Maidstone.' (Needham, 1988, p. 77)

3.2.5 In 3000 BC the Lydd area was heavily wooded, but by 100 AD had become inundated with water. The gravel from which the group was recovered is on or adjacent to the gravel bank (indicated at Illustration b) which fits with the description of the recovery of the axes in 1985. As the assemblage was recovered from gravel one could therefore assume that they were also deposited in a similar environment. However, there is also the argument that they may have been 'down-washed' from the dryer inland environment and pressed against the gravel banks to the south-east. That all of the Lydd group remained in such so close proximity when recovered to each other may counter this theory, but the group may have been more substantial than the five specimens of Arreton Down phase (4E) flat axes that have been recovered to date.

3.2.6 To conclude, it appears that the current environmental context of the Lydd group axes does not conform to the environment in which they were originally deposited. It is likely they were deposited in a largely heavily wooded area, on dry land, (The changing face of Romney Marsh' [internet]

<http://www.villagenet.co.uk/history/0000-romneymarsh.php>) but a sequence of topographical changes

occurred that altered the nature of the landscape, and either the axe heads were down-washed from another site or the gravel covered their original deposition. The axes display no signs of wear or erosion

associated with having been 'rolled' by water action or abrasion, as can be observed in the Langdon Bay assemblage [ds 10]. Affinity or association with the wooded landscape in which these items were deposited is not conclusive, but it can be conjectured that their function as a tool is directly related to the habitat in which they were placed. The north side of the gravel banks could be a possibility for further metal-detectorists exploration.

3.2.7 The following overlay maps demonstrate the location of the Early Bronze Age Lydd assemblage showing the conjectural transformation of the (English) Channel coastline over a period of 4,500 years, as a result of combined actions of long-shore drift and inland erosion from rivers creating down-wash and silting:

Lydd group site



Illustration 3a. Lydd 3000 BC

The land had risen about 40ft (12m) and is above sea level. As the land dried out and the salt leached away, the whole area becomes forested, the remains of which are visible today as a submerged forest at Pett Level (see 4.9 below). The hatched line represents the present day coastline.

Lydd group site

Gravel banks



Illustration 3b. Lydd 100 AD

The land rose about 370 AD, but it is on its way down again. The river Rother flows north of the Isle of Oxney and out through the salt marshes to the sea at Old Romney. The hatched line represents the present day coastline.

Lydd group site



Illustration 3c. Lydd 1250 AD

The Rye estuary continues to contribute to silting and sand-bars and gravel begin to re-define the coastline to the south to the near same extremities as those from 3000 BC. This area in-fills with sediment over the forthcoming centuries to create a predominantly marshland environment. The hatched line in red represents the present day coastline. (Maps from 'The changing face of Romney Marsh' [internet] <http://www.villagenet.co.uk/history/0000-romneymarsh.php>)

3.2.8 EBA regional hypothesis

From the information currently available Stuart Needham has produced a distribution map (below) with Willerby and Arreton phase finds in England and Wales, including finds along the south coast of England.

3.2.9 Nevertheless, the singular Westbere and Sturry singular examples mentioned above have been be added to this map, which would certainly reinforce the evidence for a south coast regional group of Willerby / Arreton Down phase material.

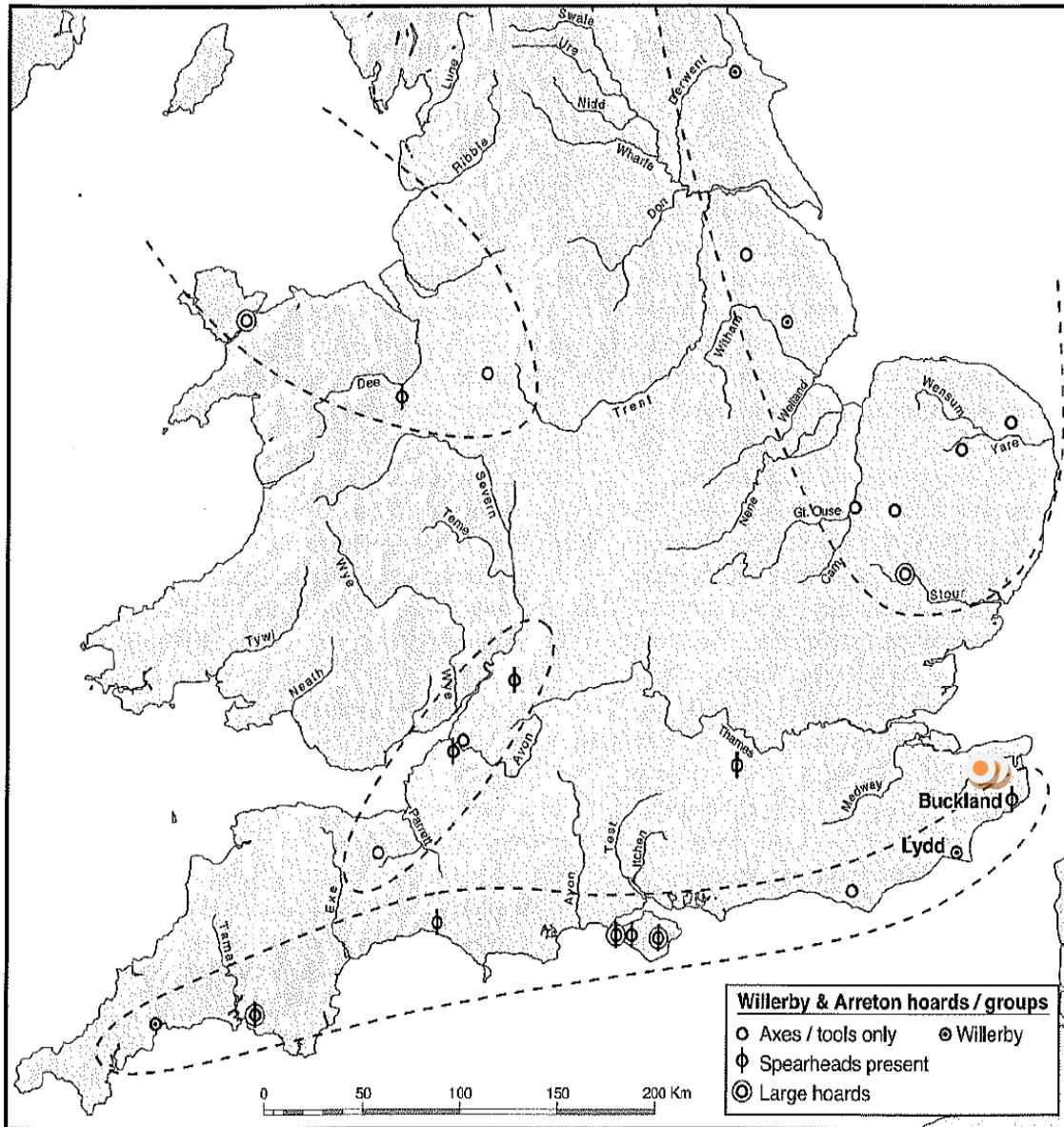


Illustration 3d. Map of recovery for 'hoards' and other possible associations with Willerby and Arreton phase metalwork in southern Britain circa 1950-1550 BC.

Regional Groups are suggested in Illustration 4d. represented within dashed outlines. (Needham, et. al. 2006, 78, Figure 38). The additional Sturry and Westbere (Arreton Down) finds are represented as orange circles.

3.2.10 Distribution of MBA assemblages

Of the thirteen MBA assemblages (see Map 1, 'Main Distribution Map' at Appendix 2), only one is from the west Kent area, the remaining eleven from east Kent, and all east of Canterbury. Eight of the easterly group are on present day coastal areas with two being inland (Ash-next-Sandwich, [ds 4] and Canterbury [ds 7]).

3.2.11 Five of the MBA assemblages are located on the Isle of Thanet. All are in a present day coastal position although that of Birchington [ds 5] is around 2 km distant inland from the present foreshore. The Isle of Thanet is rich in settlement evidence; 'Possible field ditches at St. Nicholas, Birchington (TfTA archives), Broadstairs and Margate.' (Hart and Moody, 2005). Three sites at Manston have produced evidence for agricultural settlement and 'At Margate, a deep boundary ditch contained Middle Bronze Age pottery and a human skull in its lower fills.' (Boast, 2007, from Moody 2008, 99)

Enclosure evidence at South Dumpton Down contains post-holes within a large ditch (Boast, 2007 p. 56) and a drove way has also been identified running from Pegwell Bay to the higher ground. The Isle of Thanet also contains probably the densest proliferation of monument structures from the Bronze Age in Kent (Monkton area) from MBA and LBA epochs.

3.2.12 When looking at the distribution of MBA assemblages their location may have a close association with features in the landscape and also the activity of the MBA population that was different to earlier societies or reflecting memories of earlier societies. That activity may reflect features in or aspects of earlier societies; alternatively it could have been innovative.

3.2.13 The link between the MBA assemblages with the landscape is alluded to by what is thought to be demographic changes in concentrations of populations in the wider region;

'This, combined with the stylistic evidence for intensive contacts between Southern Britain and the Normandy/Seine/Somme regions of N. France suggests that our arbitrarily defined region must in the long term be seen as part of a larger regional system...' (Rowlands, 1976, p. 142)

3.2.14 Concentrations of MBA assemblages almost exclusively in the eastern region of the study area may reflect the population centres and subsequent metalworking activity (see Map 1, Appendix 2, 'Main Distribution Map'). However, it is noted 'There are no clay moulds found in Britain that can be dated to the

MBA but this absence neither proves nor disproves their use at this period.’ (Rowlands, 1976 p. 11) which still holds true in the MBA record in the subject area (see Appendix I, Table 10)

3.2.15 The MBA assemblages in the study area imitate the composition and typology of many groups and pools of material from Northern France, which contain notably high concentrations of palstaves. This indicates a transition from connections with central Europe to the closer trading links with Northern France which is also apparent from the almost exclusive typology of tools and weapons that were being produced and exchanged, particularly in the late MBA.

3.2.16 It has been proposed that the influence of MBA metalworking and typology commenced in the early MBA from Northern France via East Anglia and the Thames Valley, and during the mid-MBA metalworking techniques and typology permeated to the south east region and the south coast. ‘This is defined by a predominantly coastal distribution of hoards, mainly palstaves, that extend from a centre in the South Hants / Isle of Wight region along the Sussex and Kent coasts with a restricted intrusion inland’ (Rowlands, 1976, p. 128). This statement is also borne out from in the data from the subject area, with the exception of the MBA assemblage at Goudhurst which is far inland [ds 56] although Champion mentions a single find from nearby Benenden (1980, p. 229).

3.2.17 Assemblages proximate to the coast can be found adjacent to each other at Ripple I and II [ds 11 & 12], near Deal; and also at Dover (Buckland Brickfields [ds 3] and at Langdon Bay [ds 10]. The Ripple I and II assemblages are in an area where there is BA settlement evidence at Mill Hill (Deal), interestingly an enclosure with undated “scrap” tin-bronze metal placed in ditch terminals either side of the entrance (Champion, 1980, pp. 233-234); and funerary and ceremonial monument clusters at Deal, Walmer and Kingsdown. The Buckland Brickfield deposit is not close to any known second millennium BC settlement or monument form, the closest monument cluster being 2.5 km to the north-west at Whitfield (Dover).

3.2.18 The Langdon Bay assemblage off Dover is also significant in its location. The enigma of its deposition is mentioned in the datasheet [ds 10], but its inclusion in the MBA record supports Rowlands’ discussion on regional activity particularly on the coastal fringes. The volume of material may justify the analysis of population concentrations in the east of the subject area in this period, borne out by the ensuing increase in supply and demand for tin-bronze due to an increase in population. It is arguable as to whether the emergence of a high population in east Kent of MBA peoples was indigenous or migrants from Northern France, or a combination of both.

3.2.19 The proliferation of typical MBA 'Ornament Horizon' artefacts in the subject area may also be an indicator of either imported items or the assimilation of form and style by an emerging MBA indigenous population, as also contrasted with the 'Beaker People' hypotheses. The Deveral-Rimbury pottery of this period in this subject area is 'the local variant' (Champion, 1980, p. 34) which also implies copying of style and form, although Deveral-Rimbury ware is also found in Northern France and along most of the south coast of England.

3.2.20 Concentrations of MBA metalwork assemblages appear to conform to MBA settlement pattern in the subject area, although there appears to be (so far), no evidence in the Dover area despite the volume of MBA material in this locality. Champion comments that 'When the archaeology of Bronze Age Kent was considered, Thanet held a respectable place on Kent's Bronze Age distribution map. The point was made that distributions of Middle Bronze Age tools, weapons and ornaments tend to cluster round social and economic centres' (1982, p. 34). It was also suggested by Champion that a 'similar major focus awaits discovery in east Kent.' (Perkins, 1988, p. 249)

3.2.21 The Goudhurst MBA group is one of only three assemblages found in the Weald (the other two being LBA). There is no evidence for Bronze Age settlement or monuments whatever for a radius of 25 km or more. The assemblage at Hundred of Hoo [ds 41] is situated amongst a cluster of LBA groups, although there is significant EBA, MBA and LBA settlement and high density agricultural activity several miles north-west at Hoo St. Werburgh [ds 40], but no Bronze Age monument evidence is currently present at all on the Hoo Peninsula (see Map 5, 'Map of Bronze Age Settlement sites in Kent in relation to tin-bronze assemblages to 2013' at Appendix 2).

3.2.22 Other MBA assemblage 'outliers' are at Canterbury [ds 7] on the River Stour and Ash-next-Sandwich [ds 4] which is interesting in that the latter would have been on low lying land in or slightly above the then Wantsum Channel.

3.2.23 Assemblages that are on or adjacent to modern river courses are those of Canterbury on the Stour and Goudhurst near the River Toise. The Hundred of Hoo assemblage [ds 41] is close to the Medway estuary to the south.

3.3 Distribution of LBA assemblages

The LBA assemblages are the most prolific in the subject area, numbering forty-nine altogether, with two unconfirmed groups being Ebbsfleet III [ds 65] and St Mary's Hoo [ds 66] which are most probably LBA in origin. These assemblages are strongly regionalised to far eastern Kent and western Kent. Eastern Kent sees a marked proliferation of LBA assemblages predominantly on the Isle of Thanet and west Kent in the Medway, Swale Estuary and Hoo Peninsula regions. Two assemblages are known of from Buckland, Dover, one of which is given at [ds 3]. There are mentions of a second assemblage (possibly known as Buckland Old Park, HER Monument no. TR34 SW37, found in 1877), and possibly some items from this are in Dover Museum, but the author has not been able to find any clear references or details of this separate LBA assemblage but is worthy of further research.

3.3.1 Several LBA groups (most of which are 'super-hoards') are found further inland at Boughton Malherbe, [ds 19], Marden [ds 45] on the northern rim of the Great High Weald, as well as Offham [ds 49] Hollingbourne I & II, [ds 37 & 38] Crundale, [ds 26], Saltwood, [ds 53], Broadness, [ds 20] and the Isle of Harty [ds 42].

3.3.2 The distribution of LBA assemblages closely follows the distribution of settlement to the north Kent coast especially, as well as the Medway and Isle of Thanet regions (see Map 5, Appendix 2, 'Map of Bronze Age Settlement sites in Kent'). There is some concentration of LBA assemblages and settlement association in the Herne Bay / Whitstable / Chislet sector on the north Kent coast. The Isle of Thanet has very high concentrations of all three elements, MBA and LBA assemblages, settlement and monuments, notably on the ancient coastal rim of the Wantsum Channel and overlooking the southern part of island's coast at Monkton, Minster-in-Thalet and Ramsgate and settlement evidence at Birchington and Minnis Bay. It has been suggested that the concentration of these elements were due to the geographical location of the Isle of Thanet, being close to the continent, having prime agricultural land and access by sea and perhaps seen as a place where there were particularly strong trading relations, religious, superstitious and ancestor worship related activities, where many people travelled through it, and deemed to be 'magnet' throughout the Bronze Age as alluded to by Perkins (1999, 12-13).

No Bronze Age settlement or monument activity has so far been located near the substantial Boughton Malherbe [ds 19] and Marden [ds 45] assemblages.

3.3.4 The same could also be said overall for correlation with monument features (see Map 3, Appendix 2, 'Bronze Age tin-bronze metalwork assemblages in contrast to excavated and ground surveyed Bronze Age monuments in Kent to 2013') with much of the LBA assemblages being some distance away from clusters, particularly in the Medway, Hoo Peninsula and from Whitfield (Dover) northwards along the Aylesford – Hoaden – Hollingbourne axis. Conversely, there are high concentrations of Bronze Age settlement activity in the Sittingbourne and Isle of Sheppey area and hinterland, but only two LBA assemblages are present that could be possibly associated with them.

3.3.5 The Bexleyheath [ds 17], Dartford I & II [ds 8 & 27] assemblages and Wickham Park [ds 63] have been recovered from inland areas that have seen a high degree of conurbation and landscaping over the last several centuries, in addition to previous agricultural practices over millennia and so it is not surprising that no evidence for Bronze Age monument or settlement activity is apparent, or remain. Settlement in the Chatham to Allhallows (Hoo peninsula) area is sparse and straddles a high concentration of six LBA assemblages, which run along an axis line south-west to north east from Borstal [ds 18] through Hoo St. Werburgh [ds 40], Stoke-at-Hoo [ds 56] to Allhallows [ds 16].

3.4 Distribution associated with water

In relation to rivers and streams, some LBA assemblages (around half) are proximate to modern major watercourses. These include, in the western region, Broadness (River Thames, [ds 20]) Borstal (River Medway, [ds 18]), Rochester (River Medway, [ds 52]) and Higham-at-Hoo [ds 34]. The two Dartford and Bexleyheath assemblages, although close to the river Medway, (see Map 3, Annex 2 'Map of Bronze Age Tin-Bronze metalwork assemblages in relation to major river and other water features in Kent to 2012') are some way from the current courses of the River Cray (Dartford I & II, [ds 8 & 27]) and Bexleyheath [ds 17]. Indeed, the Dartford I assemblage is on considerably high ground with no immediate water sources nearby.

3.4.1 The Offham assemblage [ds 49] is also close to the current Wateringbury Stream at the confluence with the River Loose, but this is still several kilometres north. Lenham I & II [ds 43 & 44] are also in proximity to the Upper Great Stour River, but again are still several kilometres away.

3.5 Assemblages in the Kent landscape

The Kent assemblages can also be considered in the context of a topographical viewpoint that may have had some 'meaning' or influence over distribution and siting. The LBA assemblages can be singled out as having pertinence due to their wider proliferation and indicators for perhaps common denominators:

3.5.1 Fifteen of the LBA assemblages are located on that are today, well drained valleys slopes, (Chislet I, II & III, [ds 21-23], Herne Bay II [ds 33] Hoaden I & II [ds 35 & 36], Hollingbourne I & II [ds 37 & 38], Hoo [ds 39], Lenham II [ds 44], Monkton Court Farm [ds 48], Offham [ds 49], Ringlemere [ds 51], Shuart Farm [ds 54] and Wingham [ds 64]) with none of the valley slopes showing similarities in geographical alignment or topographical anomalies. Bradley and Yates (2010) allude that many of the assemblages were specifically located in the proximity of fresh water or their headwaters and outlets, or that some overlook fresh water sources or sea water (Higham-at-Hoo, [ds 34]) or channels and estuarine environments as well as major contemporary Bronze Age sea channels (Wantsum Channel), but on the premise that such (fresh water) sources were present at that time.

3.5.2 Some LBA assemblages are indeed found in present day 'flooded plateau' environments (Herne Bay I [ds 32]) and flood-plain areas: Allhallows [ds 16], Ebbsfleet I – V [ds 28-31 & 65], Crundale [ds 26] and Hoo-St-Werburgh [ds 40] and several located very near modern natural springs (Boughton Malherbe [ds 19] and Hollingbourne I & II [ds 37 & 38]).

3.5.3 The siting of some the Kent assemblages on valley sides or higher topographical feature overlooking seaward may have had certain significance. What is apparent is that assemblages within the subject area have been located with distinctive thought to their 'alignment' with topographical features (extant of water-courses) none have been deposited on a valley side or spur that faces other than a northerly or southerly direction. Although there is some data not yet available for the location of many of the Kent assemblages (Grid References), the data that is available indicates that none of the assemblages had been selected to be placed on a due east or west facing topographical feature. The data for these can be seen at Appendix 1, Table Nos. 27-30. The altitude of some assemblages may also corroborate this data (see Chapter 4, Graph f)

3.5.4 Other interpretations can include cosmological inferences that could be influenced by astronomical or astrological concepts perhaps aligned with faith, beliefs and ideas. Some future research in relation to astronomical alignments and episodically relevant 'events' such as natural disasters (flooding, droughts or the effects of volcanic activity) and the sighting of comets or meteor showers may have some bearing on siting of assemblages. Particular astronomical or astrological phases, including lunar cycles should not be discounted; the North Star (Polaris) is a constant and South Star (Sigma Octans) although faint to the naked eye, is also a constant which may infer a connection between the assemblages, their topographical location and 'permanency'.

3.5.5 None of the Kent assemblages have been placed in what could be conceived as ‘prominently visible’ positions, as earlier Neolithic and Bronze Age round-barrows had been presented (mainly on sky-lines or ancient route ways (Bradley, 1998b, p. 121)), but there are several assemblages that have been placed on topographical spurs.

3.5.6 The word ‘Hoo’ refers to a spur of land, and is thus a common element of place names for a spur or peninsula, such as the Hoo Peninsula, other examples include;

Bexleyheath [ds 17] – prominent spur facing south

Boughton Malherbe [ds 19] – spur facing south

Monkton Court Farm [ds 48] – gentle slope facing east (spur)

3.5.7 Yates and Bradley suggest that ‘It seems as if the deposition of bronze metalwork was governed by certain conventions. The distribution of assemblages could also be included within the same envelope, in those certain geographical areas and nuances in the ‘landscape’ where they were conducive and acceptable for their deposition’ (2010, p. 1)

3.5.8 It is conceivable that ‘conventions’ may have been played out differently within micro-regions or era, or that there were no homogenous ‘rules’ or ‘standardisation’ to assemblage deposition and relevance with the landscape. Any ‘conventions’ would have been transmitted by word of mouth, which therefore implies that ‘interpretation’ by the recipient generations would also be either ‘respected’ or open to ‘re-interpretation’ and thus possible variations or even loss of ‘conventions’ through time (re-codifying).

3.5.9 The data so far, implies that the siting of assemblages was not ‘random’ and there seems to have been deliberate forethought in play. What is also interesting is that particular modes of deposition (pits and containers for example) is evident throughout the subject area, and is not localised.

3.6 The prehistoric coastline - distribution

There are several conjectural maps of the Kent coastline based on sea and land levels at the time of the Late Mesolithic to Early Bronze Age. The data for these maps is based on Admiralty Charts and recent geological surveys using core-samples taken from the sea-bed (Wessex Archaeology Ltd., 2004, 39-46).

3.6.1 The ancient coastline is far removed from the maritime topography than can be seen today. This has not been factored in to conceptions of distribution and sea-borne transport (particularly for LBA assemblages) by many previous authors and further study is required in this area to gain a theoretical symbiosis between practical transport, communication and transmission of ideological thought with supply and demand for materials. The concept of 'invisible trade' has always been greatly overlooked, even in historical terms. It is without doubt that trade and exchange during the Bronze Age also included precious 'invisible' cargoes of (possibly) slaves, animals, leather and fleeces, oils, woodwork and the most prized of all, communication techniques (interpreters) bringing knowledge, ideas and news and proposals for alliances, marriage and ultimately, conflict or reparation.

3.6.2 For example, it is intriguing that there were headwaters off the north Kent coastline between Whitstable-Tankerton-Minnis Bay (see Illustration 1 below) during the late Mesolithic and Early Bronze Age with equivalent or higher land present further out into the North Sea, by many kilometres. The navigation of these channels would have most certainly dictated sea-borne transport of one sort or another as well as those carrying tin-bronze material and other imports and exports. The finds off the Whitstable-Tankerton-Minnis Bay coast can well be considered as indicators of this activity, although their context of deposition will be open to debate as to whether they were 'dry' or 'wet'.

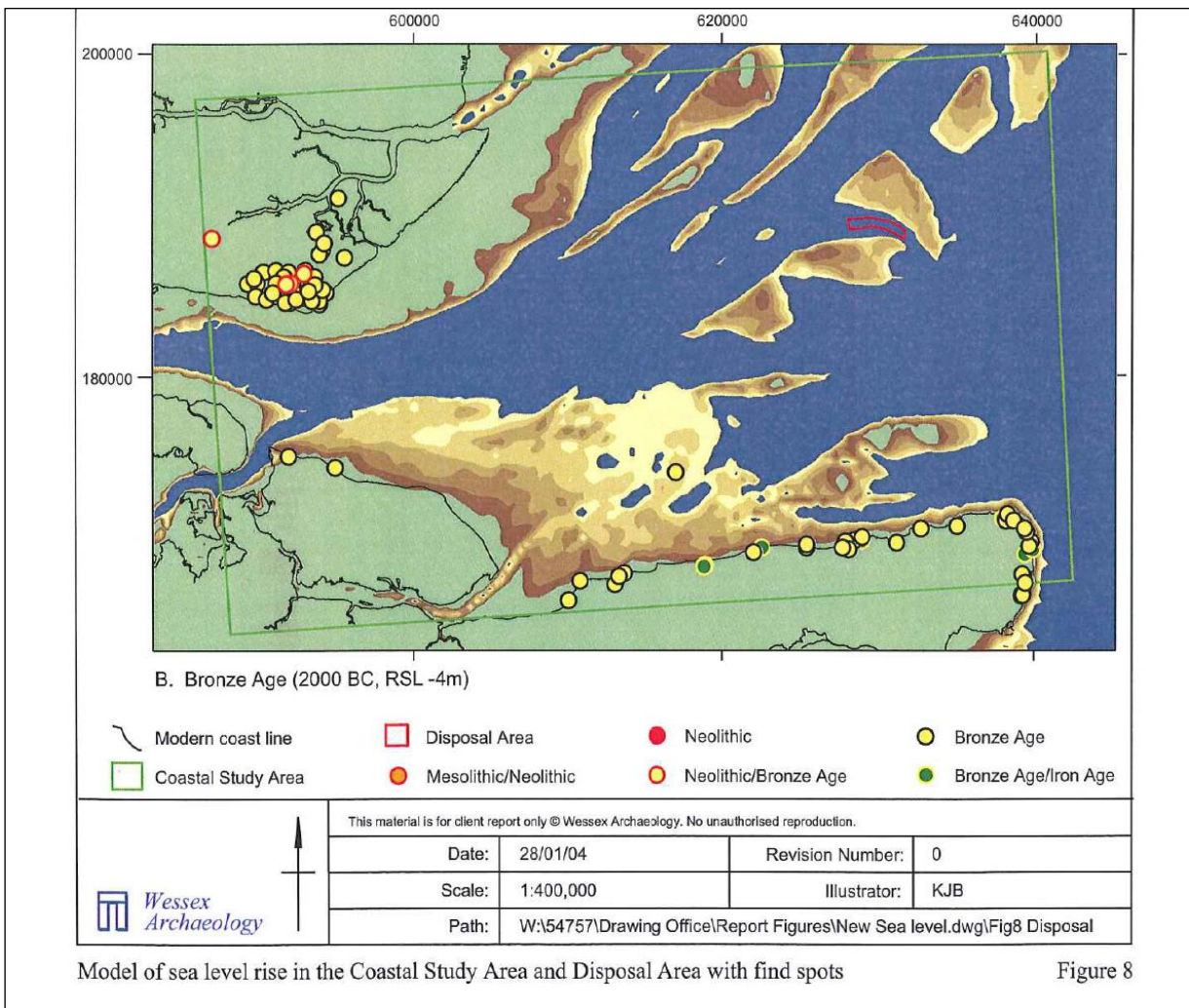
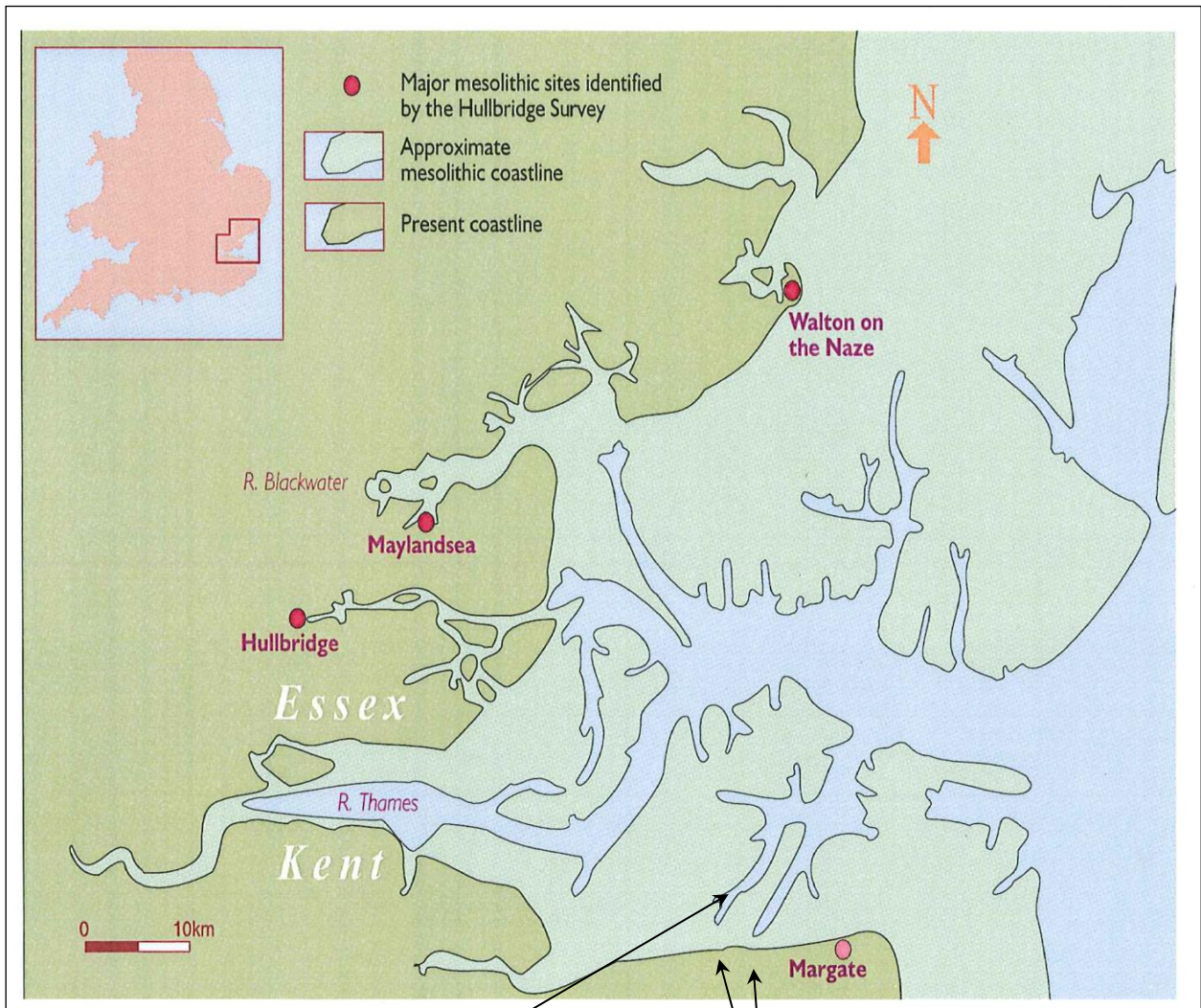


Illustration 3e. Single and assemblage finds to 2004

The yellow circles represent Bronze Age metalwork single and assemblage finds (data not referenced by the Trust). The Trust for Wessex Archaeology Ltd, (2004, p. 77)



Pan Shoal (Whitstable)

BA Whitstable-Tankerton-Herne Bay and Minnis Bay marine hinterland

Illustration 3f. Map of the North Kent and East Essex coastline during the Mesolithic to the Early Bronze Age. (Parsons Brinckerhoff Ltd. 2009, p. 10)

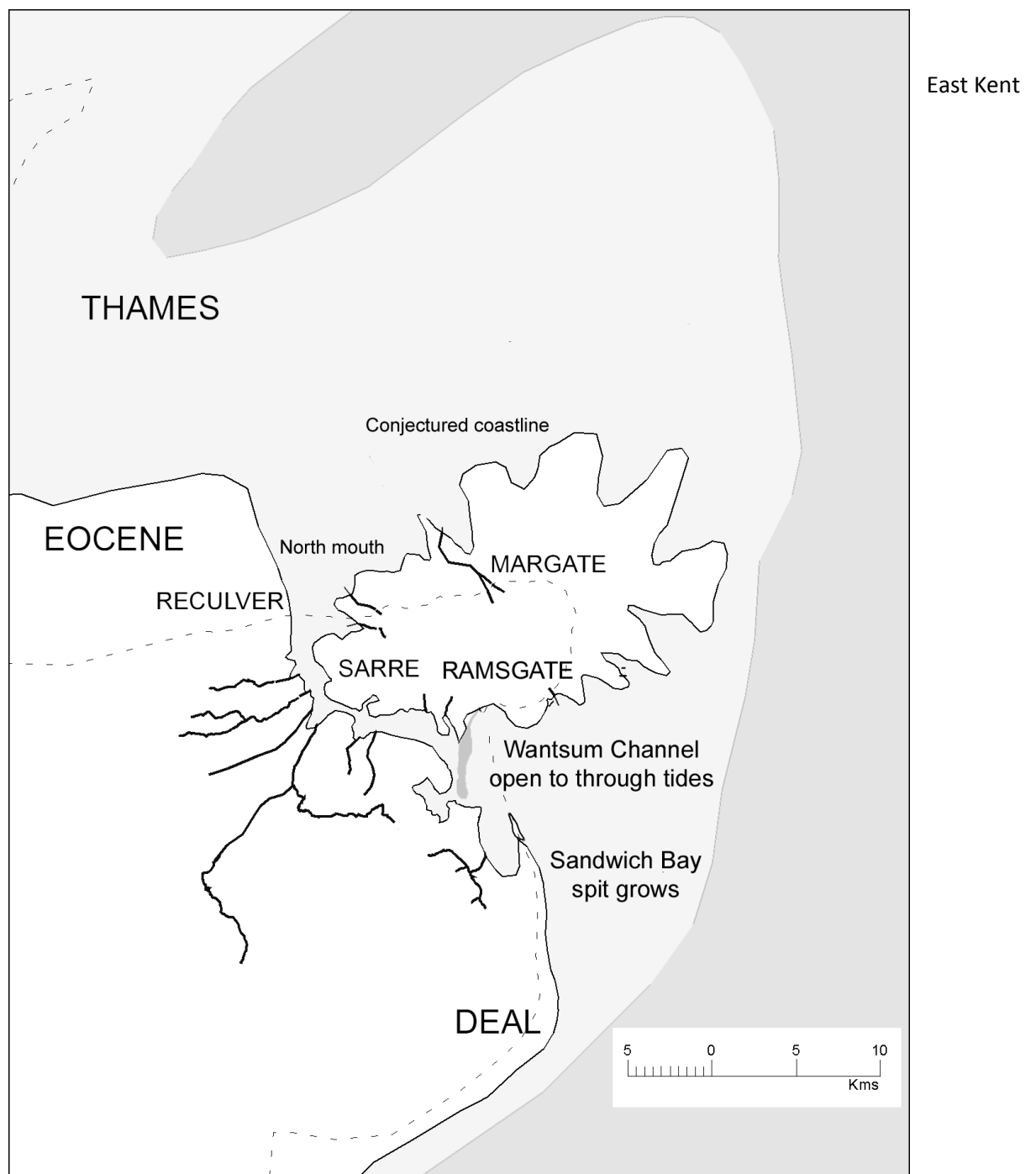


Illustration 3g. Conjectural coastline in the Neolithic / Early Bronze Age
 (from Moody, 2008, p. 50, based on Coles, 1998)

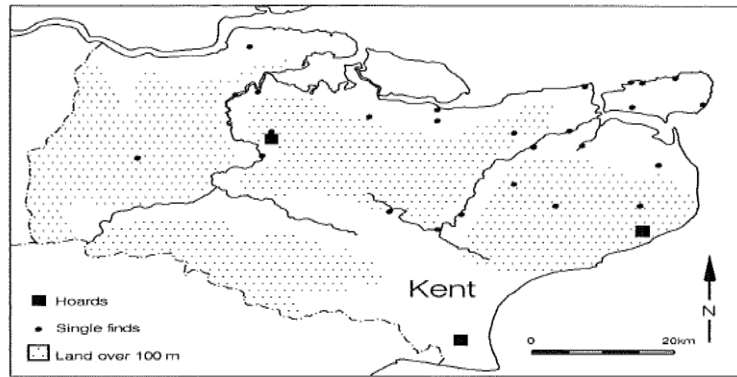
3.7 Distribution of Kent tin-bronze assemblages in relation to water courses

Comparison of some assemblages in Kent with river courses has already been covered in part recently by Yates and Bradley (2010). To expand upon their analysis, a more comprehensive overview that includes the 70 assemblages from the study area in this paper in relation to (modern) water courses is provided below.

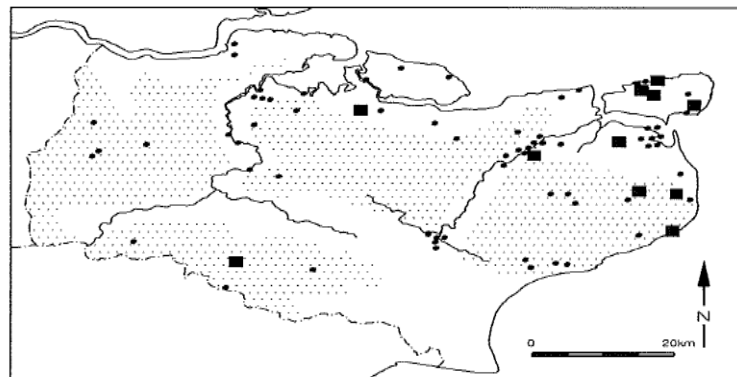
The comparison includes assemblages related in proximity to coastlines which can be conjecturally related to older estuarine or river courses that are now below sea level (Illustration 1 above). A full table of this information is found at Appendix I, Tables 23-26 'Kent tin-bronze assemblages located in or adjacent to modern streams, river, estuarine or spring systems', which also includes relationships to assemblages' which includes volume of material, depositional context, OD elevations and monument and settlement activity. This can also be correlated with Map 3, 'Map of Bronze Age tin-bronze metalwork assemblages in relation to river and other water courses in Kent' at Appendix 2.

3.7.1 It can be seen that many assemblages are close to water sources, but on reflection one could argue that due to the topography of not just Kent, but also many other regions within the British Isles, one would find oneself not far from any such water courses, in any direction. From any point in the British Isles, it is no more than 120 km away from the coast, and river, stream or spring systems even closer. If a similar perspective was taken for say, Hampshire, Wiltshire, Sussex or North Wales, the same would hold true.

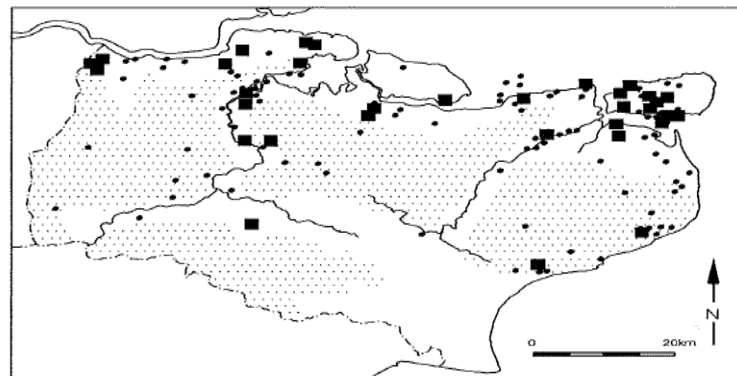
3.7.2 Nevertheless, the Ebbsfleet groups I-V [ds 28-31 & 65] in particular and the remaining Thanet and west Kent assemblages in the Medway area could most certainly reflect the association with water-borne transport activity and such modes aiding distribution. This has been exemplified previously by Bradley and Yates (2010) in their own distribution maps which include single finds as well as assemblages:



Distribution of Early Bronze Age metalwork
2000 - 1500 BC



Distribution of Middle Bronze Age metalwork
1500 - 1000 BC



Distribution of Late Bronze Age metalwork
1000 - 700 BC

Figure 3.1 Bronze Age metalwork in Kent. Compiled from data supplied by Martyn Barber. The maps show the accumulating scale of metal deposition and the importance attached to key routeways, particularly the Wantsum Channel in the north east corner of the county

Illustration 3h. Bronze Age metal work in Kent

From Yates and Bradley, 2010 pp. 41-72

3.8 Marine transport and distribution

From the conjectural maps above it can be discerned that although there is present evidence for a distinct line of finds along the present day shores of north Kent (Faversham-Whitstable-Herne Bay axis in particular), they are very likely only the 'high-tide markers' for assemblages. The density of finds along this coastal area strongly suggests that there may be substantially more potential artefacts lying off the north Kent coast as alluded to by singular finds already recorded from the seabed (Wessex Archaeology, 2004, 38-45).

3.8.1 Of course, it could be argued that this density of finds, predominantly LBA in origin may have been known of and remembered. Then, as the coastline changed, they were removed and transported further inland to be re-located as coastal erosion and sea levels altered. Although this could be somewhat far-fetched it has always been assumed that assemblage depositions have been static since their initial placement and have not been subject to mobility by human interaction. That so many LBA assemblages in this regional sector have no obvious context for dug pits or containerisation may be an indicator for a practice of later, hurried re-location.

3.8.2 Some, clearly from the evidence from the excavations and Bronze Age assemblage and settlement evidence at Minnis Bay for example [ds 46] were subject to inundation along with its associated later overlaying settlement in the Iron Age, although there was clearly an attempt to create a man-made shingle bank of substantial proportions between the Bronze Age and Iron Age epochs to protect the site which was inevitably over-whelmed by nature. This also signifies that this settlement was occupied for many centuries and that the inhabitants were tenacious in their attempts to preserve the habitation.

Overland distribution

3.9 Any load, regardless of commodity type can be transported in two ways during the Bronze Age; water-borne or overland. The contents of individual assemblages or load could determine the mode of transport. It must be assumed that the weightier assemblages (by volume) were via marine transport with the lighter loads by human or animal transport. The Langdon Bay assemblage [ds 10] (if indeed it was transported by boat, which is currently under debate) was substantial in volume of tin-bronze material. Yet the later LBA assemblages at Boughton Malherbe [ds 19], Crundale [ds 26] and Marden [ds 45] which are just as significant in volume could only have been transported, finally, to their depositional sites by human or animal transport due to their topographical location, either in whole or in parts.



Illustration 3i. Photograph of Pett Level Beach (East Sussex)

Here, at Pett Level Beach, the remains of petrified ancient woodland are below the sand. The wood shown in the picture is younger. The Lydd assemblage [ds 2] is thought to have been deposited in a similar wooded environment when the land was 12 metres higher. [Internet]

http://www.google.co.uk/imgres?imgurl=http://www.pentaxforums.com/forums/attachments/post-your-photos/39100d1247872079-pett-level-beach-3730871022_7f15cd47d8_b-2

Chapter 4

Issues with contextualising and Analysis

4.1 Issues with contextualising

4.1 Placing assemblages into context is problematic. Many assemblages have been recovered in antiquity when modern archaeological practices were not employed, such as taking soil samples in the immediate stratigraphical area, or attempting to assess whether a container had been present at deposition, or a wider area of excavation of the depositional site that may have a relationship to the assemblage for example. The chronology of individual assemblages presents a similarly challenging perspective, particularly where typology comes in to play as many groups have a mixture of EBA, MBA and LBA components. Even after initial deposition it is also quite likely that assemblages may have been re-visited and altered in their composition by adding to, or removing individual artefacts or groups of them.

4.2 Taking all these variants and challenges in to account, this section will endeavour to look at the context of Kent assemblages, where context is available. The difficulty with many of the assemblages recovered is that there is little or no explicit context known. The relatively few exceptions are those such as Ebbsfleet IV and V [ds 30 & 31], Crundale [ds 26], Herne Bay I [ds 32] and Hoaden I [ds 35], which were controlled excavations. In addition, only two of the assemblages at Herne Bay I and St. Mildred's Bay [ds 32 & 13] were located within a defined enclosure of possible contemporary Bronze Age habitation, but not within building structures.

4.3 Some assemblages certainly reflect deposition using containers of one sort or another. The assemblages from Aylesford I [ds 1]) Birchington [ds 5], Minnis Bay [ds 46] and Herne Bay I [ds 32] for example were containerised, using cist or box-work, pottery or wickerwork. The small group from Dartford I [ds 8] had evidence for a textile material 'packaging' or 'parcelling' the contents.

4.4 None of the Kent assemblages contain obviously prestige items, although several contain what can be termed as conventionally exceptional objects on account of size, complexity of manufacture or raw materials. Numbers of amber beads are present in the Hundred of Hoo assemblage [ds 41] and small quantities of gold wire in the LBA Ringlemere group [ds 51], which can be considered 'prestige' artefacts. The Ringlemere assemblage may have a relationship to the EBA gold Ringlemere Cup (Needham, Parfitt and Varndell, 2006), although Needham disputes such a scenario (2004 p. 39).²

² Needham explains his reasoning in the Ringlemere datasheet [ds51]

Analysis

4.5 The Assemblages Compendium

The Assemblages Compendium (Appendix 1) has been constructed so that it lists specific items from assemblages to aid comparison and quick reference. Where there is no National Grid Reference (NGR) provided, this is due to the assemblage having been recovered in antiquity or more recently with no record of the exact location, or more contemporary finds where metal detectorists have been reluctant to divulge information to the PAS or County Finds Liaison Officer. This has also impinged on data for elevation or where the OD maps are not very clear and the data has therefore been omitted. Additionally, it has not been possible to corroborate some assemblage's contents physically with the information from references:

Table 4a Assemblage whereabouts: lost, missing, incomplete and divided

Confirmed EBA assemblages

Assemblage number	Assemblage name	Total objects	Date of discovery	Assemblage in the possession of (number of artefacts)
1	Aylesford I	3	1899	unknown
2	Lydd	5	1985	British Museum (4) and Kent Archaeological Rescue Unit (1)
3	Buckland	4	1856	Dover Museum (3) remaining axe lost

Confirmed MBA assemblages

Assemblage number	Assemblage name	Total objects	Date of discovery	Assemblage in the possession of (number of artefacts)
4	Ash-next-Sandwich	3	1983	Canterbury Museum (1) local residents (2)
6	Broadstairs	7	U/K	British Museum (unable to locate)
7	Canterbury	4	1998	British Museum (unable to locate)
9	Goudhurst	8	1800's	British Museum (3) (unable to locate)
13	St Mildred's Bay	10	1987	unknown
15	Westgate	27	1724	unknown

Table 4a Assemblage whereabouts: lost, missing incomplete and divided - continued

Confirmed LBA assemblages

Assemblage number	Assemblage name	Total objects	Date of discovery	Assemblage in the possession of (number of artefacts)
17	Bexleyheath	79	1930	British Museum (provenance issue)
18	Borstal	44	1983	Rochester Museum (4) remainder lost
23	Chislet III	9	1876	unknown
24	Cliffe-at-Hoo	8	U/K	unknown
28	Ebbsfleet I	172	1893	Canterbury Museum (8) British Museum (remainder)
29	Ebbsfleet II	179	1890	British Museum (unable to locate)
33	Herne Bay II	4	1981	British Museum (unable to locate)
34	Higham-at-Hoo	U/K	1906	unknown
35	Hoaden I	7	1974	British Museum (unable to locate)
41	Hundred of Hoo	81	1747	unknown
43	Lenham I	13	2004	Finders unknown
44	Lenham II	21	U/K	unknown
45	Marden	216	1858	Maidstone Museum (91) remainder unknown location
52	Rochester	39	U/K	British Museum (unable to locate)
53	Saltwood	38	1872	Folkestone Museum (?), British Museum (1) Private hands (some)
54	Shuart	25	1982	unknown
56	Stoke-at-Hoo	32	1893	British Museum (unable to locate)
57	Stourmouth	42	1963	unknown
58	Sturry	18	1943	unknown
59	Swalecliffe	58	1922	British Museum (58) additional 36 missing
60	Tankerton	3	1955	unknown
64	Wingham	5	2008	unknown

Unconfirmed BA assemblages

Assemblage number	Assemblage name	Total objects	Date of discovery	Assemblage in the possession of (number of artefacts)
65	Ebbsfleet III	5	1992	unknown
66	St Mary's Hoo	2	1875	unknown

4.5.1 Where context of a deposition is known, full details can be found in the appropriate datasheet.

Where it is indicated that metalworking related tools or ash are present at the deposition, or other precious items such a gold wire or amber beads , reference should be made to the datasheets as the tin-bronze artefacts are the centre of attention for this dissertation.

4.5.2 The issue of whether ingots or cake or bun-ingots should be included in the analysis is open to debate, as it can be argued that *all* items within the assemblage can be viewed as 'ingots' (Kuijpers, 2008, 73). Some ingots are of alloy and in some cases pure copper, and in the single case of Boughton Malherbe, lead, which was used to assist in making more intricate items during casting. However, elements that can be interpreted as cake/bun ingots and those with casting and waste slag or jet-runners have been listed for the purposes of analysis of the assemblages (see Table 4b below).

Comparison between the far eastern and western Kent regions of assemblages (LBA)

4.5.3 The most striking feature of the Main Distribution Map (Map 1, Appendix 2) is the proliferation of assemblages in the far east and west of Kent. The EBA assemblages are of such low frequency, and their deposition can be interpreted in such different ways due to their deposition and contexts that it is not felt their inclusion is beneficial in this particular analysis.

4.5.4 The high frequency of MBA assemblages in east Kent is notable as are the concentration of LBA assemblages in far eastern and western Kent. To this end, two distinct regional concentration of LBA and MBA assemblages for far east Kent (EK) and far west of Kent (WK) are listed for the purposes of comparison, and these are reflected in Tables 13-14 at Appendix 1.

4.5.5 As some of the 'outlier' assemblages are deeper within the hinterland of Kent and not associated with watercourses, valleys (or possibly track-ways) it is very precarious to assume that they are in any way affiliated with these assemblage concentrations (for example, Lenham I & II [ds 43 & 44] and Marden [ds 45], and mid-way coastal areas such as the Isle of Harty and Sittingbourne. Of course, there are likely to be many more undiscovered assemblages further inland or information on discoveries not yet in the public domain, which may change this pattern of distribution.

The EK and WK regional concentrations have been divided thus:

WK region

EBA

1. Aylesford I

LBA

16. Allhallows
17. Bexleyheath
18. Borstal
24. Cliffe-at-Hoo
27. Dartford II
34. Higham-at-Hoo
37. Hollingbourne I
38. Hollingbourne II
39. Hoo
40. Hoo St. Werburgh
41. Hundred of Hoo
49. Offham
52. Rochester
56. Stoke-at-Hoo
63. Wickam Park
8. Dartford I
66. St. Mary's Hoo

EK region

EBA

2. Lydd
3. Buckland

MBA

4. Ash-next-Sandwich
5. Birchington
6. Broadstairs
7. Canterbury
10. Langdon Bay
11. Ripple I
12. Ripple II
13. St. Mildred's Bay
14. Tilmanstone II
15. Westgate

LBA

21. Chislet I
22. Chislet II
23. Chislet III
26. Crundale
28. Ebbsfleet I
29. Ebbsfleet II
30. Ebbsfleet IV
31. Ebbsfleet V
32. Herne Bay I
33. Herne Bay II
34. Higham-at-Hoo
35. Hoaden I
36. Hoaden II
46. Minnis Bay
47. Minster-in-Thamet
48. Monkton Court Farm
50. Ramsgate
51. Ringlemere
53. Saltwood
54. Shuart
57. Stourmouth
58. Sturry
59. Swalecliffe
60. Tankerton
61. Tilmanstone I
62. Waldershare
64. Wingham

4.6 Composition and profiles of assemblages

A profile of the material from all assemblages in Kent can be seen Appendix 1, Tables 1-36. The EBA material includes only eight items and has not been represented in graph form as there is no meaningful profile to discern.

4.6.1 From the data, the profile of MBA and LBA assemblages reveal the type of material being deposited. In the MBA in the subject area, there is a predominance of palstaves (and remains of) x 199, and sword / knife blades (and remains of) x 180 (see Table 6 at Appendix 1) being included in the depositions, with a lesser inclusion of early socketed axe heads (Taunton-Hademarschen type) and a scattering of flat winged axes and spearheads. In the LBA there is a propensity of socketed axe heads (and remains of) numbering 759 specimens, sword blades (and fragments thereof) numbering 585 specimens, cake and bun ingots totalling 443 and alloy fragments with 302 items. The other notable quantities comprise spearheads (and fragments) numbering 141 items and 32 sheet metal pieces (see Table 11, Appendix 1).

4.6.2 A summary of the frequency of metalwork assemblages and artefacts over the three Bronze Age epochs is shown in the following graphs:

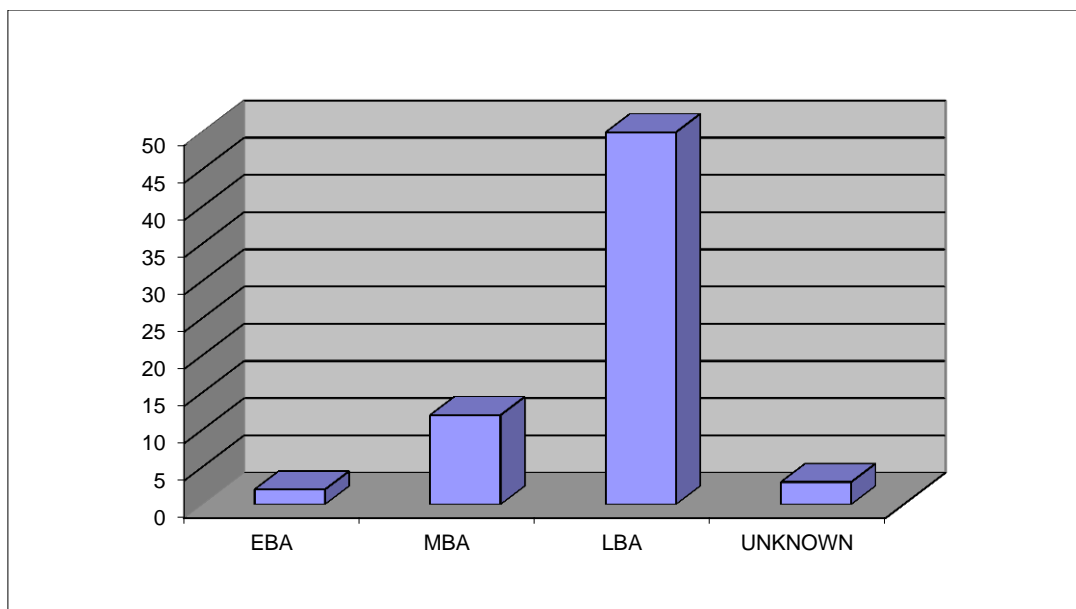


Illustration 4a. Graph 1. Frequency of assemblages by Bronze Age era

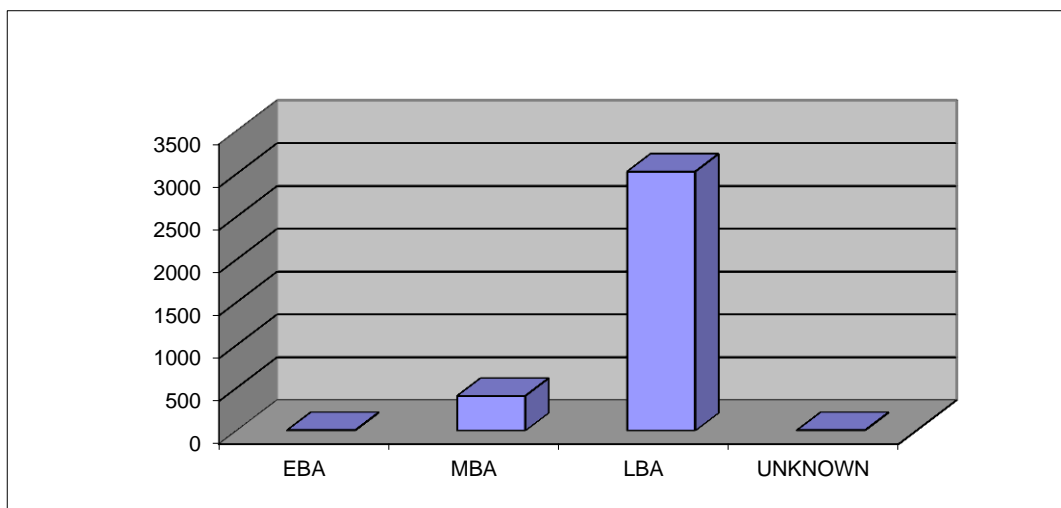


Illustration 4b. Graph 2. Frequency of items in assemblages by Bronze Age era

4.10 A much more eclectic mix of tools, horse furniture and weaponry emerge in the LBA record as well as the emergence of 'Ornament Horizon' artefacts such as bracelets (34) and rings (53) in the MBA.

4.11 The abundance of LBA material over EBA and MBA material is clearly significant, particularly in the EK regional concentration, although the bulk of MBA finds are also in the EK region. Assemblages that include metalworking tools and weapon moulds are few but this does not preclude local manufacture which may be suggested by the assemblage from the Isle of Harty which includes a rare whetstone and bivalve axe moulds [ds 42], Ebbsfleet IV [ds 30] and sword moulds from Snodland (see Chapter 5, 5.3.25). 'Assemblages in a metalworking context'), as well as ring moulds from an excavation at Mill Hill (Deal) mentioned by Champion (1980, p. 237, from Stebbing (1934, p. 207-9)), as well as Boughton Malherbe [ds 19] and a fragment of a mould among the Stoke-at-Hoo group [ds 56], along with sword moulds from Highsteads, Chislet. Evidence of metalworking is also found at the Ramsgate site. [ds 50].

4.12 Several notable observations on profiles of assemblages can be made and these include the absence, largely of ingots, bun / cake ingots or cast waste in the EBA and MBA assemblages but are prevalent in the LBA:

Assemblage	Axe heads & fragments	Spearheads & fragments	Sword & Dagger fragments	Cake / Bun Ingot	Other Objects	Total	Era
18. Borstal	18	1	10	26	15	70	LBA
26. Crundale	48	14	33	33	57	185	LBA
27. Dartford II	10	0	1	20	2	33	LBA
32. Herne Bay I	11	4	0	12	0	27	LBA
39. Hoo	40	8	19	30	50	147	LBA
40. Hoo St Werburgh	54	15	31	34	39	174	LBA
42. Isle of Harty	13	0	2	2	15	32	LBA
45. Marden	1	4	4	1	74	84	LBA
46. Minnis Bay	23	2	10	1	35	71	LBA
47. Minster-in-Thanel	14	0	5	2	17	38	LBA
48. Monkton Court Farm	17	0	12	2	20	51	LBA
50. Ramsgate	33	4	10	20	19	86	LBA
55. Sittingbourne	4	0	1	20	7	32	LBA
56. Stoke-at-Hoo	0	0	6	22	1	29	LBA
57. Stourmouth	18	3	10	11	7	49	LBA
61. Tilmanstone I	1	0	2	11	2	21	LBA
64. Wingham	1	0	0	4	0	5	LBA

4.13 The following Table (4c) provides a summary of assemblages with the highest volume of material (over 60 items) or by weight. In the case of Sittingbourne [ds 55] although the number of artefacts are low the presence of 30lbs (13.6 kg) of amorphous tin-bronze accounts for its significant volume. It is quite notable when comparison is made to the Main Distribution Map (Map 1, Appendix 2) that many of the colossal 'super-assemblages' (Boughton Malherbe, Marden, and Waldershare) are not located near any known Bronze Age settlement sites or monuments. The Boughton Malherbe and Marden assemblages are in very close proximity to each other, far inland. The two Ebbsfleet groups (I & II, [ds 28 & 29]) are coastal and in an area of large numbers of assemblages, settlement and monument structures. The Waldershare assemblage of primarily sword blade fragments is not located near settlement and is also quite far inland. The significance of the large 'depot' assemblages at Boughton Malherbe, Crundale and Marden is considered in more detail in Chapter 6, 'Discussion' (6.14).

Assemblage number	Assemblage name	Total objects in assemblage
10	Langdon Bay	297
16	Allhallows	63
17	Bexleyheath	79
19	Boughton Malherbe	364
26	Crundale	185
28	Ebbsfleet I	172
29	Ebbsfleet II	179
39	Hoo	149
40	Hoo St Werburgh	174
41	Hundred of Hoo	81
45	Marden	216
46	Minnis Bay	69
48	Monkton Court Farm	57
55	Sittingbourne	12*
59	Swalecliffe	58
62	Waldershare	350
	Total	2196

*Sittingbourne contains 30 lbs (13.6 kg) of amorphous tin-bronze

4.13.1 The following Graphs (c, d and e) manifest the types of artefacts in the MBA and LBA assemblages from the subject area:

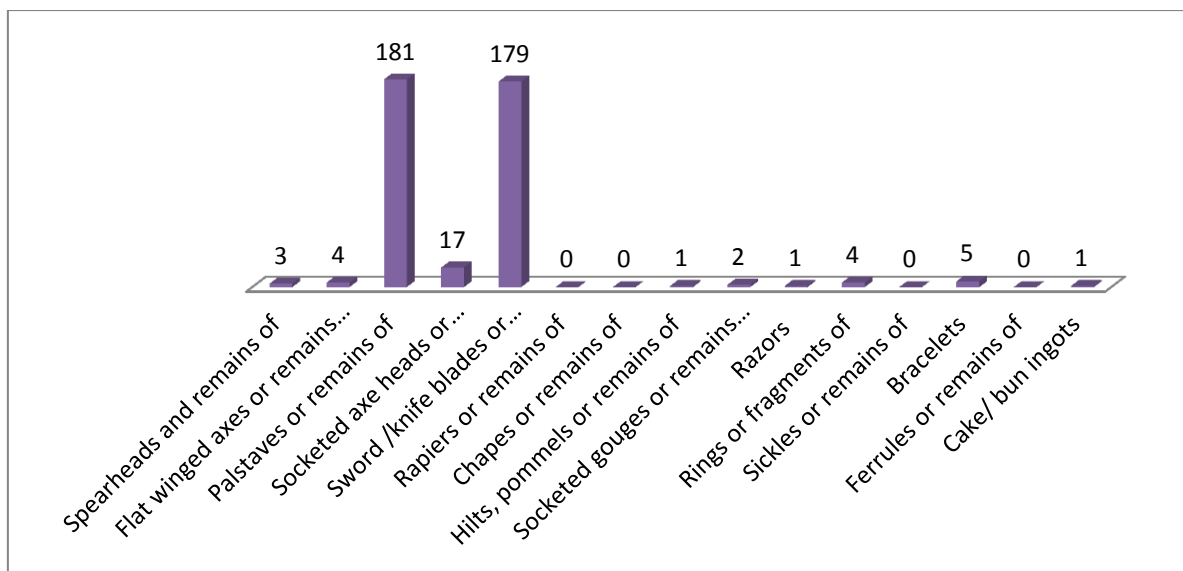


Illustration 4c. Graph 3. Profile of Middle Bronze Age assemblage artefacts

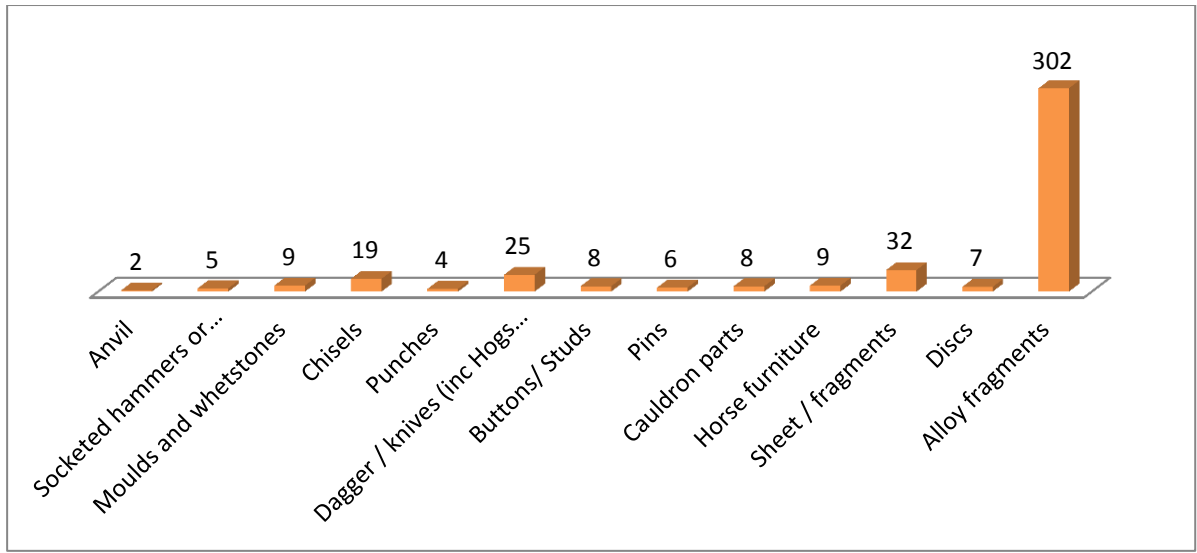


Illustration 4d. Graph 4. Profile of Late Bronze Age assemblage artefacts

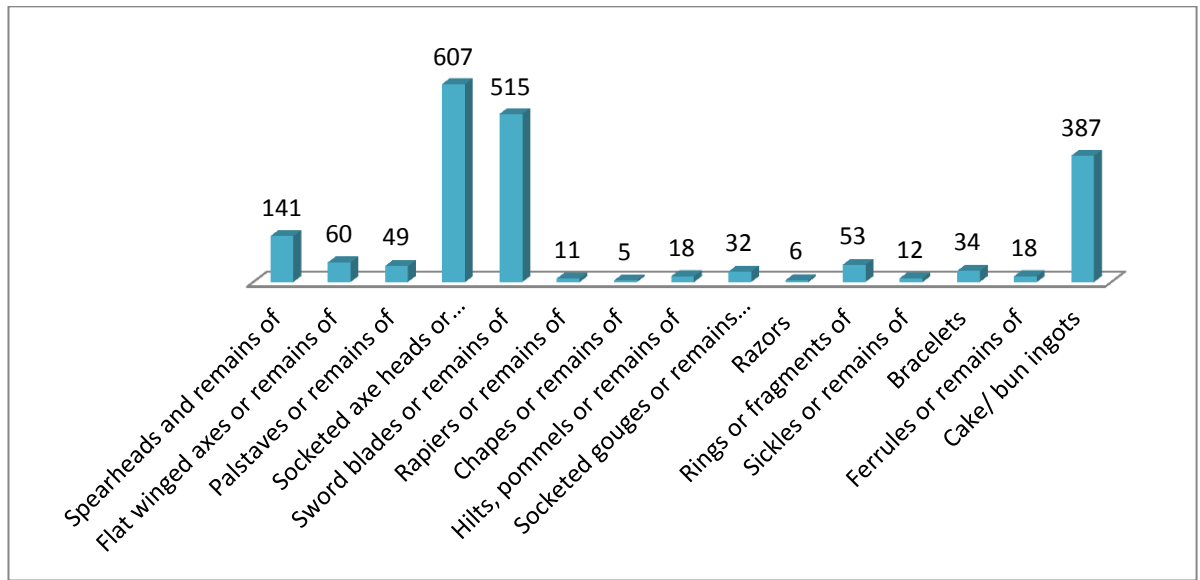


Illustration 4e. Graph 5. Profile of LBA assemblage artefacts

4.13.2. Table 4d below provides analysis of assemblages that contain earlier items in their inventory. All are LBA assemblages with the exception of Tilmanstone II [ds 14] and Bexleyheath [ds17]

Table 4d - Assemblages containing earlier typology				
Assemblage number	Assemblage name	Total objects in assemblage	EBA items	MBA items
14	Tilmanstone II (MBA)	23	riveted, triangular dagger	-
17	Bexleyheath	79	flat, winged axe	-
27	Dartford II	33	-	fragment looped palstave
28	Ebbsfleet I	172	complete flat axe head	6 looped palstaves
29	Ebbsfleet II	179	-	10 palstaves
36	Hoaden II	34	-	fragment of palstave stop-ridge
41	Hundred of Hoo	81	2 flat axes	60 palstaves & axe heads, 2 rings
45	Marden	216	-	107 fragments of rings / bracelets
46	Minnis Bay	69	-	rings / bracelets
49	Offham	26	-	2 bronze sickle fragments
55	Sittingbourne	12	-	6 bronze rings
58	Sturry	18	-	palstaves and winged, looped axes
60	Tankerton	3	-	1 winged axe
62	Waldershare	350	-	1 palstave
63	Wickham Park	34	-	3 looped palstaves

4.13.3. Where height datum (OD) is known from assemblage sites, these have been plotted to show the number of assemblages (x-axis) between certain heights (y-axis):

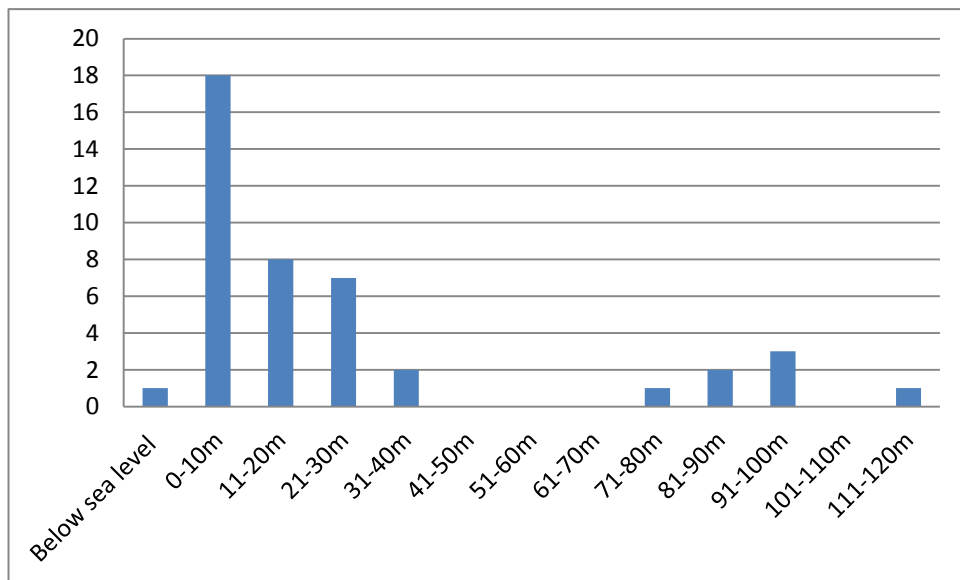


Illustration 4f. Graph 6. Assemblages by elevation (OD)

4.14 Assemblage depositions that may infer votive, superstition or ritual practice

Some assemblages from this study could infer some sort of ritual or superstition in the way they have been physically placed in the ground. This can be inferred through the use of a container or placement and treatment of individual artefacts and location. A prime example is that of Hollingbourne II [ds 38] where the photograph in the datasheet (pre-lifting) shows the context in which the items were deposited, with three socketed axe heads planted blade first into the pit surrounding the remaining fragments of sword blades, axe heads, spearhead fragment and ingots in the centre. These items do not appear to have been just 'randomly thrown' in to a storage pit but carefully arranged.

Particular assemblage examples include:

Allhallows [ds 16] - earthenware pot container (LBA)

Aylesford I [ds 1] - globular pot in an inhumation (EBA)

Birchington [ds 5] - earthenware bowl container (MBA)

Chislet III [ds 23] - not far from a furnace and nearby BA pyre/cremations and settlement (LBA)

Crundale [ds 26] - evidence for sorting – copper cake underneath and remainder scattered on top, small pieces of scrap packed in to sockets (LBA)

Dartford I [ds 8] - evidence of textile wrapping or cover (MBA)

Goudhurst [ds 9] - axes'...laid out, one upon the other in twos' (EBA-MBA)

Herne Bay I [ds 32] - in a pottery container in an oval shaped pit (MBA)

Hoaden II [ds 36] - pottery container (LBA)

Hollingbourne II [ds 38] - found in a pit with three axe heads all placed vertically, blade downwards, with a complex of ingots, spearheads and a blade wedged in between them (LBA)

Hoo St. Werburgh [ds 40] - scrap pieces packed in to sockets (LBA)

Hundred of Hoo [ds 41] - container of a cist or box

Langdon Bay [ds 10] - reputed shipwreck but no evidence for one, possible sea deposition (MBA)

Minnis Bay [ds 46] - within a concentrated Bronze Age settlement (LBA)

Minster-in-Thamet [ds 47] - located in deliberately cut pit with a calcined floor, near ash and slag deposits in a well known Bronze Age settlement area (LBA)

Ramsgate [ds 50] - pottery container (LBA)

Ripple I [ds 11] - located in the top of a Bronze Age ditch (MBA)

Sittingbourne [ds 55] – finds are in two separate urns divided between axes, gouge and pure copper ingots in one, and rings and bronze blade in the other. A skeleton was found directly 12 feet (3.65 metres) below (LBA)

St. Mildred's Bay [ds 13] - Found within a large Bronze Age settlement, the palstaves were found laying in a row with their cutting edges vertical and pointing inshore on a line roughly south east. Two of the palstaves were fragmented in such a way that would normally require considerable force. Among organic remains found with the palstaves, included birch bark, their inner surfaces bearing cast

impressions left by palstaves, and fragments of what appeared to be grass blades. While reconstruction was not possible, these materials seem to have once formed some kind of container for the assemblage (MBA)

Stourmouth [ds 57] - found in a black pot with finger marking decoration – since broken and lost (LBA)

Waldershare [ds 62] - packed into a flint tempered poor quality clay pot (LBA)

4.14 Typology

The typology of some of the artefacts has been drawn together below from information extracted from the datasheets as well as identification from illustrations and photographs provided therein. On the whole, the identification of typology and Bronze Age era has been made by the holding Museums or Find Liaison Officers and their comments are included in the datasheets.

4.14.1 Only cases where the typology is very clear have they been included in this summary. Much of the material from the remaining assemblages is so fragmentary that it is difficult to analyse or even speculate upon their typology. Mostly sword hilts, near complete palstaves and some socketed axes provide the clearest determination of typology as well as the MBA 'Ornament Horizon' material. Where typology has been discernible it is provided at Table Nos. 19-22 at Appendix 1.

4.14.2 There is strong representation of a wide range of typology in the Kent assemblages. Items that originate from Wales, Gloucestershire, Thames Valley, East Anglia and the Isle of Wight, Normandy and Brittany are in evidence. The later Ewart Park, Wilburton and Carp's Tongue phase material is also well distributed and it is difficult to see whether there is any particularly strong correlation to any specific typology being concentrated in one area of Kent, such as Wilburton phase or Ewart Park material.

4.14.3 Looking at the numerous range of socketed axes, high proportions (and by percentage of artefacts therein) are found in the assemblages at Buckland (14 items), Crundale (48), Ebbsfleet I (66), Ebbsfleet II (61), Hoo (40) and Hoo-St-Werburgh (54), Hundred of Hoo (60), Monkton Court Farm (24), Ramsgate (42), Rochester (28), Saltwood (21) and Swalecliffe (13).

A lesser propensity of spearheads in assemblages is noteworthy; however some groups have significant numbers, which include Boughton Malherbe (15), Broadness (28), Crundale (14), Ebbsfleet II (8), Hoo (8) and Hoo St. Werburgh (15).

4.14.4 Palstaves have a wide distribution in Kent and are also represented in some LBA assemblages. Large numbers are indicatively present in the MBA Kent record, particularly Birchington (14), Goudhurst (8), Langdon Bay (109), St. Mildred's Bay (10) and Westgate (27). Within the LBA assemblages can be found palstaves such as that at Tilmanstone II (18), Ebbsfleet I (6) Ebbsfleet II (10), almost exclusively at

Herne Bay I (9) and Wickham Park (3). Earlier EBA or MBA flat-winged axes (in whole or fragments) are also found among LBA groups which include Herne Bay I (1), Hoaden I (1), Hundred of Hoo (2), Minnis Bay (4), Ramsgate (1), Stourmouth (1), Sturry (4) and Tankerton (1).

The typology and 'stages' of Bronze Age metalwork are given below (Needham et al , 1997, pp. 55-107) which give associated examples from other parts of the British Isles and the continent;

EBA phases; 2100-1400 BC

- Stage IV - Migdale-Killaha
- Stage V - Aylesford-Colleonard
- Stage VI - Willerby Wold
- Stage VII - Arreton-Inch Island

4.14.5 Three groups from the EBA period are found in Kent;

1. Aylesford I [ds 1] - associated with the Wessex Series (Burgess and Coombs, 1979, BAR 76)

2. Lydd [ds 2] - 'this group has been identified as being of the Arreton Down complex (Isle of Wight), classified as class 4E axes (Burgess & Richardson, 1985). Two single finds from Westbere and Medway Brassworks at Maidstone are also known. Other examples are known of from York, Penrhyndeudraeth, Gwynedd and Cumbria, Dumfries and Galloway, and Glenalla, Co. Donegal and Trenovissik, Cornwall and Bandon, Co. Cork as well as Ballinacre, Co. Derry, Ireland. '(Needham, 1988, pp. 77-82)

3. Buckland Brickfields [ds 3] – contains flanged winged axes of the Plymstock and Westbury-on-Trym form

MBA phases (and 'Ornament Horizon' material) 1500-1000 BC

- Stage VIII - Acton Park I
- Stage VIII - Acton Park 2
- Stage IX - Taunton
- Stage X - Penard I
- Stage X - Penard 2

Twelve MBA assemblages are known of in Kent:

Ash-next-Sandwich [ds 4] - three Acton Park shield pattern palstaves similar to the Chepstow Ridge (Gloucester) Group 2

Birchington [ds 5] - one mid-ribbed palstave identical to one from Cemmaes (Powys), the remaining 14 palstaves being of Acton Park shield-pattern (Group 2) type

Broadstairs [ds 6] - rings from 'Ornament Horizon'

Canterbury [ds 7] - one palstave similar to a converging ribbed palstave from Chepstow (Gwent)

Dartford I [ds 8] - unconfirmed but suggests MBA

Goudhurst [ds 9] - 'eight palstaves...laid out, one upon the other in twos.' (un-looped)

Langdon Bay [ds 10] - 352 items make this by far the largest group of metalwork in northwest Europe for this MBA phase of the Bronze Age (Penard/Bronze Final I). It contains some types that are familiar in neighbouring continental regions, but extremely rare in Britain

Ripple I [ds 11] - 5 un-looped winged palstaves, one (ribbed) variant similar to Chepstow (Gwent) and including three 'shield pattern' palstaves after Chepstow Bridge (Gloucestershire) typology

Ripple II [ds 12] - Chepstow (Gloucestershire) and Chepstow Ridge variant palstaves

St. Mildred's Bay [ds 13] - 10 un-looped, low-flanged palstaves, within the Anglo-Welsh series with similarities to the Birchington assemblage

Tilmanstone II [ds 14] – MBA items that contain EBA typology

Westgate [ds 15] - 27 looped and un-looped palstaves with stop-ridges

4.14.6 The typology and range of items from the MBA assemblages show some variation but not as extensive as many LBA assemblages. The Ash-next-Sandwich [ds 4] and Birchington caches [ds 5] both contain Acton Park phase shield-pattern palstaves and there are similar examples within the St. Mildred's Bay and Westgate groups [ds 13 & 15]. The remainder exhibit Penard phase (Langdon Bay [ds 10]), Chepstow, Plymstock and Westbury axe typology. 'Ornament Horizon' material is also represented in the form of rings and bracelets in the assemblages from Broadstairs [ds 6], Ripple II [ds 12] and St. Mildred's Bay [ds 13] which are all located to the very far east of Kent, and in relative proximity to each other. Some MBA material is also found in later LBA assemblages (see Table d at 4.2.9).

4.14.7 The typology within the LBA distribution is more varied than those experienced in the MBA assemblages in the subject area. The materials in larger LBA assemblages display some predominant concentrations of metal work phase typology whilst others have a mixture. For example in the Allhallows assemblage [ds 16] material has been identified as belonging to the Ewart Park and Carp's Tongue metalworking phases, and at Crundale [ds 26] specimens from both the Ewart Park and Wilburton phases (see Appendix 1, Tables 19-22).

There are also some singular continental 'erratic' typologies present such as Taunton-Hademarschen type (Crundale, [ds 26]), 'Lappenmuster' (Stourmouth, [ds 42], and 'Plainseau' type axes (Hoaden II, [ds 36]).

LBA phases (1000-600 BC)

- Stage XI - Wilburton and association with St Brieuc-des-Iffs, northern France
- Stage XII - Ewart Park 1
- Stage XII - Ewart Park 2
- Stage XIII - Llyn Fawr

4.14.8 Fifty-eight LBA assemblages are represented in Kent:

Aylesford II [ads 2] – includes one looped and socketed axe with square mouth

Bexleyheath [ds 17] - includes one Wilburton phase sword (fragmented)

Broadness [ds 20] - spearheads of Broadward Type II and Wilburton metalwork phase

Crundale [ds 26] - square-mouthed socketed axe similar to a specimen from Worthing (West Sussex) or earlier Taunton-Hademarschen type. Wilburton / Ewart Park series spearheads are present

Dartford II [ds 27] - one socketed axe similar to Welby (Leicestershire) and others from Welsh series (Stogursey), Llanwitt (South Glamorgan)

Ebbsfleet I [ds 28] - includes three axes similar to Welby (Leicestershire) and others possibly from Welsh series (Stogursey), Llanwitt (South Glamorgan). One axe head of south-eastern style (Cheddar, Somerset). Five riveted sword hilts of typical Wilburton phase origin. Interestingly, most of the socketed axe heads are very worn on the blades opposite to the loop side (author's observation - see photograph on datasheet).

Ebbsfleet V [ds 31] - includes three distinctly ribbed socketed axe heads similar to Welby (Leicestershire) - see photograph at datasheet

Hoaden II [ds 36] - the assemblage shows similarities with those found at Drieul, Somme, north-west France and also with one in the Minnis Bay group. PAS date to Ewart Park metalwork phase (1000-800 BC). See illustration at datasheet

Hollingbourne I & II [ds 37 & 38] - includes six sword blade fragments (Carp's Tongue phase)

Hoo [ds 39] - one sword hilt, more reminiscent of Ewart Park phase than Wilburton, but with the absence of a blade or blade fragments it is difficult to see if it would have had a curved or later straight blade (Ewart Park). See illustration B2 on datasheet

Hoo St. Werburgh [ds 40] - two of the socketed axe heads (far right in the lower photograph (datasheet) are similar to the decorated specimens from Worthing, West Sussex with an hour-glass decoration at the socketed end

Hundred of Hoo [ds 41] - three axes similar to that of Beachy Head, East Sussex typology (Penard phase - see upper illustration at datasheet)

Isle of Harty [ds 42] - two socketed axes with similarity to Worthing (West Sussex) typology

Marden [ds 45] - LBA assemblage (socketed items) with a substantial portion of 'Ornament Horizon', such as bracelets and ring material indicative of the MBA

Minnis Bay [ds 46] - sword hilt fragment identical to that of Carp's Tongue sword from the River Thames (Pearce, 36) see datasheet, illustration at A3

Minster-in-Thanel [ds 47] - three sword hilt fragments of Ewart Park phase typology (specimens A1,2 & 3 in data sheet) and one of Late Wilburton phase (specimen A4) and three V-butted style, possibly Thames or Carp's Tongue phase (A5, 6 & 7)

Monkton Court Farm [ds 48] - Ewart Park phase bronzes including Carp's Tongue swords (see illustration at data sheet, specimens 1 and 1a)

Offham [ds 49] - one of the complete south-eastern type socketed axes (No. 9 in the PAS report) was noted of being a rare type, but has associations with those from the Stourmouth and Wateringbury assemblages. Ewart Park metalwork phase (Needham et al. 1997, 93), with the exception of the potential riveted sickle (Fox, 1939, 137-139) possibly Group A which may be older.

Ramsgate [ds 50] - sword and hilt fragments are all Ewart Park phase type, the socketed axes predominantly south-eastern Class A and several Class B specimens (see datasheet)

Ringlemere [ds 51] - according to Needham 'the socketed axe is the only securely datable object among the group, belonging to the Ewart Park stage of the Late Bronze Age' (Needham, 2004, p. 39 and 1997, 93). See illustration, first photograph, top left at datasheet

Rochester [ds 52] - single sword hilt fragment, possibly Wilburton phase typology, see illustration D at datasheet

Saltwood [ds 53] - three sword hilt fragments and blades present, one of which typology suggests Ewart Park phase (see specimen D2 in the illustration at datasheet)

Stourmouth [ds 57] - one sword hilt fragment of Carp's Tongue phase (see specimen 9, illustration at datasheet) and one 'Lappenmuster' axe fragment

Sturry [ds 58] - Turner (1998) lists fifteen objects as representing Wilburton Phase and one from Ewart Park/Carp's Tongue phase (Turner's italics for these in Table 4, denotes '*a LBA hoard which is believed to represent a chronological period other than the Ewart Park Phase*').

Swalecliffe [ds 59] - includes one socketed axe with decorated faceted moulding very similar to that of Feltwell Fen (Norfolk) or winged axe from Worthing (West Sussex)

Tilmanstone I [ds 61] - includes one socketed axe, South-East class A. Very close similarities to items in the Crundale assemblage [ds 26]

4.14.9 The abundance of LBA material over EBA and MBA material is clearly significant, particularly in east Kent, although the bulk of MBA finds are also in the EK region. Assemblages that include metalworking tools and moulds are few and far between in Kent but this does not preclude the potential evidence for local manufacture (Isle of Harty, [ds 42]). Isolated cases where items have been detected as originating from the same mould can be found at Sturry [ds 58] which have four winged and looped axes from the same mould (moulds not present), which is extremely rare. The MBA group at

Birchington [ds 5] also has evidence for two palstaves from the same mould. In relation to St. Mildred's Bay group [ds 13]. David Perkins has also suggested that there is a similarity in casting between the palstaves with those of the Birchington assemblage where some of the palstaves within both assemblages were cast from the same moulds. Most of the St. Mildred's Bay and Birchington assemblages' palstaves have decoration.

4.14.10 Many groups contain rarer items (and fragments) such as cauldron parts in Shuart [ds 54] and Minnis Bay [ds 46], horse furniture in Borstal [ds 18], Boughton Malherbe [ds 19] and Minster-in-Thanel [ds 47], anvils at both Ebbsfleet IV [ds 30] and Isle of Harty [ds 42] and sickles at Hoo [ds 39] and Minnis Bay [ds 46]. What can be seen, however, is the lack of what can be termed as 'personal' items such as those associated with personal toiletry. Three razors are present in the Crundale group [ds 26] and two razors are found in the Hoo assemblage [ds 39] and one each in the Dartford I and II groups [ds 8 & 27].

4.15 'Packing' of socketed artefacts

Several assemblages include socketed items that have been 'packed', where small fragments of tin-bronze alloy material have been forced into the aperture which was then forced or 'pinched' closed. Such specimens are found within the following Kent assemblages:

Assemblage name	Axe heads & fragments	Spearheads & fragments	Sword & dagger fragments	Cake / bun ingot	Other objects	Total	Era
Borstal	18	1	10	26	15	70	LBA
Crundale	48	14	33	33	57	185	LBA
Monkton Court Farm	17	0	12	2	20	51	LBA
Stockbury [ads 70]	7	2	4	11	3	27	LBA

The practice of 'packing' socketed items is also expanded upon in Chapter 6, 'Discussion' at 6.15).

4.16 Pure metal ingots

Pure copper ingots appear in five assemblages at Cliffs End [ds 25], Crundale [ds 26], Lenham I [ds 43], Stourmouth [ds 57] and Tilmanstone I [ds 61], and two of pure lead in only one group at Ebbsfleet IV [ds 30]. Lead was introduced to the melting process to allow the alloy to be thinner to cast more intricate mouldings, permitting the molten metal to 'slip' more easily. No pure tin or arsenic is present in any assemblage in Kent.

4.17 Environmental change

In his paper 'The Bronze Age in Kent' Champion outlines the environmental changes since the Bronze Age; 'Kent has undergone more several physical changes since the Bronze Age than most other areas of England. The most obvious changes have been in the coastline' (1982, p. 31).

4.17.1 A major obstacle to the study of context is indeed topography. Landscape and marine environments have changed so considerably since the early Bronze Age in Kent that without an exhaustive scientific survey, it is almost impossible to ascertain the natural environment that existed at individual assemblage sites at the time of their deposition. Changes in sea level, water courses, water tables, denudation of woodland, drainage and silting of water channels over time reflects the challenge of assemblages in context. It is therefore arguable whether a grouping experienced a 'dry' or 'wet' deposition.

4.17.2 The Broadness assemblage [ds 20] is a good case study. Recovered from the River Medway through dredging, it originally may well have been deposited in what might be variously defined as a marginal coastal, marshy or semi-marine area, perhaps were where there was periodic but not permanent inundation. This raises the question as to whether particular groups of metalwork were deliberately placed in a 'wet' setting or where the original setting was initially 'dry' (for example, Lydd [ds 2]). Other examples include the Ebbsfleet series of assemblages [ds 28-31 & 65] which were in marginal estuarine environments in the Bronze Age, and also Herne Bay I [ds 32] also exemplified in particular single items recovered by divers from Pan Shoal off Whitstable (see below) the latter two of which are both locations on the north Kent coast. There are historical accounts from antiquity that highlight these changes, for example:

Herne Bay

'On the 3rd of March, 1896, owing to a heavy S.W. gale, which had blown with much force all the previous night, the tide ebbed to the lowest point that had been known within the memory of the oldest inhabitant. Only those that availed themselves of the sight can realise the varied formation of the soil, consisting at places of large sand and cement stones, rock, blue and yellow clay, among which might be seen the trunks of large trees laying as they fell, showing that land once extended far outside the present shore. At 1 ¾ miles from Herne Bay shore, it was perfectly dry on the Weir Rand (commonly pronounced 'Ware Rand'), and the long rows of wooden stumps that were revealed showed the remains of ancient fishing weirs.' (Author unknown) *The Gentleman's Magazine*. 1784 'The Phenominal Low Tide'. Part I, p. 57 cited in Ref:

<http://oystertown.net/features/toado78.html>

Whitstable

Other observations note that 'The Bronze Age sea level was lower than at present, as evidenced by traces of settlements, farming and track ways on the Thames floodplain. Archaeological excavations on the coastline near Long Rock, Swalecliffe, revealed the remains of possible structural late Bronze Age to early Iron Age timbers' (Bennell , 1996, Coulston 2000, and Tyers, 2001). The area also boasts several

Neolithic or Bronze Age barrows, for example Thanet Way and Seasalter (Parfitt & Allen, 1990) and the Ordnance Survey Map ‘...also depicts another at Clowes Wood.’ (O’Brien, 2004)

4.17.3 There are further accounts of BA metalwork that have been recovered offshore from the seabed in the same area, primarily off Whitstable. These take the form of fifteen looped and socketed axes and a complete sword of Ewart Park phase manufacture. It is unclear whether these items of LBA provenance represent depositions of single objects or assemblage(s) which have been dispersed through marine action. The reports of these are from an extract from the Oxford Journal of Archaeology (2006):

Item No. 5: Whitstable, Kent; Three looped and socketed axes 1.5 km off Whitstable (LBA) Maidstone Museum. Twelve more were recovered by divers in the same location but their current whereabouts are unknown (personal comment from Parham to Samson, Samson 2006, p. 373 and p. 382) and personal conversation with Mrs Jacqui MacDonald of Whitstable Diving Club (2009). The items, she believes, came from the ‘Pan Shoal’ off Whitstable.

Item No. 6: Whitstable, Kent. One sword (Late Ewart Park Phase) found in the sea off Whitstable (exact location and date of recovery unknown) now in the possession of Maidstone Museum.

4.17.4 Samson (2006, pp. 371-388) surmises that these were deposits at sea, which may not be the case based on the sea levels during the LBA in this area; however the ‘Pan Shoal’ off Whitstable is a depression in the seabed which may have been subterranean in the BA period.

4.17.5 It is certain however, that many assemblages were deposited in a ‘dry’ setting as the OD at these sites are so high, and that they are on well drained natural slopes such as that at Shuart Farm [ds 54]. The character of the micro-environment in which they were deposited is pretty much inconclusive, that is to say that again, without scientific analysis from soil samples it is impossible to deduce whether they were deposited in ‘managed’ landscapes or ‘wilderness’ settings. This is considered further in Discussion at 6.11 and a graph of altitudes of assemblages is given at 4.13.3 above.

4.17.6 Soil type does not appear to be a factor in the decision to place an assemblage (Appendix 1, Tables 31-34) although it is apparent that there are distinctly fewer assemblages in the thinner, poorer soils of the Downs and the Weald (see, Map 1, Main Distribution Map at Appendix 2), as explained earlier.

4.18 Imperfect recording at time of recovery

Many assemblages recovered in antiquity were not recorded in great detail and their context is very ambiguous. Examples include:

Allhallows [ds 16] - ‘Found by agricultural workmen’ (Burgess and Colquhoun)

Aylesford I [ds 1]

Cliffe at Hoo [ds 24]

Dartford I [ds 8])

Dartford II [ds 27]

Ebbsfleet I and II [ds 28 & 29]

Higham-at-Hoo [ds 34] - 'The exact nature of the Higham-at-Hoo hoard is unknown' (Burgess and Coombs, p. 188)

Hoo [ds 39] - 'Found by workmen cutting a trench for the purpose of laying a water main on Whitehall Farm, in 1873' (Burgess and Colquhoun, 1988)

Marden [ds 45])

Minster-in-Thamet [ds 47]

Rochester [ds 52)

Saltwood [ds 53] 'Discovered during excavations for the branch line of the S.E. Railway to Hythe and Sandgate, 1872, in Hayne Wood' (Burgess & Colquhoun, 1988 p. 77 and O'Neill Osborne, 1939 pp.202-206)

Stoke-at-Hoo [ds 56]

4.18.1 In some cases the find is associated with a named individual such as that of the EBA assemblage from Buckland, Dover (also known as Bucklands Brickfield, Dover Museum, [ds 3]): 'This hoard was found in 1856 in the brickfield of Mr F. W Fry, on the Union Road.' (Colquhoun and Burgess, 1988, p. 127). Dover Museum also has other finds recovered from Buckland that are LBA in dating, but there are no references to this/these separate assemblage(s). The author is intent on investigating these items further and will add these as an addendum datasheet post scriptum to submission of the thesis.

4.18.2 While the items recovered can usually be considered genuine, it should perhaps be borne in mind that in some cases we must be cautious as to the exact source of the artefacts (for example Bexleyheath [ds 17]: 'Another thirteen objects (unknown typology) with a further nine pieces were also recovered from a dealer claiming they had come from the site (probably via the workmen at the discovery.' (Tester, 1958, pp. 232-233). Additional objects must have followed as the British Museum hold 79 objects from the assemblage.

4.18.3 Some assemblages themselves are misinterpreted or indeed assigned by the contemporary antiquary to a different epoch; Perhaps unsurprisingly given the early date of discovery (1724), Westgate [ds 15] is a prime example of inaccurate interpretation;

'Our Antiquaries are, I find, at a Loss to know what Use these Instruments were, tho' they seem to agree that they are either Roman or British, and most probably the former, they being found in such places, where the Britains, very likely, never were. The learned Montfaucon has described No. 4 of these with a Ringle, among the Roman Tools of Building, and is of Opinion,

that it was a Chizel, with which they used to cut or hew Stones. But the great Objection to this Opinion is, that the Metal, of which these Instruments are made, seems not hard enough for such Work. That learned Man however observes, that the Ancients used some Temper, by which they made Brass as hard as Iron. But it is by looking on these Tools, if they are such, to be satisfied, that the Metal of which they are made, tho' somewhat harder than common Brass, is not so hard as Iron, nor hard enough to hew any Stone that is not soft and easy to be cut. Mr Gordon seems to have fancied them Roman Securis's or Axes; but I can't conceive that their Edges are sharp enough for the Work of such a Tool, nor, if they could be made for, how they could chop or cut with them: Tho' I confess, by Mr. Gordon's Draught, I can't certainly conclude it was the same Instrument with these. A learned and ingenious Friend conjectures, that this Instrument is a Roman Soldier's Chizel, which he used to sharpen the Stakes called Sudes and Valli, which were a Part of their constant Sarcina, or their travelling Baggage, since they used them in their daily Encampments.' (Lewis, 1736, p. 138)

The current whereabouts of this assemblage is unknown.

Other examples include the Hundred of Hoo assemblage [ds 41] recovered in 1747, 'Bridle-bits and late Celtic buckles, said to have been found; coins also? Amber beads found at same time; possibly palstaves and not socketed celts'. (Wickham, 1877, p. 123)

4.19 Recovery of artefacts

The Chislett III assemblage (or part thereof) recovered in 1876 show how some assemblages were treated, recovered and recorded [ds 23]:

'Some workmen, not belonging to the district, were employed on extensive drainage work, when the labourers came upon a hoard of these bronze implements. No value seemed to have been attached to them, nor was there any competent person at hand to examine them. Some were thrown away as useless. Five only, as far as I could learn, were preserved, and these were sold to an old rag and bone man who happened to be in the neighbourhood with his cart and donkey. He bought them as waste metal, and J\Ir. Parry of Canterbury, who has a taste for antiquarian objects, purchased them for a trifle, and has permitted me this evening to exhibit them' (Brent, 1876, p. 23).

4.19.1 Also, the LBA assemblage from Bexleyheath [ds 17]: 'Thirteen objects (unknown typology) with a further nine pieces recovered from a dealer claiming they had come from the site (probably from the workmen at the discovery)' (Tester, 1958, pp. 232-233). Also, Ogilvie relates to the fate of the Ash-next-Sandwich assemblage from 1983 [ds 4]: 'In 1983, random amateur metal detecting led to the discovery of several bronze objects, not far from the surface, on arable land, near Overland, Ash-next-Sandwich.'

Subsequently, they were dispersed among local residents, but I have traced three of them. These are typical palstaves, superficially corroded, but otherwise in good condition.’ (1986, p. 66)

4.19.2 In some cases assemblages were broken up and placed in private collections, with some artefacts being lost, such as those from the complete MBA assemblage from Westgate [ds 15] and the Buckland, Dover assemblage [ds 3].

4.19 Assemblages associated with containers

Despite the frequency of poorly recorded assemblages, in some instances the context of finds is highlighted. This can be seen in the EBA palstave assemblage (eight in number) at Goudhurst [ds 9], ‘...laid out, one upon the other in twos’ (Jessup, 1930, 99). Here there is no suggestion of a container for the artefacts *in situ* but there are some examples from other assemblages, which, as a result of this research, are surprisingly quite common and it could be argued that many of the assemblages did in fact have some form of organic or pottery container with packing material.

4.19.1 A known example is the EBA assemblage from Birchington [ds 5], ‘A largely complete bowl was recovered at Birchington, three feet below the surface in Southern Brickfield in 1904. The decoration ‘consists of six rows of parallel grooves around the middle of the vessel, with a single row of stamped circles (two concentric rings). This bowl held an assemblage of fourteen intact bronze Palstaves, no two of which were identical. The axes have been dated to circa 1300-1100 BC.’ (Powell-Cotton and Crawford, 1924, pp. 220-226)

Also, the LBA assemblage from Sittingbourne [ds 55];

‘Some time previous to this the brickfields at Sittingbourne yielded to Mr. Yallance (July 16, 1828) a bronze gouge and four socketed celts, much resembling the celt from the Pan Shoal (off-shore at Whitstable)’. These are also now in the Museum at Dover. They are noted in Collectanea Antiqua, vol. i, p. 101, wherein Mr. C. R. Smith informs us these ‘celts’ were found in an urn, ‘together with thirty pounds’ weight of bronze or bell-metal.’ Another urn, close by, contained a bronze dagger about 12 inches long, and six bronze rings, which, as some of them were 2 inches wide, could not be called finger-rings. A skeleton lay about 12 feet below the surface of the soil.’ (Brent, 1876, p. 35)

In addition, the assemblage from St. Mildred’s Bay [ds 13];

‘The palstaves were found lying in a row with their cutting edges vertical and pointing inshore on a line roughly south east. It was observed that two of the palstaves were fragmented in such a way that would normally require considerable force; thus the fragments seemed to be more or less in situ. And that ‘The silt around and under the palstaves was hand-sorted and passed through a number of sieves down to 300 microns aperture. Among the organic remains so isolated were

pieces recognizable as birch bark, their inner surfaces bearing cast impressions left by palstaves, and fragments of what appeared to be grass blades. While reconstruction was not possible, these materials seem to have once formed some kind of container for the hoard. (Perkins, 1988, pp. 243-249)

4.19.2 The Hundred of Hoo assemblage is an example of an assemblage being found in a container [ds 41]: '1 spear-head, large, and with lunate openings (along with sixty palstaves and multiple other items); all found in "a cist or box" (Evans, 1881, Wickham 1877 and Penes Canon Greenwell et al, 1942). The EBA Aylesford I assemblage also had a container [ds 1]: 'Hoard found in a globular pot with straight neck and having three horizontal grooves.' (Burgess and Coombs, 1979, p. 191)

4.20 Assemblages from pits

Equally, there are a small number of Kent assemblages that come from clearly defined pits, where depressions in the earth or predominantly chalk surfaces were deliberately excavated. It is of course a presumption to assume that these pits were specifically cut for the deposition of the assemblages. They may have originally been for other purposes such as food storage or middens and may pre-date the deposition significantly.

4.20.1 The assemblages that show evidence for pits are at Crundale [ds 26], Herne Bay I [ds 32], Hollingbourne II [ds 38], Monkton Court Farm [ds 48], Wingham [ds 64] and possibly Sturry [ds 58]. The shape and depth of the pits are completely unique to each assemblage and bear no distinctive similarities. The pit at Crundale [ds 26] was described from the controlled excavation simply as being 'shallow', that from Herne Bay I [ds 32] from a roughly oval-shaped pit, Hollingbourne II [ds 38] had no specifics annotated in the excavation report. The case at Monkton Court Farm [ds 48] is however more detailed in that the deliberately excavated pit had a 'calcined' base, indicating that it had been subjected to high heat. The Wingham assemblage [ds 64] came from an undefined 'hole' or pit two feet below the surface.

4.20.2 None of these pits had reports of markings consistent with tools being used in their excavation, which might be expected.

4.21 Assemblages in a metalworking context

There is a paucity of direct evidence for actual metalworking practices. Nevertheless, there are some assemblages that may possibly reflect localised metalworking activity notably Ebbsfleet IV [ds 30], Hoo [ds 39], Isle of Harty [ds 42], Marden (Kent) [ds 45], Minnis Bay [ds 46], Monkton Court Farm [ds 48] and quite possibly Chislet III [ds 23].

4.21.1 The principal factors that would assist in determining whether any of these assemblages had a metalworking context are evidence from the immediate vicinities in which they were deposited. One

would theoretically expect to find the debris of metalworking processes of the metalworker's 'toolkit'. Some of those listed have been suggested by Kuijpers (2008, 81-93*) the remainder by the author, such as the following:

Ash

Bellows*

Burned clay

Casting jets*

Charcoal

Clay*

Dung

Furnace and furnace lining*

Hearths

Local water source

Mould and mould fragments*

Old crucibles*

Lost-sand (moulding material)*

Stone anvils and cushion stones

Stone moulds*

Tin-bronze droplets*

Tin-bronze slag

Tongs

Tuyeres*

Whet and polishing stones

4.21.2 Kuijpers argues that many of the metalworking tools may also have been multifunctional, for example in food processing or tanning. 'A hoard like the one from Deurne, containing two chisels and a gouge, is therefore nothing more than a hoard containing craftsman tools with a tentative indication that they may have also had something to do with metalworking. The scholar studying woodworking, however, would suggest that they are woodworking tools.' (Butler 1963a, p. 126, from Kuijpers, 2008, 105)

4.21.3 Few of these elements of the metalworker's 'toolkit' survive in the context of Kent tin-bronze assemblages, however, this does not necessarily imply that metalworking was not taking place. The Monkton Court Farm assemblage [ds 48] is, possibly, the strongest candidate for evidence of 'on-site' metalworking, within an area that has substantial evidence for both local BA settlement and monument activity. The calcinated pit floor and ash-slag found around the assemblage could suggest metalworking.

However, the assemblage does not contain any items directly associated with metalworking processes, except for two bun ingots which are commonly found in LBA assemblages.

4.21.4 The Late Bronze Age settlement site excavated in 2004 at Snodland (Holborough Quarry) included a 'mould pit', containing a substantial number of fragmented clay sword moulds which have been identified as Ewart Park phase typology (blade and hilt mould fragments in evidence). Although within a settlement area, there was no evidence for actual metalworking in the immediate vicinity or in fact any metalwork of any kind.

4.21.5 An MBA bi-valve pasltave mould is known of from Hoo, (Jessup, 1930, 108) and Hodges (1960, p. 161, from Rowlands, 1976, p. 179) also relate to the finds which may well indicate metalworking on the Hoo Peninsula. Evidence for possible metalworking is also found at Snodland, Kent with sword mould fragments recovered in 2004, although no actual evidence for metalworking in form of ash or slag were found.

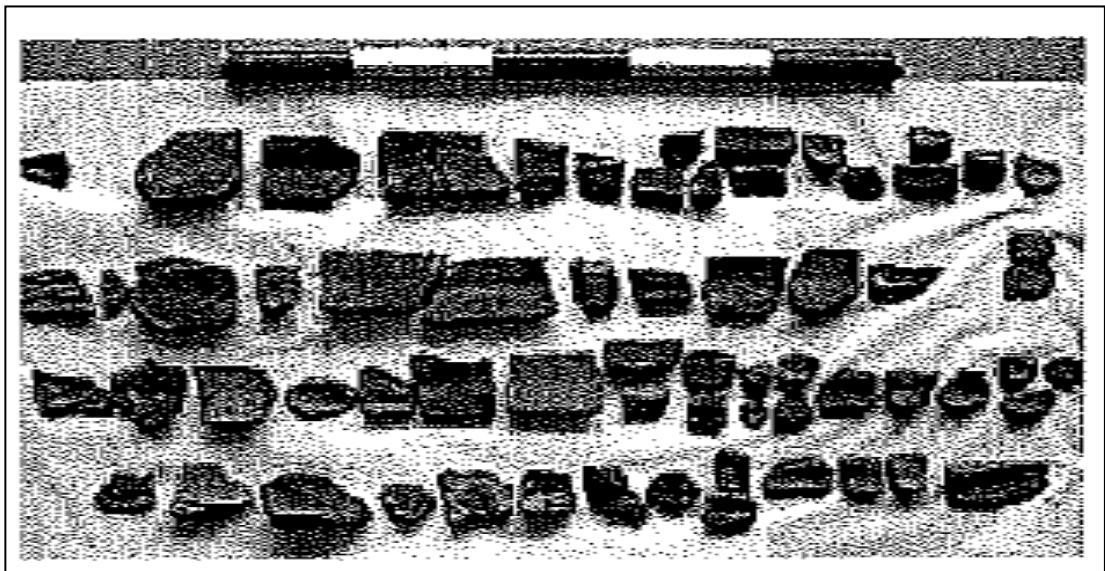


Illustration 4g. Sword mould fragments recovered from the Snodland site

From Canterbury Archaeological Trust 'News from the trenches', 2004. Items held at Maidstone Museum.

4.21.6 Assemblages that include tools that are directly associated with metalworking are very few among the sixty-six groups so far identified in this corpus of research. One anvil is found each in the Ebbsfleet IV [ds 30] and Isle of Harty [ds 42] assemblages only.

4.22 Depositional data in context

The depth at which the assemblages were deposited is difficult to estimate in assessment of context, as surface erosion, or deposition of soil, or downwash debris will no doubt have varied considerably over time. In addition, many were clearly ploughed to the surface from their original resting place. Nevertheless, the majority were recovered from a shallow depth, in some instances significantly less than one metre below the surface or even less. The descriptions of depths of the assemblages recovered are from reports as defined in the relevant datasheets and references therein. The datasheet number for each assemblage has been prefixed:

Shallow depositions:

Allhallows [ds 16] - 'They were found in an earthen pot, two feet below the surface'

Ash-next-Sandwich [ds 4] - 'the discovery of several bronze objects, not far from the surface'

Birchington [ds 5] - 'Found within a largely complete bowl, three feet below the surface in a field'

Broadness [ds 20] - 'The artefacts came from the first few feet of deep ballast, below the superficial alluvial peat and clay deposits'

Minnis Bay [ds 46] - 'Discovered at a depth of 30 cm to 3 cm in a man-made gravel bank' (LBA)

Crundale [ds 26] - 'Found in a shallow pit just below the plough soil'

Dartford I [ds 8] - 'Found in a layer of sand and gravel two feet below the surface'

Ebbsfleet III [ds 65] - 'Five objects found lay within 1m² area in a uniform mixture of Thanet Beds sand at a depth of approximately 0.8m'

Ebbsfleet IV & IV [ds 30 & 31] - 'Here, a concentration of objects was found together at the base of the subsoil, just above the interface with the natural.' Ebbsfleet IV was concentrated within an area of one square metre and Ebbsfleet V within an area of 0.25m with additional outlying objects up to 4m away

Herne Bay II [ds 33] - 'Fragments found at a depth of 10 cm distributed along a straight plough-line'

Hoaden I [ds 35] - 'Recovered from a low mound and scattered by a potato harvesting machine, indicating the shallowness of the items'

Hoaden II [ds 36] - 'The items recovered came from a dispersed assemblage created as a result of ploughing', found scattered in topsoil across an area of about 20 square feet, with some objects visible on the surface'

Hollingbourne I & II [ds 38] - Dispersed assemblages: 'From ploughed soil and a pit in the same vicinity. The initial finds were three ingots and an axe head which had been disturbed by ploughing, distributed around and 'in-situ' and 'Found within plough soil, consisting of heavy grey clay no more than 30cm deep. The finds were distributed across a roughly crescent-shaped area about 15m by 10m across'

Hoo [ds 39] - 'Found by workmen cutting a trench for the purpose of laying a water main on Whitehall Farm'

Hoo St Werburgh [ds 40] - 'Found by workmen laying a water main, approximately 3 ft. below ground surface'

Lenham I [ds 43] - 'Metal detector find in plough soil at a depth of 30 cm'

Offham [ds 49] - 'In topsoil of a garden on a gentle slope facing north-east', Found scattered in topsoil across an area of about 5 square metres, at a depth of between 7 to 25 cm

Ringlemere [ds 51] - 'Metal-detector find after locating a single fragment of socketed axe head during a field-walking survey which led to a group of bun ingot fragments and some copper alloy waste dispersed in the plough soil'

Ripple I [ds 11] - 'Discovered at the base of plough soil in the upper fill of a Bronze Age ditch, running north-east to south-west'

Shuart [ds 54] - 'South of the farmhouse in plough soil abutting the chalk pit, and a few metres east of the eastern cliff of the pit. Overburden of brick earth is 1m depth to natural chalk'

St. Mildred's Bay [ds 13] - 'A surface scatter of pot-sherds in Late Bronze Age fabrics were sampled. As the feature was covered by brown loam from valley downwash it is conjectured that the assemblage had originally been deposited in a marsh.' Found at a depth of c. 45 cm in light-blue sticky clay. The palstaves were laying in a row with their cutting edges vertical and pointing inshore on a line roughly south-east

Sturry [ds 58] - 'In the top-soil of a sand pit, between the roots of a tree'

Waldershare [ds 62] - 'Assemblage was dispersed by ploughing action'

Wingham [ds 64] - 'All coming from one hole, approximately two and a half feet down (76.2 cm) (LBA)

Deeper depositions:

Bexleyheath [ds 17] - 'Found by workmen in a sandpit, 5-6m below the surface' (LBA)

Lydd [ds 2] - 'Found on extraction by machinery from a flooded gravel pit 5-6 metres deep' (EBA)

4.23 Assemblages that may have a contextual relationship with each other

Three case studies:

The Marden, Goudhurst and Boughton Malherbe assemblages (north Weald)

Where some assemblages are very close together in a geographical or topographical sense there may be a contextual relationship between them. Esoteric knowledge in the possession of individuals or communities of other contemporary deposits or older depositions should not be discounted. For example, rather than representing a random or coincidental placement, there may be a deliberate articulation of assemblages in proximity to natural features such as woodland edges, the banks of water features or artificial features such as field or settlement boundaries or drove ways.

4.23.1 When viewing the Main Distribution Map (Appendix 2, Map 1) it can be seen that there are some assemblages that are very close together, some with a mix of artefacts of both LBA and MBA origin. Examples of potentially significant groupings are the three from Marden LBA [ds 45], Goudhurst MBA [ds 9] and Boughton Malherbe [ds 19] assemblages where there is no evidence for Bronze Age settlement or monument activity in their vicinity. To date, these are also the only assemblages located in the north Weald.

4.23.2 The content of these three assemblages may bear on a relationship between them. The Goudhurst [ds 9] assemblage contains purely MBA palstaves, but the LBA Marden group [ds 45] contains a substantial percentage of MBA 'Ornament Horizon' material (the definition as proposed by Margaret Smith in her 1959 work), and in the Boughton Malherbe assemblage [ds 19] MBA looped and un-looped palstaves and MBA 'Ornament Horizon' material in the form of bracelets and rings, although these are described as being hollow in form and not solid. The Marden and Boughton Malherbe assemblages also share a similar feature in their very high volume of material; Marden has mostly broken-up artefacts with a high volume of metalwork (216 items) and Boughton Malherbe also a high volume mixture of broken-up material and large quantity in terms of volume (353 items).

4.23.3 The similarities between these two assemblages are the sheer volume of material they each contain. These could be termed 'super assemblages' and may well have a contextual relationship in terms of dumps of tin-bronze for recycling in what could be termed as being on an 'industrial scale', in close proximity to each other. It could be proposed that this area of the North Weald was a significant focus for the accumulation, possible exchange or redistribution of material.

4.23.4 There is also the LBA Ebbsfleet I – V groups [ds 28-31 & 65] that are close to both settlement and monument activity, located on an ancient shoreline. The Hoaden I & II [ds 35 & 36] and Stourmouth [ds 57] assemblages are similarly grouped close together. We find the same situation with the Swalecliffe [ds 59], Tankerton [ds 60] and Herne Bay I & II assemblages [ds 32 & 33] and those on the Hoo Peninsula. There may also be similarities between proximate hoards in terms of their typology and the volume of contents, for example the LBA Ebbsfleet groups; the quantity of artefacts given in brackets;

The Ebbsfleet concentration

4.23.5 The Ebbsfleet groups give a picture of mostly fragmented items with a poor repertoire of different types of material being gathered despite the volume of specimens, which differ from the 'super-hoards' in 4.13 above. Nevertheless the presence of five assemblages in such close proximity to each other is worthy of an overview;

Ebbsfleet I [ds 28] - A mixture of broken-up material and some damaged axe heads, with EBA, MBA and LBA material. A high volume assemblage (172 items)

Ebbsfleet II [ds 29] - A mixture of broken material, complete items and scrap, another high volume deposit (179 items)

Ebbsfleet III [ds 65] - Objects of unknown typology (5 items)

Ebbsfleet IV [ds 30] - Including lead objects, broken-up material and an anvil (13 items)

Ebbsfleet V [ds 31] - Various socketed items and ingots (18 items)

4.23.6 The close proximity of the five assemblages at Ebbsfleet [ds 28-31 & 65] is unusual within the area of study. The two 'super assemblages' of Ebbsfleet I and II display volumes of deliberately deconstructed artefacts and to a smaller extent by volume, Ebbsfleet IV. The Ebbsfleet IV assemblage is evocative of metalworking as it includes some components in the form of an anvil, lead (for finer castings techniques) and readily broken up tin-bronze to add to the crucible, along with Ebbsfleet V that includes ingots. The subjective overview would question why these five assemblages were diffused in such a manner. It could be suggested that these assemblages were originally 'in contextual association' but there was a deliberate attempt to segregate them to prevent re-cycling, or that each assemblage held a more individual significant 'meaning' or 'ownership' that prevented their synergy.

The Hoo Peninsula:

4.23.7 The Hoo Peninsula group of almost exclusively LBA assemblages display not only high volumes of items, but also an interestingly higher assortment of items compared to those of assemblages from East Kent. The diversity of items being included in these deposits compared to others in the Kent record requires further study which unfortunately is not possible in this paper. However, the Hoo Peninsula record may well be symbolic of regional inclusiveness of particular items as a reflection of localised Bronze Age domestic, hunting, woodworking and industrial metalwork activity.

4.23.8 This may reflect a higher level of deliberate acquirement or procurement of metalwork (finer or more intricate castings or exclusively secured modes of import) or a more advanced indigenous metalwork capacity. The Hoo Peninsula assemblages portray their diversity thus;

Allhallows [ds 16] - Very eclectic mixture of items, axe head blades, spearhead and sword blade fragments, gouges, chisel, pommel, chape, bill-hook, pure copper cake ingots, sword hilts (63 items)

Cliffe-at-Hoo [ds 24] - Axe, sword and spearhead fragments (8 items plus other small tools)

Hoo [ds 39]: Again, an extremely eclectic mix of items, complete and fragmented specimens of socketed axes, swords and knives, chape, chisels, gouges, razors and sickles (149 items)

Hoo St. Werburgh [ds 9] - Mainly axe head fragments, spearhead and sword / dagger fragments and bun ingot fragments (174 items)

Hundred of Hoo [ds 41] - Another assemblage with a very wide eclectic mix of items, with punches, razor, rings, leaf-shaped spearheads, sickles, clasp, multiple broken swords and amber beads (81 plus items)

St. Mary's at Hoo [ds 66] - Unknown quantity and typology

Stoke-at-Hoo [ds 56] - A good mix of items, sword blade and hilt fragments, bronze sheet, mould runner and mould fragment, circular ingots (32 items)

4.24 Assemblages in context with Bronze Age ritual/ceremonial/communal settlement

Several assemblages have been located within or adjacent to Bronze Age settlement sites. These include Broadstairs [ds 6], Herne Bay I [ds 32], Minnis Bay [ds 46], Monkton Court Farm [ds 48] and Ramsgate [ds 50] among others (see Tables 23-26 at Appendix 1).

4.25 Assemblages that may be associated with memory or ritual

One particular assemblage requires special attention in that it may have a connection with a burial. The Sittingbourne finds [ds 55] are from two closely related deposits which were directly above a human inhumation some 12 feet (3.65 m) below the surface. The two metalwork groups were recovered in 1824 and 1828 but it is not specified which of the two urns containing the deposits was the first to be recovered although the Rev. Vallance recovered both. No detailed records exist of the inhumation or any context and it is debatable as to whether the connection between the assemblages and the inhumation is a mere coincidence. The possible relationships between the two assemblages at Sittingbourne and the inhumation are explored in 'Discussion' at 6.11.2.

Chapter 5

Kent assemblages in retrospect and current thinking

5. Kent assemblages in retrospect and current thinking

5.1 Introduction

Prior to embarking on a discussion of the analyses, this section takes an overview of Kent assemblages from the initial finds in the early 18th century to the present day. The perceptions of what these assemblages represented are considered from the perspective of the finders and academics past and present with an emphasis on more modern concepts, in the light of technological advances, particularly in the realms of metallurgical analysis (Northover, 1982 and Coombs, 1988) as well as details gleaned from properly controlled excavations that give an insight into their context.

5.2 Chronology of assemblage discoveries

Below, (Table 5f) is a summary of the chronology of the discovery of all the assemblages from Kent up until 2013. In some cases discovery dates which have been gleaned from published sources, are only approximate; a very few are as yet unknown.

5.2.1 The analysis of this data is given below. In the case of the Monkton Court Farm assemblage [ds 48] discoveries were made on two separate occasions, in 1981 and 1990, and in the case of Ripple I [ds 11] a widely scattered assemblage was recovered over several re-visits by metal-detectorists spanning five months.

5.2.2 In some cases, despite finds being reported to the PAS database, there are no specific dates given for the discovery of the material, such as Chislet I & II [ds 21 & 22]. The chronology of the dates of discovery and recovery of the Kent assemblages is as follows:

Date of discovery	Assemblage number	Assemblage name
1724	15	Westgate
1747	41	Hundred of Hoo
1824	55	Sittingbourne
1828	55	Sittingbourne
1854	9	Goudhurst
1855	63	Wickham Park
1856	3	Bucklands
1872	53	Saltwood
1873	39	Hoo
1873	42	Isle of Harty
1875	66	St Mary's at Hoo
1876	23	Chislet III
1885	45	Marden
1890	29	Ebbsfleet II
1893	28	Ebbsfleet I
1893	56	Stoke-at-Hoo

Table 5f – Chronology of assemblage finds continued

Date of discovery	Assemblage number	Assemblage name
1893	56	Stoke-at-Hoo
circa 1899	1	Aylesford I
1904	4	Birchington
1906	34	Higham-at-Hoo
1913	20	Broadness
1922	59	Swalecliffe
1930	17	Bexleyheath
1930	8	Dartford I
1938	46	Minnis Bay
1943	58	Sturry
1946	27	Dartford II
1955	60	Tankerton
1963	57	Stourmouth
1973	40	Hoo St Werburgh
1974	35	Hoaden I
1974	10	Langdon Bay
1981	48	Monkton Court Farm
1981	33	Herne Bay II
1990	48	Monkton Court Farm
1982	54	Shuart
1983	3	Ash-next-Sandwich
1983	18	Borstal
1985	2	Lydd
1987	13	St Mildred's Bay
1992	65	Ebbsfleet III
1994-1995	11	Ripple I
1995	14	Tilmanstone II
1997	62	Waldershare
1998	7	Canterbury
1999	32	Herne Bay I
2002	12	Ripple II
circa 2003	21	Chislet I
circa 2003	22	Chislet II
2003	26	Crundale
2003	37	Hollingbourne I
2003	38	Hollingbourne II
2004	30	Ebbsfleet IV
2004	31	Ebbsfleet V
2004	43	Lenham I
2004	51	Ringlemere
2004	61	Tilmanstone I
2005	50	Ramsgate
2007	36	Hoaden II
2007	49	Offham
2008	64	Wingham
2009	25	Cliffs End
2011	19	Boughton Malherbe

5.3 Frequency of assemblages recorded or recovered in Kent in chronological order

Where the date of excavation or recovery of an assemblage is known (or parts thereof) their frequency can be plotted and these have been presented in the column chart below. Recording the finds by quarter century it has revealed an interesting pattern. The interpretation of frequency is largely related to increased activity in conurbation, road building, pipe-laying and rescue archaeology from the mid-19th century onward which resulted in the higher number of discoveries. The most poignant frequencies are during the late Victorian and Elizabeth II eras;

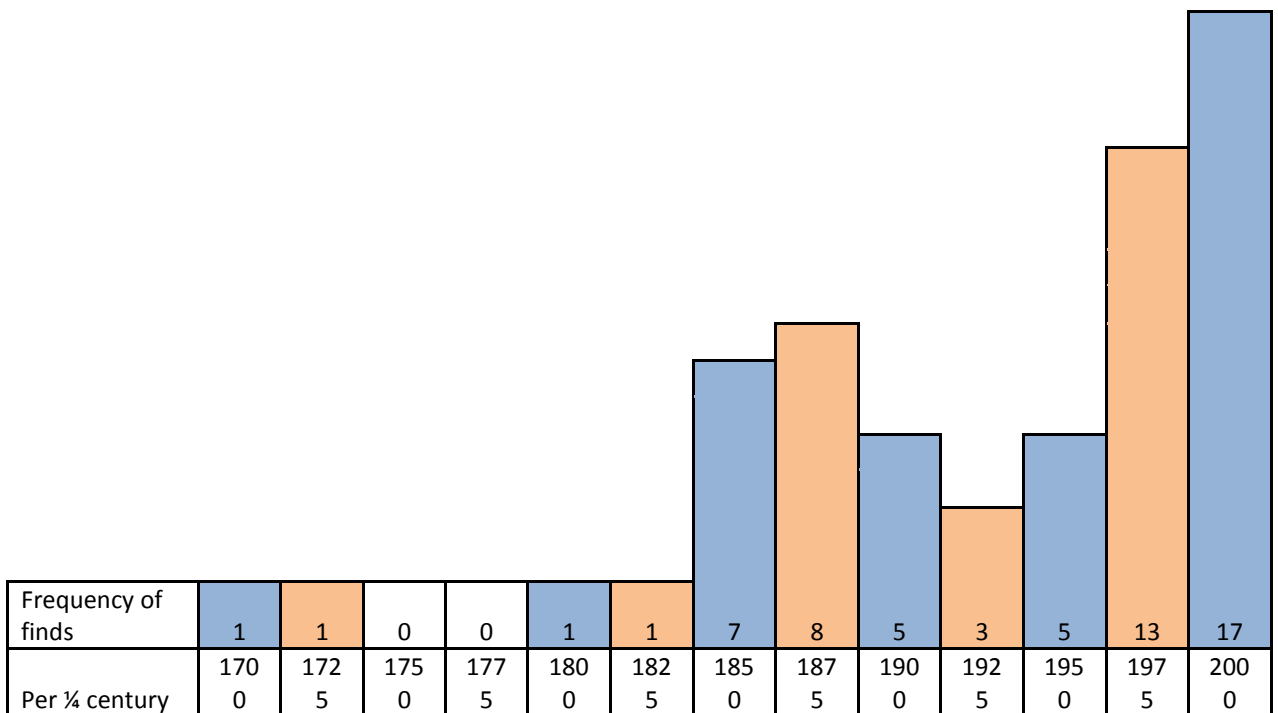


Illustration 5a. Frequency of assemblage finds by quarter century from 1700 AD

5.4 The finders – collecting and observing assemblages

The discovery of the very first recorded assemblage known from Kent were an assemblage of palstaves found near Leeds Castle in 1708, but were recorded as having been ‘sent to the brazier’ with the exception of two that were sent to the Royal Society (Young and Thorpe, 1708, no. 202)

The second, made in Westgate in 1724 with drawings made by William Stukeley, is considered in detail below. The circumstances of discovery of the third recorded assemblage from Kent, found in 1747 in the Hundred of Hoo (also known as Little Coombe Farm and Allhallows Hundred of Hoo, or St. Mary’s Hoo, [ds 41]) are, however, somewhat shrouded. Details of the composition are provided by Wickham (1877, p. 122) also with some excellent illustrations. The eminent antiquarian Sir John Evans gives more information but supplies little or no data on the context or circumstances of this find, apart from that it was found in a ‘cist, or box’ (Evans , 1881). Where Evans got this information from is unknown.

5.4.1 Other assemblages from this period that had sadly, no context, location or description include Marden [ds 45] and Bucklands Brickfield [ds 3], Ebbsfleet III [ds 65] and St Mary's Hoo [ds 66].

5.4.2 During the Edwardian period only one 'assemblage' was found in Kent, being that of Birchington [ds 4] which fortunately had a reasonably well recorded context and was well preserved and illustrated. The poor recording and contexts of assemblages continued during the following four decades with the exception of that of Minnis Bay [ds 46], but even in this case the location is not recorded despite there being an excellent account of the controlled excavation, context and composition of the assemblage.

5.4.3 Throughout the 1950s and up to the early 1980s assemblages continued to be found more regularly. The early 1980s to the present day has seen a much higher frequency in discovering of arrays of tin-bronze clusters and single finds, due to a combination of factors such as the advent of metal-detecting, the expansive programmes of building, construction and pipe-laying in areas of dense conurbation. In addition, laws requiring pre-building watching briefs, geo-physical survey, rescue archaeology and excavation of known archaeology have led to a spate of discoveries and their subsequent, fully controlled excavations by professionals. Prime examples of these complete excavations include Monkton Court Farm [ds 48], Ringlemere [ds 51] and Ebbsfleet IV & V [ds 30 & 31].

5.4.4 In addition 'the proliferation of client reports from civil engineering programmes (railway track, major roads and flood relief schemes) and small contracts have contributed to data gathering.' (Yates, 2001, from Brück, 2001,78)

5.4.5 In response to these requirements Rescue Archaeology has become an important instrument and the catalyst for private archaeology 'companies' to develop and operate, such as Wessex Archaeology who excavated the Ebbsfleet IV-V groups [ds 30 & 31] and Oxford Archaeology Unit. These companies provide professional and experienced heritage consultancies and fieldwork teams that, in conjunction with Local Council Finds Liaison Officers, Archaeological Trusts and the Portable Antiquities Scheme (PAS), will ensure that many future Bronze Age metalwork assemblages will undergo much more rigorously controlled excavation, recovery, contextual and compositional analysis which will enable a fuller picture of these depositions to come to light.

5.5 Historical critique – from Lewis to Childe to Bradley

Historical and current thinking on the 'meaning' and 'purpose' of Bronze Age tin-bronze assemblage deposits is worthy of an overview. Many archaeologists and authors have expounded upon varied theories and below are given a summary of some of the principal protagonists in this field. A selection of the principal concepts is given below in chronological sequence. Although there are many other contributors that could be included, the limitations of this paper had meant focusing on those that have been mentioned in the Chapters herewith.

18th century

5.5.1 The earliest account of an assemblage found in the subject area, the MBA group from Westgate [ds 15] has been mentioned in the datasheet which includes a lengthy but informative report of this find and the high calibre in the form of his deliberation and deductions.

5.5.2 This a masterpiece of observation, which, sadly was not replicated by many successive finders of other assemblages, either in Kent or elsewhere for many decades, even centuries. Lewis drew upon the opinions of friends and other contemporary antiquarians and clearly he wished to gain their ideas before publishing his account twelve years after the assemblage was first discovered.

5.5.3 Taking into consideration the excellent drawings of some of the palstaves from this assemblage (artist unknown, but Gez Moody believes they are by Stukeley - personal conversation, 2010), and the descriptions of them by Lewis, it is apparent these palstaves date from the MBA because of the cast loops (Perkins, 1988a, 248). Some of the palstaves blades appear to have been used, others are in near-mint condition, and none appear to be from the same mould - indeed each seems to have a very individual provenance.

5.5.4 It is particularly interesting that Lewis and his fellow antiquarians were at a loss as to what the palstaves represented; their function was questioned, due partially by their size and metallurgical content. Nevertheless Lewis questioned the opinions of his contemporary antiquarians, and concluded, quite rightly as we know today, that the 'Instruments' were for cutting, not hewing. It is also worthy of note that in the mid-eighteenth century, all comparisons were with Roman finds. The possibility that the objects were manufactured by earlier indigenous populations was never canvassed. This is understandable given the proliferation of Roman artefacts that have dominated the adjacent Sandwich and Reculver port areas.

19th century

5.5.5 Assemblages recovered and collected during the very late 19th and early 20th centuries (notably by eminent antiquarians such as Sir John Evans (1823-1908)) were often displayed at forums and Museum lectures.

5.5.6 Many assemblages were generally recovered by workmen or labourers or by purchase, which meant that most suffered from a lack of context although they were mostly subsequently very well recorded, photographed or illustrated. The Isle of Harty assemblage [ds 42] is a prime example, and Evans also recorded and described the Hundred of Hoo assemblage [ds 41] which was discovered in 1747 (Evans, 1881). Evans and his contemporaries always referred to axe heads (regardless of Bronze Age period) as 'celts', which is a very ambiguous expression to us today, as it also infers a connection

with 'Celts' which was a term also being popularised during the Victorian era to refer to iron-age peoples in Britain.

Nevertheless, we see in Evans' work a serious attempt to understand typology and catalogue assemblages for display and research and their eventual guardianship by Museums.

Early 20th century

5.5.7 Childe was probably one of the first antiquarians and scholars to illuminate on the possible meaning of 'hoards' and of their provenance. In his 1930's book 'The Bronze Age' he gives a short yet 'authoritative' explanation by categorising assemblages between 'closed hoards' (domestic assemblages) and 'founders hoards' for industrial scale re-cycling or trade, as well as votive possibilities, for example he suggests that 'Objects found together at the foot of a rock or a tree or in a spring or a swamp, may sometimes at least represent offerings to a divinity supposed to inhabit the spot' (Childe, 1930, 44).

5.5.8 Furthermore, Childe proposed methods for dispersal and collection of assemblages, and suggested that most of the metalworking was carried out by 'itinerate smiths plying their trade over a localised area, '...some such hoards probably belong to gangs of travelling tinkers who went round the countryside repairing broken tools and collecting scrap metal at a time when the demand was particularly intense' (Childe, 1930, 45) which has been subsequently disparagingly remarked upon by some contemporary academics (Northover, 1982, p. 102), but in the light of this dissertation may not be so far from the truth (Kuijpers 2008, 36-37)

5.5.9 In many respects Childe's interpretations may hold true. The Chislet I & II assemblages [ds 21 & 22] could be construed as 'closed hoards', the Boughton Malherbe group [ds 19], Langdon Bay [ds 10], Ramsgate [ds 50] and Crundale [ds 26] as 'industrial scale' with Herne Bay I [ds 32] as an 'itinerate' or community (collective) deposition due to its locality and volume of artefacts within a Bronze Age settlement. Childe also alludes to the concept of larger assemblages as possible 'trading stations' (1930, 45) and also mentions trade routes and co-joining through the trade of amber in particular. Only one Kent assemblage has evidence for amber beads (quantity unknown) at Hundred of Hoo [ds 41].

5.5.10 Childe (ibid) has also proposed that some assemblages were buried in haste, on trade routes or even on the frontier of two cultural provinces, the latter ideas for which have not been properly explored in any recent academic circles, probably due to the scarcity of BA settlement and agricultural data for Kent.

5.5.11 Although it may be conceived that some of Childe's ideas maybe somewhat 'romantic' and perhaps based on little archaeological evidence for 'itinerate smiths' for example, or burial of assemblages in times of danger or 'invasion', he at least planted the seeds for discussion and for the idea of individual assemblages having distinct purposes, particularly in the LBA record.

Childe's suggestion for larger assemblages (by volume) as being 'trading stations' or 'depots' is further explored in 'Discussion' (6.14).

Later 20th century

5.5.12 Later authors begin to take a more 'holistic' view of assemblages in the Bronze Age record and present theories as to a recurrent 'time-line' that may have influenced deposition. Included are proposals for ethnographic influences that may have been responsible for typological clusters within assemblages; 'Ethnographic examples also show that production and the demand for new tools and weapons is often a seasonal factor, concentrated at a time when new tools are most needed...' (Rowlands, 1976, p. 212). Rowlands' theories could also potentially sit well within Taylor's 'groupings' suggestions (see below) concerning volumes of material, as well as typological.

5.5.13 Rowlands' approach is the only account, so far, that attempts to integrate and reconcile ethnographical patterns into the discussion concerning Bronze Age assemblage typology. During recycling processes which would have no doubt been carried out at regular intervals, 'The possibility of customers returning broken and worn out implements to the smith might explain the typologically and sometimes chronologically heterogeneous nature of some 'Founders hoards' (ibid. p. 212). The Kent record can certainly support some of this proposal; nearly all the assemblages have an eclectic mixture of items and with clearly different chronologies, such as those found at Boughton Malherbe, [ds 19] and Marden [ds 45].

5.5.14 Furthermore, Rowlands posits that irregular phases of metalworking and recycling were taking place, this being an explanation for the 'super-hoards'. He states that 'The presence of large hoards containing large numbers of similar implements (usually interpreted as 'merchants hoards') might suggest a system of large scale production at a limited time of the year, or the economic cycle, rather than continuous production regardless of local demand and economics needs' (ibid. p. 213). However, one could argue that although some large assemblages may contain large volumes of similar items (socketed axes or palstaves for example), no items are from the same mould and no more than two or three exhibit close stylistic design or regional manufacture parallels, which would surely be expected to be in evidence if material is being returned to the same smith, in the same locale, notwithstanding the constantly changing identities of the smith and stylistic influences.

5.5.15 Northover also reiterates this concept of irregular manufacture and recycling by explaining that 'It is at present believed by a number of writers (Burgess & Coombs, 1979) that hoards are irregularly distributed in time and that periodic episodes of hoard deposition occur, often toward the end of metalworking phases.' (Northover, 1982, 69-109). Again, however, this concept could be challenged when the chronological standpoint is taken in the light of evidence from assemblages containing

multiple phase metalwork (Ewart Park, Carp's Tongue and Wilburton phases) found in the Minster-in-Thamet assemblages [ds 47].

5.5.16 Other authors have given similar thought to the suggestion that deposits of assemblages should have been fairly regular with each Bronze Age epoch when considered in the context of votive or supernatural / spiritual belief: 'This should mean that there was a fairly even deposition of hoards from period to period, within individual periods, and in all regions. Clearly, this did not happen' (Burgess and Coombs, 1979a, 4).

5.5.17 The reasons for the irregularity of frequency of deposition is also discussed by both Barber, Burgess and Coombs and Hawkes, who imply that they were caused by interruptions due to the uncertainties and vagaries in Bronze Age life. Hawkes (1943, 78) alludes that 'Travellers in little civilised lands are always liable to meet accidents, occasionally sudden death, so it is not surprising that throughout Europe and the British Isles the contents of the of the bronze-smith's workbags are found today in many places where they have lain since they were lost in bogs, or from capsized boats, or buried in an emergency and never reclaimed.' This leads to further suggestions that more calamitous events were also influencing frequency of depositions, such as natural disasters, disease or warfare.

5.5.18 Peter Northover has been significant in research in the Bronze Age for many years and has produced some significant findings. In his paper on 'The Metallurgy of the Wilburton Hoards' (1982) he explores the ebb and flow of demand, supply and metallurgical contents during this period. Northover's paper concentrates on the massive assemblages from outside Kent (mainly Isleham and Guilsfield). There is little Wilburton phase material in the Kent record, apart from larger representations from Broadness [ds 20], Ebbsfleet I [ds 28] and Sturry [ds 58]. There are some single, scattered examples in the form of sword hilts (and fragments) from Bexleyheath [ds 17], Crundale (spearhead, [ds 26]), Minster-in-Thamet [ds 47] and possibly Rochester [ds 52].

5.5.19 Northover, in his same paper, also looks at the composition of assemblages ('founders hoards') which may be due to 'a combination of several features' (1982, p. 106):

- The repertoire of the founder and the demand for his various products
- His relationship to various metal resources e.g. imported / locally collected scrap, his own surplus production, ingots, lead etc.
- The ways in which metal was stored and transported
- The tools used by the founder and his working practices e.g. his success rate in producing sound castings

5.5.20 That many of the assemblages contain a variety of typologies and scrap tin-bronze to the exclusion of other material has been identified by Northover, but it could be suggested that the 'composition hypotheses' that abound still have no substance for their individual 'Raison d'être'.

R. J. Taylor

5.5.21 In Taylor's paper of 1993 (p. 103), a system of classification is introduced of assemblage by weight (volume) and size (number of mixed artefacts therein) rather than typology. These were apportioned by Taylor by grouping:

Group I – 'small, restricted category assemblages' (for example four items only that may include two axe heads and ingot metal and a hog's back knife blade). In Kent these could be construed as Aylesford I [ds 1], Cliffe-at-Hoo [ds 24] and Hoaden I [ds 35] among others. Turner comments that 'Group I assemblages are common in Essex but rare in Kent' (1998, p. 73), but as can be seen from the Kent assemblages in this research, this can be seen that this is no longer the case.

Group II – 'small mixed category assemblages', for example Sturry [ds 58] and Wickham Park [ds 63] would fit within this descriptor.

Group III – 'intermediate mixed category assemblages', these would sit within these criteria to include certainly Ramsgate [ds 50], Monkton Court Farm [ds 48] and Minnis Bay [ds 46], in which Turner concurs (1998, 74) but at least a dozen more could be added.

Group IV – 'large, mixed category assemblages', these would now also include subsequent assemblages such as Boughton Malherbe [ds 19], Crundale [ds 26] and Waldershare [ds 62] which are among half a dozen others, the data for which was not available to Taylor and Turner as these are recent discoveries.

5.5.22 Although this 'grouping' by Taylor may have some purpose and value, possibly in determining 'consumption' of the tin-bronze material within a certain location, space and time, Turner argues that it is near impossible to determine their chronological relationships as deposition dates are ambiguous, as is distribution.

5.5.23 Turner's PhD Thesis (1998) includes an overview of previous academic thought relating to not only the theme of 'hoards' in general, but also of influences concerning proposed anthropological contexts by Bradley. Her thesis looked at selected assemblages from Kent and Essex and summarised that there was 'a significant dominance of Ewart Park metalwork and also that 'the emphasis on weaponry is in many cases noticeably greater in many of the Kentish hoards [compared to Essex' (ibid. p. 76), which may be connected to her summary that 'To begin with, the smaller hoards of both Essex and Kent include only Ewart Park material', (ibid. p. 61) which on the whole is largely borne out from the data in this dissertation (see Tables 19-22 at Appendix 1).

5.5.24 Turner also analysed the work of Christopher Hawkes (1960) within his paper 'A Scheme for the British Bronze Age', within which he presented chronological scheme based on differences in material culture from a succession of cultural groups. Despite contention over the dating of various cultural groups this model for chronology remains as a basis for analysis.

21st century

Timothy Champion

5.5.25 'If the prehistory of Kent has been neglected in favour of the later periods of its archaeology, the Bronze Age has perhaps suffered worst' (Champion, 1982). In this publication Champion also noted that there were only three out of twenty-four Late Bronze Age Kent 'hoards' published in an 'adequate manner by modern standards', and also stated that 'There are in fact [in Kent] no major field monuments, no important ceremonial centres, little pottery, and few settlements'. Since 1982 however, there has been a plethora of Bronze Age settlement and ceremonial centre evidence coming to light through rescue archaeology and excavations such as those at Herne Bay I [ds 32] and Broadstairs [ds 21].

Champion expands upon the difficulty in interpretation of settlement areas, in the light of coastal erosion in north Kent which certainly has an impact on our understanding of trade and exchange mechanisms. Some observational secondary source material that supports this is at Chapter 3 and at Chapter 1.2.1 relating to the Herne Bay and Whitstable area coastline. There is also evidence for a rarely found Bronze Age children's burial and ceremonial site at Eastry on the North Downs, discovered in 1995, which also adds to the wider range of Bronze Age activity in Kent.

Martyn Barber

5.5.26 Barber also covers much of the overview given in this Section (Barber, 2003, pp. 44-47). His particular attention to Evans' compartmentalisation of reasons for deposition reverberates upon those of Childe's later work. This has become, as Barber describes it, 'an orthodox' and generally accepted authoritative framework for depositional theory, which transcends to this day. Other authors have also expanded upon this 'orthodoxy':

John Hammond

5.6 Single object finds

Considering the frequency for single finds in the subject area 'In Kent, up to 2003, just 23 single object finds, largely from non-funerary contexts, and three assemblages, dating to the period 2000 BC - 1500 BC had been recorded (Yates 2007, 21). In 2008 that figure was being revised as part of work on the South East Regional Framework. 'By the autumn (2008) it had reached 35' (Hammond, 2010, p. 120).

5.6.1 The record of single Bronze Age tin-bronze finds subsequent to 2003 have grown in propensity largely in part to the Portable Antiquity Scheme and the willingness for detectorists to bring them

forward. It has not been possible to explore the numbers or location of single finds or typology in the limitations of this paper. The lack of any sort of context for the vast majority of single independent articles would not contribute to the study of assemblages. Only typology and metal content may possibly provide a contribution in relation to understanding Kent assemblages.

Chapter 6

Discussion

6. Discussion

6.1 Introduction

The following themes will be considered:

- Overall distribution of tin-bronze assemblages
- Marine transport and distribution of assemblages in Kent
- Evidence for cross-Channel trade and exchange in the study area
- Re-cycling tin-bronze metalwork
- The 'magic' of the smith
- Intentions to re-cycle: the debate
- Inclusion and exclusion: acceptability theory
- Copper and tin sources – acquisition and accumulation
- Place and memory: re-codifying
- Social markers
- 'Battle damaged' weapons
- Dry or wet depositions
- 'Super-assemblage' and 'depot' theory
- Instances of 'packed' socketed items

The discussion elaborates on some aspects of the themes from the preceding chapters to expand upon observations made from the corpus of data.

6.2 Overall distribution of tin-bronze assemblages

Observations have been made by contemporary archaeologists on Kent assemblages, (Turner 1998 p. 172), Barber (from Yates, 2003), Yates and Bradley (2010), Rowlands (1976) and Perkins (1999). These observations have been selective and limited in scope due to the lack of more expansive data now provided in this dissertation. They are also focused on particular approaches to, or in support of, very specific analysis for example, the Arretton Down phase metalwork in a south-coast 'regional zone' proposed by (Needham, Parfitt & Varndell, 2006); by Turner when looking at typology (1998, Tables at pp. 209-219) and the proposed re-alignment of the Wilburton complex phase (Burgess, 2013, pp. 127-158).

6.2.1 These contributions and others not mentioned in such detail in this dissertation have added significantly to the overall picture of assemblage distribution in the study area.

6.2.2 The distribution of tin-bronze assemblages in Kent as outlined in Chapter 3 and the Main Distribution Map (Map 1, Annex 2) include all of the assemblages mentioned by the above authors in their research.

6.2.3. Although undoubtedly more assemblages will come to light over the coming years, (see Addendum at Appendix 3), from the current data there is an apparent regional concentration of assemblages in eastern and western Kent. This is likely to be significant even taking into consideration the patchy nature of excavation through contractual archaeology or the discovery of 'chance' finds in mid-Kent and in the southern coastal areas.

6.3 Marine transport and distribution of assemblages in Kent

One might intuitively assume that there would be a higher propensity of finds along the southern shoreline of the study area as it is the shortest navigable route for imports from the near continent (Buckland Brickfields, Langdon Bay and Saltwood) but importantly the lack of slower moving navigable rivers along the south coast may have hindered 'delivery' to the hinterland.

6.3.1 The longer, more circuitous routes around the Isle of Thanet from Northern France or the less hazardous and arduous 'short-cut' route through the Wantsum Channel during the Bronze Age, and the more protected and shallower waters of the northern coastline (Whitstable, Faversham, Sittingbourne) westwards into the Medway, Hoo Peninsula and Thames estuaries may have been a more attractive proposition, offering opportunities of 'stop-over' points and replenishment along the way, and of course, any return journey. The sandbars and their associated currents (e.g. The Goodwin Sands) along the north and east Kent coast in the Bronze Age were probably just as hazardous as they are today. This would have been largely avoided by hugging the channels between sandbars and coast and been largely avoided by navigation of the Wantsum Channel however it is noted that 'Sandbars, periodically fed by sustained wind activity can be found on all the coasts but they were still discontinuous and unstable' (Meurisse-Fort and Phillippe, from Lehoërff, 2012, 19).

The possibilities for imports via the shallower waters of the Bronze Age north-sea from the Low-Countries therefore must have been inviting; however the archaeological evidence appears to indicate exports rather than imports of tin-bronze material (Cunliffe, and Fontijn, from Clark, 2009, and 129-134).

6.3.2 The navigation of the north coast and estuaries of the study area appears to have at least influenced distribution, but not the end location or siting of assemblages which may have been determined by other factors. These potential factors have been alluded to in Chapter 3, 'Distribution'. The most significant data in siting of Kent assemblages is found in Tables 27-3 at Appendix 1. The orientation and positioning of assemblages (possibly astronomically and therefore with a cosmological

idealism) may have had a more powerful influence in BA assemblage distribution in this study area than has been recognised in previous studies.

6.3.3 In addition to the Langdon Bay assemblage [ds 10] which is arguably thought to derive from a seafaring episode, the excavations of the plank-built Dover Bronze Age boat (Clark, 2004) and the recent discovery of six boats from outside the study area, from the Must Farm excavations in Cambridgeshire (Symonds, 2012, pp. 13-19) which are of different chronological BA dates, has shed a whole new light on the possibilities of extensive water-borne transport and communication which could be applied to the whole of the British Isles. 'The raw materials for bronze, for example, are not to be found in south-east Britain, and need to be imported from the far west of Britain or from distant sources in Continental Europe, e.g. from eastern and southern Brittany or the Massif Central south of Argenton' (Clarke, 2004, 6). Evidence for other Bronze Age water borne transport has also been located at North Ferriby, Humberside (3 boat relics) dating from EBA-MBA, which included items such as paddles and a bronze tanged knife (Wright, 1978, pp. 187-202).

6.3.4 The Dover Bronze Age boat is accepted by some as indicating coastal and short sea crossings were undertaken (Clarke, 2004). Similarly, the oak dug-out canoe and punt varieties from the Must Farm excavations demonstrate an ability of the Bronze-age peoples to adapt and adopt new methods of travel in response to a changing climate and coastal environments (Symonds, 2012, 19). The shallow punt boats would have been ideal for marshland habitats and the more substantial dug-outs for heavier inland waters. It is clear from these specimens that they were capable of transporting people and cargoes (even evidence for small fires on the middle of one deck for cooking) making them very versatile.

Based on these exciting discoveries, the transport and distribution of ore, ingots and metalwork become more realisable and plausible when taking an overview of the distribution of assemblages if these types of craft were also employed in Kent. The prevalence for deposition near fresh-water navigable systems and coastal areas may define this mode of transport as the *prima facie* for distribution. (The rivers Medway, Len and Stour for example – see Map 3). Other offshore finds on the south coast of England exemplify the volume and quality of material that is being imported or re-distributed in the south western and transmanche regions.

6.3.5 The Devon Bronze Age metalwork discovery in 2004, 500 metres offshore from Salcombe (Salcombe B) in only 10 metres of water is further evidence of 'bulk carrying' of tin-bronze and copper metal. Needham states that 'The cargo recovered includes 259 copper ingots and 27 tin ingots. Also found was a bronze leaf sword, two stone artefacts that could have been sling shots, and three gold wrist torcs – or bracelets.' (Needham et al, 2013, 184-187). This is one of the very rare examples of where pure tin ingots have been identified anywhere, suggesting that material was intended for re-

cycling and the creation of new tin-bronze tools. The loss must have been significant to the traders and those anticipating perhaps receipt of same. To re-inforce this scenario there is also a significant second assemblage recovered between 1970-1982 known as 'Moor Sand' about 400 metres ENE of Salcombe B, also thought to be a wreck site (Needham et al, 2013, 20) and also an 'ingot field' equidistant between the sites that is yet to reveal detail of composition.

6.4 Evidence for cross-Channel trade and exchange in the study area

Several of the assemblages, notably, Hoaden II [ds 36], Minnis Bay [ds 46], Stourmouth [ds 57] contain Plainseau socketed axe variants (Ewart Park metal phase) from northwest France (Drieul, Somme). According to Richardson 'The drapery decoration is relatively rare in this country though recent parallels are known from Pencoyd, Herefordshire, Braintree Essex (Butler, 1976), Bognor Regis (Maraszek, 2006 606 Fig XVII) as well as other older assemblages (see O'Connor, 1980, 521, List 122) which includes Wateringbury and Stourmouth in Kent.' (Richardson, 2003, PAS Unique ID: Kent-7C3863). It can be construed that either these items were copies of continental manufacture, or were imported.

6.4.1 The earlier MBA also sees evidence for cross-Channel trade with the Acton Park phase showing parallelism in production with that of Tréboul in Brittany and in the Taunton phase with links to Picardy and Normandy. Pearce notes that 'The great find from Malassis had an extensive range of familiar Taunton types, including palstaves, rapiers, basal-looped spearheads, knobbed sickles arm-rings and spiral rings' (Pearce, 1982, 32). The LBA Armorican socketed axe distribution and 'Carp's Tongue' swords also demonstrate this with specimens from both sides of the English Channel as demonstrated by Briard below (from Coles and Harding, 1979, 474-475);

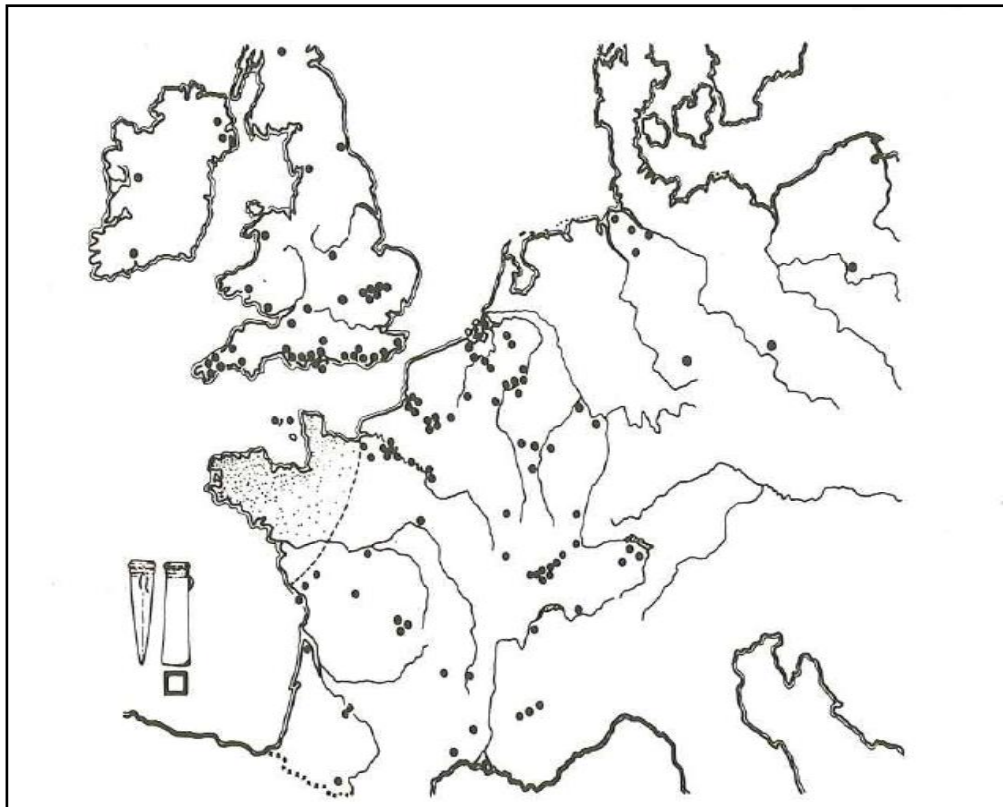


Illustration 6a. Distribution of Armorican socketed axes(from Briard, 1965)

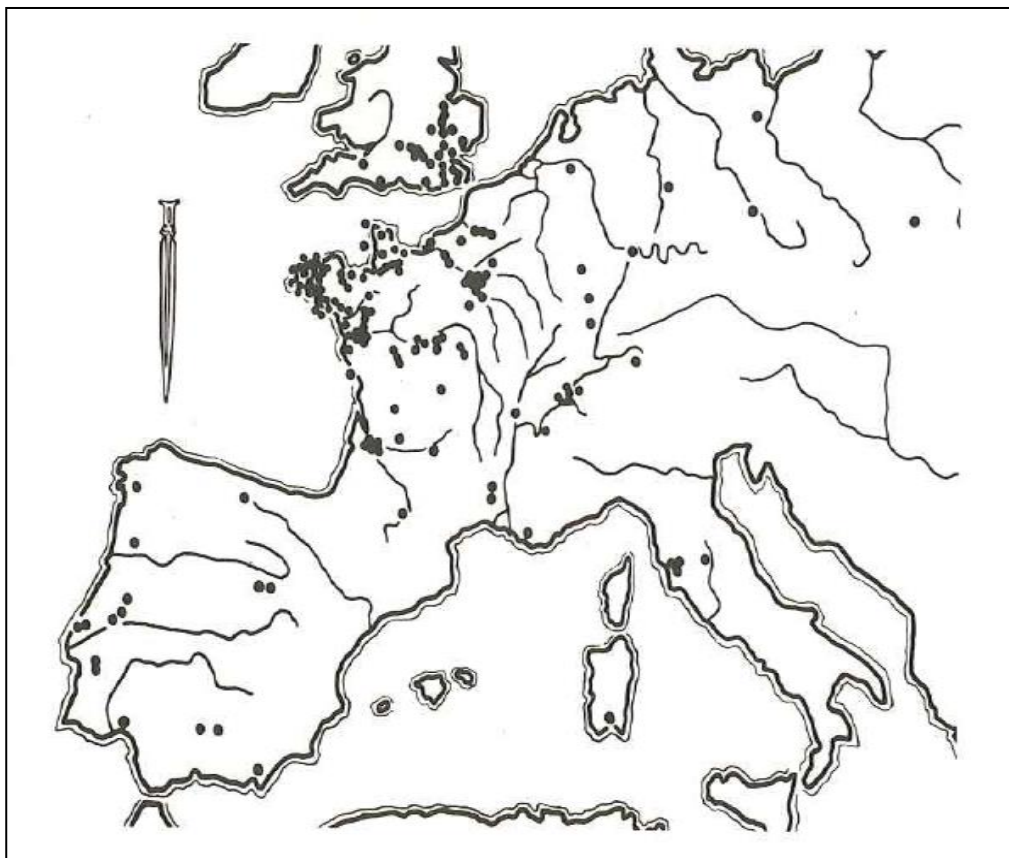


Illustration 6b. Distribution of 'Carps Tongue swords in Western Europe
(from Briard, 1965)

6.5 Re-cycling tin-bronze metalwork

Rohl and Needham observe that 'The existence and the degree of recycling of metals is very difficult to demonstrate unequivocally' (1988, 6). However, metallurgical information can assist in the interpretation of refining and recycling. Northover (1989, 111-118), for example, predicted the progressive loss of certain elements such as iron and tin during re-melting, while it is generally acknowledged that certain volatile elements, notably arsenic, might be steadily reduced after each re-melt under oxidising conditions. This has been subsequently borne out by recent experimental archaeology conducted by Jeroen Zuiderwijk in the Netherlands (Kuijpers, 2008, 133).

6.5.1 Metallurgical analysis of some of the assemblages may give a better understanding of the re-cycling processes. The quality of the tin-bronze could determine if some metalwork had low tin levels which may indicate repetitive re-smelting. How the smith could determine which specimens to mix in the crucible to maintain the quality of the ratios required to produce good quality tin-bronze is not known, as clearly some tin-bronze had not been re-smelted before. Analysis of the alloy 'bun' or 'cake' ingots found in some assemblages would be fascinating in particular, as these may contain richer levels of either tin or copper which the smith would use to balance the ratios required. By continuous re-smelting (or melting) Kuijpers notes that the smith could ascertain the quality of the metalwork, by observing the patina and hue of the finished item (2008, 19). This could also be achieved by casting multiple small items from one crucible and testing the quality of one item (practical use) before deciding whether to re-smelt once more or to 'pass' all the castings. The runners or jets could also be utilised in such a way.

6.5.2 The quantity and composition of the bun or cake ingots from this study can be found at Tables 5-8 in Appendix I. It can be noted that many had pure copper ingots and some with lead, but none with pure tin. Clearly, the smiths in this study area were only able to introduce the tin component from the alloy material to hand, or from a separate stock that was never included with assemblages.

6.6 The 'magic' of the smith

The omission of arsenic and tin in their purified form in assemblages is also significant (see Appendix 1). It is very unlikely that the smith knew of arsenic and its properties in its rare (pure) crystallised form. As suggested by Parker-Pearson; 'Before people in Eastern Europe realized that tin could be added to copper, they used arsenic as a hardening alloy. Presumably, the lifespan of arsenical bronze workers was short' (1994, 82). Clearly, the smith knew how to add arsenical copper as a secondary constituent. The fumes given off by from arsenic, when mixed with oxygen are deadly poisonous; Andrews notes that 'The symptoms of arsenic poisoning are acute dermatitis and peripheral neuritis; a disablement of the nervous system leading to weakness of the fingers, legs and feet, and finally death; ...it may be no

coincidence that the earliest recorded metalworking gods – Hephaistos in Greece, Vulcan in Rome, and Weyland in Germanic countries - were often depicted as being lame' (1991, 71).

6.6.1 The smith's skill was in the calculated hardening processes when two relatively 'soft' metals were introduced to each other in a defined ratio in the crucible and during the solidifying and cooling process that included arsenic as a latent part of the 'recipe'.

6.6.2 However, it is very possible that smiths were able to separate out arsenic during the melting processes of tin or copper, though how they accomplished this is unknown. Arsenic is recovered mainly as a side product from the purification of copper in modern processes. Indeed, it has been noted by Briard (1976, 81) that 'the art of enriching certain parts of the [sword] blades with arsenical powders or regales was known, whereby the patina of the blades produced a white, glazed appearance in some swords of Armorican typology in France and Germany (Saxony)'.

6.6.3 This patina affect may have been significant as part of display of a weapon blade or ritualistic meaning. Whether this practice was copied in the southern English record is unknown but would merit further metallurgical analysis and research from appropriate samples in the Kent assemblage record.

6.7 Intentions to re-cycle: the debate

A detailed breakdown of individual assemblage constituents is given at Appendix 1, Tables 1-12. There has been some discussion from authors on the significance of typology and metal content from some assemblages (Turner, 1998). However, it is noticeable that there is a distinct lack of comment on what is *not present* in assemblages deemed to be founder's hoards (for example, pure tin or metalworking equipment).

6.7.1 To expand upon this topic, if founder's hoards were indeed deposited with the intention of re-visiting and recycling material it could be argued that in order to recycle one would endeavour to have all the necessary components also deposited with it, for safe keeping for its intended purpose. For example, to recycle tin-bronze a smith would especially require additional sources of tin (Sn) which normally includes traces of naturally occurring arsenic for the 'hardening process' as mentioned above by Kuijpers (2008, 20-21), as tin oxidises to a degree during melting / smelting processes. This also applies to lead (galena (PbS)), particularly in the LBA metalwork phases (Ebbsfleet IV [ds 30]) where finer casting of intricate items would require the thinning of tin-bronze, or a coating to moulds to allow 'slip' would be required. Pure copper (Cu) is found in reasonably significant volume among six Kent assemblages (see 6.7.4 below).

Pure tin ingots are also emphatically absent from all the assemblages listed by Turner (1998) from Essex

and in other significant regional assemblages such as Islesham (1959, Cambridgeshire, 6,500 items) and Tisbury (2011, Wiltshire, 114 items). Pure tin is resistant to oxidation so it would not impact on its exclusion in assemblages.

6.7.2 Many of the assemblages contain cake or bun ingots, slag or cast jets of tin-bronze alloy. The question that could be asked is how would the smith, if recycling material, be able to determine the quality and content of the alloys (cake and bun ingots). If such alloy material was of low quality, in that it had not enough tin or copper content, it would be discarded. The only way to determine the quality of such alloys would be to smelt it and perhaps attempt casting, thereby grading the suitability for its use. This would of course have presented the smith with a dilemma. Every time that tin-bronze material is re-smelted, it loses some of its essential properties, such as the oxidation of the tin element and arsenic thus degrading its acceptability for further use without significant additions to the consistency.

6.7.3 By adding pure copper the cast item can become brittle and therefore has a shorter working life-span. The patina of items with a high copper content gives them an attractive 'golden-like' lustre when polished, but the effectiveness as a tool is diminished.

6.7.4 The interpretation of 'ingot' is open to debate (Kuijpers, 2008, 73-74). It has been proposed that solid rings can also be interpreted as ingots (Rowlands, 1976, 167) and rings contained in some assemblages in the subject area have already been noted (see Tables 5-8 in Appendix 1). In most cases these are too big for use as finger-rings and may possibly be bracelets or bangles. However, pure ring ingot hoards are found in abundance in central southern Europe (identified as a production area), and north central Europe as an area of distribution where they are mixed in assemblages containing other items (Kristiansen & Larsson, 2005, 114). Kristiansen argues that these rings were ingots, not ornamentation, their circular cast form aiding transportation. That these rings are also found in Kent in quantity (Boughton Malherbe [ds 19], Marden [ds 45] and Sittingbourne [ds 55]) could reinforce the evidence for cross-channel trade and exchange that had longer, deeper reaching routes into central continental Europe than previously thought. It is also interesting that the aforementioned assemblages containing large rings are LBA as one would perhaps expect 'ornament horizon' material to be more prevalent in the MBA (see Appendix 1, Tables 5 to 8). Bradley also comments upon the proliferation of Breton socketed axes; 'a strange group of axes produced at the very end of the Bronze Age which were so poorly made that they could never have been used at all' (1998, 119) which infers that these may have been intended as ingot material.

6.7.5 Pure copper ingots are found in six assemblages;

Cliffs End [ds 25] – 31 ingots

Crundale [ds 26] – 33 ingots

Isle of Harty [ds 42] – 2 ingots

Lenham I [ds 43] – 11 ingots

Stourmouth [ds 57] – 11 ingots

Tilmanstone I [ds 61] – 1 ingot

6.7.6 Pure lead ingots in;

Ebbsfleet IV [ds 30] – 2 ingots

High volumes of alloy ingots from;

Allhallows [ds 16] – 10 ingots

Bexleyheath [ds 17] – 26 ingots

Boughton Malherbe [ds 19] – 58 ingots

Ebbsfleet I [ds 28] – 58 ingots

Ebbsfleet V [ds 31] – 9 ingots

Herne Bay I [ds 32] – 12 ingots

Hollingbourne II [ds 38] – 13 ingots

Hoo St. Werburgh [ds 40] – 35 ingots

Lenham II [ds 44] – 18 ingots

Ramsgate [ds 50] – 35 ingots

Ringlemere [ds 51] – 7 ingots

Sittingbourne [ds 55] – 30 lbs (13.076 kilos) alloy material

Stoke-at-Hoo [ds 56] – 22 ingots

Wickham Park [ds 63] – 23 ingots

6.8 Inclusion and exclusion: acceptability theory

Many assemblages from the subject area also include a mixture of earlier Bronze Age material, notably in the LBA assemblages. Theories abound concerning the accumulation and inclusiveness of items from earlier periods in the Bronze Age metalwork epochs. The 'votive' concept, for example, is mentioned as a possible explanation in general terms by Bradley (2000, 37).

6.8.1 The significance of these assemblages is that the inclusion of earlier material meant that the EBA / MBA material was either still in 'circulation' (still functional or 'heir looms') or had been recovered from individuals, communities or from other assemblages still extant that were remembered, re-discovered, or otherwise. What can be seen from the data, however, is that these largely exclude items related to weaponry such as dirks, daggers or swords (except one item from Tilmanstone II [ds 14]). An example 'inclusiveness' in assemblages comes from outside the study area being a recent find from Wiltshire, designated the 'Tisbury hoard' of 114 items, (Boughton, *Archaeology* March/April 2013, pp. 42-48) which is a 'multi-period' assemblage that remarkably, also includes Iron Age early 'Hallstatt D' (600-450 BC) terminals or pommels from daggers and also a later Iron Age La Tène, Hallstatt D knobbed bracelet and a winged chape of the possibly older Iron Age Hallstatt C phase (800-600 BC).

6.8.2. The Tisbury hoard has been subsequently described as a 'museum' of artefacts by Boughton, 'that all of these artefacts may have been kept before deposition in some kind of 'community museum.' They may have been considered not possessions of the finders, but of the community, much as most of think today: to be used enjoyed, admired or prayed before all. Perhaps they were displayed.' (Boughton, 2013, p. 48). It is also possible that they were retained as 'templates' for reproduction or design and decoration (author's observation).

6.8.3 There are several arguments to these proposals. It is very probable that earlier items were included in caches as 'curiosities'. As agriculture and settlement became more intensive between Middle and Late Bronze Age / Early Iron Age transitions it is very probable that numerous finds of early metalwork assemblages were made in the relatively shallow depositional modes of concealment. A more expansive set of concepts for 'concealment' are made by Bradley (2000, 37).

6.9 Copper and tin sources – acquisition and accumulation

There are no known natural sources of copper or tin ore in the study area and therefore these must have been acquired from other regions of the British Isles or further afield. Without metallurgical analyses of some of the copper ingots (no tin is present) from the assemblages in Kent (see Tables 6 and 7 at Appendix 1), it is difficult to suggest their likely sources.

6.9.1 Sixteen principal sources of copper ore have been identified in the British Isles and Ireland. These are predominantly from west Ireland, Scotland, Wales and Cornwall. 'The largest copper mine from this period (probably in all Europe) is in Wales, at Great Orme, Llandudno, which used charcoal as fire setting to crack the stone resulting from the pouring of cold water over the affected area' (Parker-Pearson, 1994, 83-84). Within the British Isles, tin appears only to have come from sources in Cornwall, the other closest are the Ill-et-Vilaine region of Brittany and Poitou-Charentes in western France. In Spain there are also several sources from Galicia and northern Castillay Y Leon which are close to the coast. By far, however, the largest concentrations of both tin and copper are from Germany, Austria, the Czech Republic and the Balkans (Champion et al 1984, 166).

6.9.2 To gather these raw materials clearly required extensive knowledge of trade and exchange contacts, which can only have passed through generations by word of mouth. It is very likely that Bronze Age communities not only retained this knowledge by such means but also by having pre-arranged and agreed times of the year and places to meet, or to have members of other communities among them for extended periods of time, acting as intermediaries such as merchants, guides, translators, ambassadors or the like.

6.9.3 Accumulating the raw materials for production or acquisition of ready-made objects would also have necessitated considerable amounts of time and travel. A major question that has not yet been fully explored by archaeologists is what was being reciprocated for these metals if they were indeed acquired by trade and exchange. The author suggests that such modes may include;

- **Resources;** livestock, hides or furs, wool, horn, timber, gold or silver, amber, precious stones, foodstuffs, honey
- **Products;** leatherwork, woodwork, bone work, pottery, ornamentation
- **Invisible goods;** slaves, exchange by 'marriage', knowledge, transmission of ideas, belief or superstition
- **Conquest;** raiding, warfare, dueling, theft

6.10 Place and memory: re-codifying

The distribution of tin-bronze assemblages in the subject area has already shown disparities between regions. Some concentrations of groups are close to monument activity in the far eastern region (Isle of Thanet), with the majority that do not seem to do so in the mid and western sectors.

6.10.1 Deciphering any context of interaction between memory and place where there are high volumes of assemblages in close proximity to monument activity in the far eastern region of the subject area relies on interpretation of the archaeology, as well the modern concepts of monuments as social markers or spatial markers, particularly in the case of barrows (Brück, 2001, 115). Incorporated into this can be brought the cognitive notion and perception of relative time with regards to memory; 'The difference is between human or substantial time and chronological or abstract time' (Bradley, 1998, 87). The local population or possibly non-indigenous visitors may have maintained memory through folklore (poems, mantra, storytelling or acting-out ritual displays) that perpetuated tradition and became almost eternal in their significance.

6.10.2 In the absence of the ability of Bronze Age peoples in north-west Europe to record memory and place in written form, it could be conceived that the acts of perpetuating legend from individuals 'deeds, heroic romanticism, tragedy and warfare were more strongly enforced through necessity to retain self-identity and self-awareness. In order to display knowledge of their ancestry, accomplishments and indeed progressiveness the inclusion of earlier metalwork in the LBA assemblages may reflect the philosophy of those involved in their deposition. This could also argue the case that esoteric knowledge for depositions of assemblages was not in-play and that there was a more cohesive, communal decision making process in the inclusiveness of material and inclusiveness' of individuals, families or other

groups (shaman, smith, high-status individuals or families) as well as that of which should be omitted, by being retained, discarded or given away such as singular finds.

6.10.3 There is much evidence for pictorial form or symbolic transmission in rock carvings and on cist stones from the Bronze Age, predominantly in Scandinavia (Kristiansen and Larsson, 2005, 198-199), but also in cup-marks at various locations in the British Isles. Pictorial form however could be also be associated to the decoration of individual tin bronze artefacts as identifying ownership. Markings by post-casting grooving and incising or those incorporated in moulded forms of metalwork may be attributable to the desire for particular individualism. Perhaps these were to symbolise status, ritual display or more complex meanings that are no longer known, or simply decoration when commissioning metalwork pieces that were not intended for practical use. In this respect, similar to such items from southern Scandinavia and Hungary, Kristiansen and Larsson suggest that ‘ritual axes, those that were clearly for ceremonial purposes are, on the whole, unique’ (2005, 194-195).

Marked or incised moulded tin-bronze artefacts noted in the present study include:

Birchington [ds 5] – 14 intact tin-bronze palstaves which include some patternisation. Two of the palstaves are from the same mould

Herne Bay I [ds 32] – 1 socket of pegged spearhead, decorated with ‘pin’ triangular chevrons, some inverted (see illustration in datasheet)

Hoaden I [ds 35] – Champion and Ogilvie (1977) note that the socketed axe with ribbed wing decoration, although in the style of Carp’s Tongue assemblages in Kent, Essex and the Thames Valley, has no exact parallel with any other axe found in the British Isles.

Lydd [ds 2] – Item No. 1: vertical, parallel striations

Ramsgate [ds 50] – Item No. 7: Spearhead, complete. Leaf-shaped blade, blade edges are mostly intact. Rivet holes on either side of socket. Below the rivet holes are two panels of concentric grooves enclosing finer lines. Length: 119.7mm.

6.11 Social markers

The Isle of Thanet displays two components of high concentrations of barrows with many cases of acts of funerary devotion (Thanet Earth excavations at Brooksend Farm, Canterbury Archaeological Trust, 2007)) with high volume MBA and LBA tin-bronze assemblages (ten in total) on their original coastal or semi-marshland periphery. Other concentrations of barrows appear in the areas of Aylesford, Chartham, Kingsdown, Lympe, and Willesborough/Smeeth (see Map 4 at Appendix 2).

It is conceivable that the deposition of tin-bronze assemblages had a connotation with the monuments through memory. Although the monuments would have been still very clearly visible, prominent and discernible in the landscape during the later MBA and LBA, the exact nature of their significance may have been eroded and diluted through the generations in-between, but that they still retained some form of reverence. That the later tin-bronze assemblages were not deposited in earlier barrows or immediately adjacent to them signifies a very interesting behaviour.

6.11.1 The barrow monuments in Thanet appear not to have been re-used or re-codified in any way subsequently with relation to tin-bronze assemblages, they were in effect left alone, isolated within their own space and time. Whether the barrows in Thanet remained as spatial markers or social markers is open to debate due to their extreme close proximity to each other, but the latter may have more credence in Thanet's case (see Map 4, Appendix 2). It would appear that older monuments were still significant to the population in that they were not violated by re-codifying. The same could also be implied for the tin-bronze assemblages, in that they also occupied their own spatial or social mark in their own space and time and their new implication of memory, unless they had some form of above-ground temporary marker.

6.11.2 A singular, fascinating example is that of the Sittingbourne assemblage within the subject area [ds 55] discovered in 1824. The assemblage is very unusual in its composition and deposition. Firstly, the apportionment of material in two pottery urns, close by, and one with 30 lbs (13.6 kilos) of tin-bronze un-formed alloy among socketed axe-heads. The inhumation, about 12 feet (3.65 metres) directly below the metalwork finds found later in 1828, adds a dimension to the possibility of place and memory.

The main difficulties with the interpretation of the inhumation at Sittingbourne are threefold:

1. There is no recorded detail of the inhumation by Vallance
2. The depth of the inhumation below the assemblages is substantial
3. The surface geology of the area is unstable (soft Thanet Bed sands);

The instability of the surface area may have contributed to the depth between the inhumation and the assemblage. Unbeknown to those depositing the metalwork, the depth of the inhumation was greater than they knew if the assemblage was not contemporary with the inhumation. This also implies that the inhumation must have had some form of marker at some point. This instability in the geology is also seen in the Thanet Bed strata at Sittingbourne where coastal erosion, deposition and tidal and river courses have shifted and altered their courses. It is noted by Champion (1980, p. 226) that erosion is quite common along river courses and estuaries and that land slip of river banks can be volatile and

include not only the exposure of river banks but the deposition of high volumes of alluvial and sedimentary material over a short space of time.

6.11.3 This also brings discussion upon how Bronze Age communities in the subject area adjusted their own concepts of ownership, custodianship and boundaries or place and memory as the landscape changed [in the relatively rapid] topographical aspect. The rise in sea levels, inundation, coastal erosion and alluvial deposition over the millennia between 1400 and 800 BC (see also 1.2.1) must have had a significant impact, notwithstanding the compacting of communities closer to one another and the resulting interaction whether desired or not (conflict and assimilation?) and the competition for prime agricultural land. The presence of weaponry in assemblages may be an indicator of the response to such social changes.

6.12 Battle damaged weapons

Observations made by Kristiansen (Kristiansen and Larsson 2005, 224) and Randsborg (1995, p. 44ff) that some central European Bronze Age assemblages contained weapons showing battle damage and bladed weapons had not been re-sharpened, has led them to suggest some assemblages represent the votive offerings of defeated war-bands. They also argue that in some cases, it is possible to reconstruct the strength of such war-bands by the volume of material deposited and its quality.

To explore this suggestion in relation to Kent assemblages is difficult as there is little or no analysis of sword blades (or fragments) or spearheads which is an area for future work. Socketed axes or indeed palstaves could double as weapons, but again there is no analysis available to confirm if any damage was resultant from such activity.

6.13 Dry or wet depositions

The difficulties in determining whether assemblages were deposited in a dry or wet setting has been covered in Chapter 2.1.2 (environmental change), but the philosophy and hypothesis behind the acts of deposition and context are complex; 'The processes which led to the deposition of material in water must have differed from those governing deposition on land and thus need to be assessed separately' and '...One problem is the movement of material due to alteration in river channels since prehistory, which may lead to the problem of interpreting whether an assemblage has a secondary context' (Needham and Burgess, 1980, p. 438).

6.13.1 Dry or wet depositions also appear to exhibit particular features in regard to the quality and preservation of material, proposed wet depositions being of a higher order in both respects. However, where items are recovered from a watery context, it should be borne in mind that any small or very

small items and fragments may escape recovery therefore distorting the overall picture of this hypothesis: 'A long-recognised feature of riverine metalwork is the preponderance of complete weapons, of unusual and exotic specimens, and of material of unusual size and in extra fine condition' (Needham and Burgess, 1980, p. 442). This is particularly exemplified in the Broadness assemblage [ds 20] with large objects with very individually defined, high quality castings and broad repertoire of typology.

6.13.2 Further to the earlier view of the Lydd assemblage [ds 2] in Section 4, 'Distribution of assemblages in Kent', it is possible to consider other assemblages that may have been in the same depositional context, that is to say possible votive groups of material treated in the same manner or similar to, the Sweet Track finds (Coles and Coles, 1986, 72 and 135). Some of the assemblages from this subject area show that they were deposited in gravel or in soil strata that would indicate inundation and subsequent covering by sediment material. In some cases, with similarities to those items found alongside the Sweet Track, preservation and condition of the artefacts varies. Some of these examples from the study area may include:

St Mildred's Bay [ds 13] - as the feature was covered by brown loam from valley downwash it is conjectured that the assemblage had originally been deposited in a marsh.

Broadness [ds 20] - artefacts were recovered from below the superficial alluvial peat and clay beds, in the first few feet of deep ballast, below the superficial alluvial peat and clay deposits in the riverbed, recovered by dredging of the Medway channel. The condition of the artefacts is relatively good but display 'chipping' to the spearhead blades and three broken spearheads.

Ebbsfleet III [ds 65] - five objects found lay within an area of 1m² in a uniform mixture of Thanet Beds sand at a depth of approximately 0.8 m. No stratigraphical sequence could be distinguished. The artefacts comprise both complete and broken specimens.

Ebbsfleet V [ds 31] - here, a concentration of objects was found together at the base of the subsoil, just above the interface with the natural, with further, smaller elements scattered around with some overlying, or in the surface of a midden deposit. The inference might be that they were placed on the ground surface (possibly in a bag) and perhaps covered with a small mound of soil, and have subsequently suffered some minor disturbance as a result of ploughing

Sturry [ds 58] - recovered from the top-soil of a sand pit, between the roots of a tree, 300 yards (274 metres) north of Broadoak Railway Crossing, close to the boundary between Nackington and Sturry on the north bank of the River Stour, on a gentle slope facing south.

6.14 Super-assemblage and depot theory

Childe's suggestion for larger assemblages (by volume) as being trading stations or depots is worthy

of deliberation (1930, 45). Possible depots may include some of those assemblages listed Table C in Chapter 3). The typology of material between these Kent super-assemblages (author's term) with those smaller in quantity does not immediately suggest transfers of particular items between them, and therefore there is no actual evidence that these were centres for distribution. Nonetheless, the super-assemblage and depot theory could benefit from further analysis relating to metal content and suitability for re-cycling.

6.15 Instances of 'packed' socketed items

As briefly covered in Chapter 5 - the practice of 'packing' socketed items occurs in some LBA assemblages (Chapter 4, Table e), which include Borstal [ds 18], Crundale [ds 26] and Monkton Court Farm [ds 48]. Very small pieces of tin-bronze material had been packed into the sockets of three axes in the case at Borstal. At Crundale; 'unusually one axe head had its socket crammed with bronze scraps and then the opening squeezed closed retaining the pieces within.' (Richardson, 2004, pp. 15-16). In the case of Monkton Court Farm [ds 48] this practice is highlighted with five socketed items having been packed;

- 1 blade fragment packed into the socket of axe
- 1 spearhead fragment packed into socket of axe
- 1 spearhead shaft fragment packed into socket of axe
- 2 fragments of ring packed into socket of axe
- 4 rod fragments packed into socket of axe with ring fragments

6.15.1 It is noticeable that *only socketed axe heads* in all three assemblages were packed with smaller fragments of material, which would have involved an element of sorting and selection. Although it is unclear what type of tool or weapon material was used to pack the Borstal and Crundale specimens, the Monkton Court Farm assemblage [ds 48] displays a mixture of items being inserted. It is also open to debate as to how the sockets were crimped closed without the metal being heated as tin-bronze in a cold state is still relatively brittle at its thinnest and would have snapped or shattered by using such force.

6.15.2 The Borstal assemblage [ds 18] does not show any crimping or sealing of sockets in the three socketed axes, but it is possible that the apertures were sealed or packed with other material such as cloth, leather, clay or mud to retain the scraps of tin-bronze.

6.15.3 The distribution of these three assemblages does not provide any clues to the practice of packing being concentrated within a particular region of Kent. Borstal is in the western region of the area of

research (Medway), with Crundale towards the eastern (inland) region and Monkton Court Farm to the far eastern region (Isle of Thanet). Turner (1988, p. 88) also mentions such examples in the Essex record.

6.15.4 The practice of packing socketed tools infers a deliberate act, but the reason(s) for it are open to debate. The author's suggestions are;

Practical: Empirical or heuristic (the scraps of material are more easily retained and transported this way)

Esoteric: The practice is adopted by individuals with knowledge of ownership of items thereby keeping them together within the cosmological realm of use and loss

Votive or superstition: The axe heads had a relationship with the material packed within them (family heir-looms) or copying of ritual or rites practiced in a localised area.

One particular example of 'packing' from outside the study area is the case of the Rossett 'hoard' (2002, Wrexham) where four pieces of gold had been 'stored' inside an LBA socketed axe;

<http://www.wrexham.gov.uk/assets/pdfs/museum/treasures/hoardboard.pdf>



Illustration 6c. The Rossett hoard with packed socketed axe head

6.16.5 It would be interesting to compare these samples with other packed socketed LBA artefacts outside of Kent, particularly Essex, Sussex, Thames Valley area and Hampshire, and possibly Northern France, which would be worthy of future study.

Chapter 7

Conclusion

7. Conclusion

Distribution

7.1 What can be seen from Chapter 3 is a widespread practice of tin-bronze assemblage deposition in the subject area, within the period of 2500 to 700 BC, an epoch of 1800 years.

7.1.1 The volume of EBA assemblages in the subject area is scant and it is therefore subjective as to relationships with distribution, context and of 'use and loss'. However, some EBA material is evidenced in later MBA and LBA assemblages (see Chapter 4, 'Analysis' at 4.13.2 and Table 4d) at Tilmanstone II [ds 14], Bexleyheath [ds 17] and Ebbsfleet I [ds 28]) which does allude to recovery, use and recycling of tools from the early Bronze Age in later times. The record of single item finds from the EBA is not included in this paper but future research may give a more elucidated overview of general distribution (see also [ds 5] Birchington).

7.1.2 MBA assemblages are significant in their proliferation in particular sectors of the subject area, with the main distribution being to the north-east of the North Downs in the east of the modern county of Kent. It can be seen that there was a burgeoning of MBA assemblages in east Kent distributed near watercourses and in coastal plains in which agriculture was predominant (see Map 1 , Appendix 2), which follows the conclusions of Rowlands (1976).

7.1.3 The emergence and distribution of MBA material and especially 'Ornament Horizon' typology has been mentioned in Chapter 4 'Analysis' at 4.14.5. The volume of MBA assemblages in the subject area supports Rowlands' theories on the introduction, influence and fusion of metalwork technology, design and production from the near continent. Evidence of importation of high volume tin-bronze material from the near continent appears in the Langdon Bay assemblage ([ds 10]) and some items displaying typical northern French typology in smaller quantities (Birchington [ds5] and St Mildred's Bay [ds 13]. It is arguable as to whether the Langdon Bay group contained both imported 'ingot' or recyclable material and finished products, but the quantity of items alludes to the demand for tin-bronze that clearly could not be satisfied domestically.

7.1.4 The transition to LBA typology was gradual but profound in the development of socketed tools. In addition, the wider eclectic mixture of tin-bronze metalwork forms becomes apparent in assemblages (Boughton Malherbe [ds 19] and Crundale [ds 26]). This is a reflection of the ability of smiths to manufacture more elaborate and refined tools and equipment such as razors, gouges, stamps, socketed hammers, buttons and horse furniture, which also found their way in to assemblages for recycling when their usefulness came to an end. The frequency of assemblages increases significantly which reflects

population growth and the ensuing market for supply and demand for tin-bronze weapons, tools and horse furniture.

7.1.5. LBA assemblages are predominantly found in the far west and east of the subject area (see Map 1), typically on or very near to the coast and river systems. Some assemblages are found in a more isolated aspect inland, such as Offham [ds 49], and in pairs such as at Lenham I & II [43-44] and Hollingbourne [ds 37 & 38]. 'Super assemblages' are also found inland at Boughton Malherbe [ds 19], and Marden [ds 45]. No assemblages have been located from the Weald, with the exception of Marden which is on the northern fringe of this geologically defined region. The soil is thin and poor and would not have been attractive to Bronze Age settlers except perhaps for grazing. This could well be the reason that tin-bronze accumulations have not been found in this region of the subject area. There is no evidence for settlement or agricultural activity in the Weald that would suggest metalworking or woodworking that would require the presence of tools.

7.1.6 Some LBA assemblages are notable in their content by high volumes of material, as has been identified at Chapter 4 'Analysis' at 4.13 and Table 4C and on Map 2. That there are 'medium' and 'small' sized assemblages may suggest that they were gathered at a different time to the 'super assemblages' or that the zones of influence in gathering and accumulating material moved or circulated due to various influences.

7.1.7 LBA assemblages are also significant in that some contain typologically earlier MBA material, as seen in Chapter 4, 'Analysis' at 4.13.2 and Table 4d, some of which are quite substantial (Hundred of Hoo [ds 41] and Marden [ds 45]). The majority of this MBA material in these LBA assemblages is palstaves, winged axes and rings / bracelets. Clearly, those gathering and accumulating tin-bronze material had access to older items, or pieces that had been handed down, rediscovered or traded. Many of these older items would have been generations old when acquired which is very significant, and it is quite conceivable that many items may have had a working lifespan longer than has been anticipated.

7.1.8 As can be seen from the distribution of assemblages in the landscape in association with monument activity and settlement in Maps 4 and 5 at Appendix 2, it is inconclusive as to whether distribution had been purely driven by proximity to monuments, settlement or agricultural areas. For example in the Ashford area there are concentrations of monument activity but no assemblages from the vicinity. On the Isle of Thanet, in contrast, it could be argued that there was a symbiosis between the presence of monuments and assemblages due to their respective high concentrations.

7.1.9 The correlation of assemblages against their elevation, where known, (see Chapter 4, 'Analysis' at 4.13.3 and Graph 4f) shows that the majority of assemblages were deposited between 0 and 40 metres, with some between 70 and 115 metres above sea level, with none appearing in the mid-range of 40 to 70 metres.

7.1.10 Assemblage distribution is clearly also dictated to a degree, to localising them with waterways, both coastal and riverine (see Appendix 2, Map 3). In particular it can be seen that the eastern and western agglomerations of distribution are concentrated along river systems. In the eastern sector The River Medway and estuary, River Len, River Darent and in the western sector, the Great Stour, Little Stour and what used to be the Wantsum Channel. Other significant concentrations are on the present day coastlines of the Hoo Peninsula, Whitstable – Herne Bay hinterland and Ebbsfleet near Richborough. There will no doubt be many theories for the distribution of assemblages, some of which include suggestions such as: 'Where these are found at 'special' or strategic places such as important river-crossings, passes, hills or frontier areas they may imply the summoning of goodwill or luck from spirits and / or ancestors, perhaps in the success or affording protection to the group' (Ruiz-Galvez Priego, 1997, p. 113, from Osgood and Monks, 2010, 51)

7.2 Context

Of the 70 assemblages in this study, only 17 can be assigned any possible context. The connotation of 'context' of the assemblages in this study relate to how they were deposited, whether in pits or containers, land or wet environments or how particular items in assemblages were treated. Where there is context available, it is certainly not homogenous; assemblages appear to have been treated in very individual ways, implying very different motivations or 'events'. Of particular interest is the manner in which some assemblages have been deliberately 'arranged' at deposition such as at Hollingbourne II [ds 38] and Goudhurst [ds 9] and the containerisation of assemblages such as Birchington [ds 4]. The wrapping of items in material in the Dartford I group for example, may imply votive practice rather than 'founders' assemblages. In addition, along with some of the palstaves from the St Mildred's Bay assemblage [ds 13] 'were pieces recognisable as birch bark, their inner surfaces bearing cast impressions left by palstaves, and fragments of what appeared to be grass blades. While reconstruction was not possible, these materials seem to have once formed some kind of container for the assemblage' (Perkins, 1988, pp. 243-9)

7.2.1 In some instances, which is not exclusive to this subject area, LBA assemblages contain socketed items that have been 'packed' (Hoo St Werburgh [ds 40] (see Chapter 4, 'Analysis' at 4.15 and Table 4e and Chapter 6 'Discussion' at 6.15). Whether this practice was purely a practical measure or had some symbolism associated with the metalwork or 'ownership' is open to debate and further research on other examples in the UK would be worthy of attention.

7.3 Use and loss

With the advent of an intensive new technology in tin-bronze manufacture, new horizons in creativity opened up. Much of the ephemeral world was copied in metalwork and flint or stone tools and weapons were assimilated in to tin-bronze design and manufacture. The 'magic' of the smith in production of tin-bronze material was intertwined with the 'making' which can only have been permitted with the power and control of others, in what is a resource demanding industry. Both the smith and those that controlled resources therefore had the power over 'making and destroying', but once items had left the foundries and forges, ownership became the new 'power' and with it no doubt, prestige.

7.3.1 Concepts of 'use and loss' of tin-bronze metalwork need to be divided in to two areas. Firstly assemblages more likely to be associated with re-cycling of material; It could be suggested that EBA and some MBA depositions are more likely to be votive in nature, such as the Lydd group [ds 2], Birchington [ds 5], Goudhurst [ds 9] and Ripple I [ds 11], and secondly, those more likely to be re-cycling 'depots' at Boughton Malherbe [ds 19] and Ebbsfleet I-V [ds 28-31 and ds 65].

7.3.2 The act of 'giving' and intentional loss through votive practices may have been due to the influence of emerging BA hierarchical society (high status control) or a way to establish 'ranking' of hierarchies, rather than being dedication to deities or gods and therefore the votive practices relate to the living rather than the supernatural or the deceased.

'Votive offerings provide an unparalleled theatre for competitive consumption through the simple fact that the valuables that are offered are taken out of circulation. This has a marked advantage over competitive gift exchange, which permits the same wealth items to move back and forth among the contending parties, until the stakes are raised so high that some of them are ruined. Votive offerings allow a lavish display to take place, but each time an offering is made, it reduces the pool of valuables available to the other contenders.' (Bradley, 1998a, 39)

A comparison of this can be made with items from the Sweet Track (Coles and Coles, 1988);

7.3.3 The loss of such material can also be interpreted as sacrifice, or giving up possessions, or possibly boundary marker. The possibility that smaller assemblages were only known by a selective few (esoteric knowledge) for superstition (cosmological) reasons is also likely, and it has also been suggested that assemblages were territorial boundary markers.

7.3.4 Most of the LBA assemblages can be construed as 'recycling' depots for tin-bronze as much of the material is broken or damaged and contain broken ingots of various forms. In all cases where sword related metalwork is found, these have been deliberately fragmented into small pieces, blades and hilts in particular. In not one single assemblage from the subject area is a complete sword present. Complete socketed axes and spearheads are common among the assemblages and do not appear to have undergone the same destructive practices as swords and rapiers.

7.3.5 The presence of palstaves, some in high quantities are represented in 9 of the 13 MBA assemblages, and the presence of socketed axes are represented in 40 of the 49 LBA groups, again some in high quantities (see Appendix 1, tables 6 and 7). These indicate very utilitarian assemblages which can be seen to be quite disproportionate in many cases, for example in relation to weaponry or other tools such as sickles or gouges;

'..axes are more common in Western Europe and sickles in Central Europe. In each area large numbers can be found in hoards, but their main areas of circulation do not coincide. It is probable that West European land use was based mainly on the axe and that in Central Europe farming depended on an abundant supply of sickles, and it seems more likely that these types possessed a dual role, serving both as everyday tools and as standard units of metal.' (Bradley, 1998a, 119)

This is certainly borne out in the LBA assemblage record for this subject area, with 199 MBA palstaves and 759 socketed axes recovered, against 13 sickles (and fragments thereof).

7.4 Metalworking

There is no direct incontrovertible evidence for metalworking in the subject area. There is some scant evidence for suggesting a metalworking industry in the form of moulds and mould fragments as well as tools and anvils present in a select few LBA assemblages. Probably the best contenders for evidence of metalworking are Monkton Court Farm [ds 48], Isle of Harty [ds 42] and Ebbsfleet IV [ds 30]. The Langdon Bay assemblage also denotes that tin-bronze was being imported for recycling but whether this was intended for the subject area or further afield is speculative.

7.4.1 Many Breton socketed axes were imported which is evidenced in some of the assemblages and typically these are of poor quality, to such an extent that they are almost useless as a functioning tool. This may also be true of indigenous manufacture and explain why so many LBA assemblages were not revisited in order to recycle the metal and were just left; the smiths were unable to procure the raw materials needed to recycle tin-bronze (particularly tin) and with the advent of iron manufacture in the 6th century BC they became superfluous and forgotten.

7.4.2 The uniqueness of these Bronze Age assemblages is reflected not in what they contain, but in what they do not contain. In the Mediterranean and Anatolian Bronze Age record we see the production of helmets, greaves, shield bosses, statues and figurines or talismans for example, but nothing resembling any of these is found in the depositions so far discovered. Whether this sort of metalwork was produced or not is not known, but there is certainly a process of exclusion taking place when accumulating material. Anything resembling artwork (except decorated axe heads) or items that can be related to domestic use was omitted.

7.4.3 This may continue to contribute to the debate as to whether tin-bronze assemblages were indeed votive or 'recycling' depots'. There is evidence that in the Early Bronze Age, peoples from Scandinavia and the Western Mediterranean were present in the subject area and were interred in barrows in the Isle of Thanet (McKinley et al. forthcoming). The latter would certainly have seen and had knowledge of more elaborate tin-bronze metalwork from the continent, which was far more advanced than that in North-West Europe at the time, but does not seem to have been transposed into the indigenous metalworking culture, and indeed, the more elaborate Scandinavian metalwork, even into the LBA, is not represented at all in south eastern England.

'The tip of the palstave'

7.5 The aim of this dissertation was to develop a response to Bradley's statement at the Abstract, endeavouring to provide some context to distribution and deposition using the corpus of research for the study area.

7.5.1 However, as more assemblages come to light, the picture of tin-bronze assemblage distribution will no doubt alter, and the addendum to this thesis is proof in itself. Another advantage of modern archaeology is that hopefully more contexts will be forthcoming with some of the finds, which will be of significant value for research. In addition, further research of LBA material is required using X-Ray fluorescence techniques to determine the quality of late tin-bronze metalwork, which in turn may support the theory of the demise of tin-bronze metalworking and the end of assemblage deposition.

Bibliography

A Guide to the antiquities of the Bronze Age in the Department of British and Medieval antiquities. 2nd Edition (1922). Oxford: Printed by Frederick Hall

Acland, C. L. (1869). The late landslip on the Warren. *Folkestone Natural History Society* 3, 48-51

Allen, T. (1998/1999). Fieldwork II Canterbury District Sites. Canterbury Archaeological Trust Annual Report, 12-13 [internet] <http://www.canterburytrust.co.uk/old-site/annreps/pdfs/1999/002.pdf>

Andrews, M. (1991). *The Birth of Europe: colliding continents and the destiny of nations*. London: BBC Books

Andrews, P. and Lawson, A. J. (2004). Treasure Annual Report 2004-5. Ebbsfleet, Kent: Two Late Bronze Age base-metal scatters (2004 T228) (Figs. 23.1, 23.2). Department of Culture, Media and Sport, 37-38 [internet] <http://finds.org.uk/documents/treasurereports/2004.pdf>

Andrews, P., Jones, G. P. and Schuster, J. (2009). The Wetherlees Water Treatment Plant excavations (Ebbsfleet). Wessex Archaeological Trust Report 24. Henry Ling Dorchester: Dorset Press Ltd.

Ashbee, P. (2005) 2nd Edition. *Kent in Prehistoric times*. Stroud: Tempus

Barber, M. (2003). *Bronze and the Bronze Age: metalwork and society in Britain c.2500-800 BC*, 47 & 60
Stroud: Tempus

Barber, M. (n.d.) Metal in the Late Neolithic and Early Bronze Age. South East Research Framework resource assessment seminar. Un-paginated

Barber, M. (n.d.) The Late Bronze Age metalwork (Herne Bay I) assemblage report (see Helm, R. below)
un-paginated

Barrett, J. C. (1994). *Fragments from Antiquity: An Archaeology of Social Life in Britain, 2900-1200 BC*. Oxford: Blackwell

Bartelheim, M. (1998). *Studien zur böhmischen Aunjetitzer Kultur: Chronologische und chorologische Untersuchungen*, 46. Bonn: Universitätsforschungen zur prähistorischen Archäologie

Beale Poste, (1858). Romano British Antiquities found in the Parish of Marden, Kent. *Journal of British Archaeology Association Vol. XIV*, 257-262 and pl. 13

- Boast, E. J. (2007). Bronze and Iron Age Occupation: Hartsdown Road, Ramsgate. *Archaeologia Cantiana* Vol. 127, 429
- Boden, D. (2007). Ellington School, Ramsgate. Canterbury's Archaeology 2005-2006, 27-9: Canterbury Archaeological Trust (CAT) 30th Annual Report
- Boughton, D. (2013). The strange case of the bronzes buried in the Vale of Wardour. *Archaeology magazine* March/April 2013, 42-48
- Bradley, R. (1990). *The Passage of Arms: An archaeological analysis of prehistoric hoards and votive deposits*. Cambridge University Press: CUP Archive
- Bradley, R. (1998a). 2nd Edition. *The Passage of Arms*. Oxford: Oxbow
- Bradley, R. (1998b). *The Significance of Monuments: On the shaping of human experience in Neolithic and Bronze Age Europe*. New York: Routledge
- Bradley, R. (2000). *An Archaeology of Natural Places*. London and New York: Routledge
- Bradley, R. (2002). *The past in prehistoric societies*. London and New York: Routledge
- Bradley, R. (2007). *The Pre-history of Britain and Ireland*. Cambridge: Cambridge University Press
- Brailsford, J. (1947). A Founders Hoard from Dartford, Kent, with a note on Socketed Bronze Swords. *Proceedings of the Prehistoric Society, Vol. 13*, 175-177
- Brannigan, K. (1982). Lead isotopes and the Bronze Age metal trade. *Nature, Volume 296 Issue 5859*, 701-702
- Brent, J. (1873). *Proceedings of the Society of Antiquaries of London, (2nd Series) Vol. V*, 376
- Brent, J. (1876). Finds from Chislet and Sittingbourne. *Journal of the British Archaeological Association* Vol. 35, 22-23

- Briard, J. (1965). *Les Dépôts Bretons et l'Age du Bronz Atlantique*. Rennes: Laboratoire d'Anthropologie Préhistorique de la Faculté des Science de Rennes
- Brück, J. (2001). *Bronze Age Landscapes: Tradition and Transformation*. Oxford: Oxbow Books
- Burgess, C. (1968). The Later Bronze Age in the British Isles and north western France. *Archaeological Journal Vol. 125*, pp. 1-45
- Burgess, C. (2013). Alignments: Revising the Atlantic Late Bronze Age Sequence. *The Archaeological Journal Vol. 169*, 127-158
- Burgess, C. and Colquhoun, I. (1988). *The Swords of Britain*. Plates 1-179. *Prähistorische Bronzefunde*. Abt.4. München: C.H. Beck
- Burgess, C. and Coombs, D. (1979). *Bronze Age Hoards: some finds old and new*. British Archaeological Reports, (BAR) 76, 188-191. Oxford: Archaeopress
- Burgess C. and Richardson, A. (1985). Unpublished. Bronze axes in Carlisle Museum and a recent find from Carrock Fell, Cumbria. *Trans. Cumberland and Westmorland. Antiquities and Archaeological Society*. pp. 85, 43-52 and pp. 46, 52 and Fig. 5
- Canterbury Archaeological Trust. (2004). News from the trenches: Holborough Quarry, Snodland. [internet] <http://www.canterburytrust.co.uk/archive/trench01.html> accessed 11/01/2010. URL no longer active. Copy available from author.
- Champion, T. C. (1980). *Settlement and environment in Later Bronze Age Kent*. British Archaeological Reports (BAR) 80(i), 223-246. Oxford: Archaeopress
- Champion, T. C., Gamble, C. Shennan S. and Whittle, A. (1984). 9th Edition. *Prehistoric Europe*. London: Academic Press Ltd
- Champion, T. A. C. and Ogilvie, J. D. (1977). Bronze Age hoard form Hoaden, Kent. *Archaeologia Cantiana Vol. 97*, 195-199 and fig. 1
- Champion, T. C. (2007). *Prehistoric Kent*, in Williams, J. (ed.) *The Archaeology of Kent*. Woodbridge, UK: Boydell

Childe, V. G. (1930). *The Bronze Age*. Cambridge: Cambridge University Press

Clark, P. (Ed.) (2004). *The Dover Bronze Age Boat*. English Heritage

Clark, P (Ed.) (2004). *The Dover boat in context: society and water transport in prehistoric Europe*. Oxford: Oxbow Books

Clark, P. (Ed.) (2009). *Bronze Age Connections: Cultural Contact in Prehistoric Europe*. Oxford: Oxbow Books

Coles, B. J. (1998). Doggerland: A Speculative Survey. *Proceedings of the Prehistoric Society* 64, 45-81

Coles, B. and Coles, J. (1988). *The Sweet Track to Glastonbury; the Somerset Levels in Prehistory*. London: Thames and Hudson

Coles, J. M. and Harding, A. F. (1979). *The Bronze Age in Europe*. London: Methuen and Co.

Coombs, D. G. (1976). The Dover Harbour bronze find – a Bronze Age wreck? *Archaeologia Atlantica* 1, 193-5

Coombs, D. G. (1988). The Late Bronze Age Hoard from Clos De La Blanch Pierre, St Lawrence, Jersey, Channel Islands. *Oxford Journal of Archaeology* Vol. 7 issue 3, 313-342

Coombs, D. G. and Bradshaw, J. (1979). *A Carp's Tongue Hoard from Stourmouth, Kent*. British Archaeological Reports, (BAR) Vol. 67, 181-189

Coy, J. G. 1965, Thanet Group. Kent Archaeological Review, winter 1965 (Issue 2), p. 1 [internet] http://cka.moon-demon.co.uk/KAR1AND2/KAR1AND2_Groups2.htm

Evans, E. (1930). The Sword Bearers. *Antiquity*, Vol. 4: 14, 157-172 [internet] (<http://antiquity.ac.uk/Ant/004/0157/Ant0040157.pdf>)

Evans, J. (1881). *The ancient bronze implements, weapons and ornaments of Great Britain and Ireland*. London: Longmans, Green and Co.

Fox, C. (1939). The non-socketed bronze sickles of Britain. 96, pp. 136-162 *Proceedings of the Prehistoric Society* Vol. 5

- Franks, A. W. (1855). A group of eight Bronze palstaves found near Goudhurst, Kent. *Archaeological Journal*, 193
- Godwin, H. and Clark, J. G. D. (1940). The Minster hoard. *Antiquaries Journal No. 20*, 62
- Grace, R. (1944). Additions to the Bronze Age Hoard from Broadoak, Sturry, Kent. *Antiquaries Journal Vol. 24*, 148-149
- Hammond, I. D. (2010). In search of 'the people of La Manche: a comparative study of funerary practices in the Transmanche region during the late Neolithic and early Bronze Age. (2500 BC-1500 BC) Ph.D thesis, University of Kent
- Hart P. C. and Moody G. A. (2005). All Saints Avenue, Margate, Kent. Trust for Thanet Archaeology Assessment Report. Unpublished Trust for Thanet Archaeology Client Report
- Hawkes, J. and C. F. C. (1943). *Prehistoric Britain*. London: Pelican Books
- Helm, R. (2011). Archaeological excavation at Bogshole Lane, Broomfield, Herne Bay Assessment Report. Canterbury Archaeological Trust
- Henderson, J. (2007). *The Science and Archaeology of Materials: An Investigation of Inorganic Materials*. London: Routledge
- Hutchinson, J. N. (1965). A survey of coastal landslides in Kent. Building Research Station Note no. 35/36 [internet] <http://www.bgs.ac.uk/landslides/folkestoneWarren.html>
- James, F. (1899). Bronze Age burials at Aylesford. *Proceedings of the Society of Antiquaries of London, Vol. 17*, 373-377
- Jessup, R. F. (1930). *The archaeology of Kent. The County archaeologies*. London: Methuen & Co. Ltd
- Jessup, R. F. (1944). A Bronze Age hoard from Sturry, Kent. *Antiquaries Journal Vol. 23*, 57 and plate XIII
- Kristiansen, K. and Larsson, T.B. (2005). *The Rise of Bronze Age Society: Travels, Transmissions and Transformations*. Cambridge: Cambridge University Press

Kuijpers, M. H. G. (2008). *Bronze Age Metalworking in the Netherlands: A Research into the Preservation of Metallurgy-related Artefacts and the Social Position of the Smith*. Leiden: Sidestone Press

Lehoërff, A. (2012). *Beyond the Horizon; Societies of the Channel and North Sea 3500 years ago*. Paris: Somogy Art publishers

Lewis, J. (1736). *The History and Antiquities, as well Ecclesiastical as Civil, of the Isle of Tenet, in Kent*. Vol. 2. 2nd Edition with additions. First published in 1723. Reproduction copy from Ramsgate (Michaels Bookshop) (2005) ISBN 978-1905477-159

McKinley, J. Leivers J., M. Schuster, M., Marshall, J., Barclay, P. A. and Stoodley, N. *Cliffs End Farm Isle of Thanet, Kent: A mortuary and ritual site of the Bronze Age, Iron Age and Anglo-Saxon period with evidence for long-distance maritime mobility*. Oxford: Oxbow Books (publication extant: expected January 2015)

Megaw, B. R. S. and Hardy, E. M. (1938). British Decorated Axes and their Diffusion. *Proceedings of the Prehistoric Society for 1938 (July – December) New Series Vol. IV, Part 2*

Moad, M. (1974). Bronze Age Hoard found near Rochester. *Kent Archaeological Review No. 37* [internet] http://cka.moon-demon.co.uk/KAR037/KAR037_Rochester.htm

Moore, C.N. and Rowlands M. J. (1972). Bronze Age metalwork in Salisbury Museum. Salisbury and South Wiltshire Museum (author's private collection)

Muckleroy, K. (1980). Two bronze age cargoes in British waters. *Antiquity, Vol. LIV*, 100-9

Muckleroy, K. (1981). Middle Bronze Age trade between Britain and Europe: a maritime perspective. *Proceedings of the Prehistoric Society, Vol. 4*, 275-297

Moody, G. (2008). *The Isle of Thanet; from Prehistory to the Norman Conquest*. Stroud: Tempus

National Monuments Record No. 469539 (English Heritage Archive) [Internet] <http://www.english-heritage.org.uk/professional/archives-and-collections/nmr/>

Needham, S. (1988). A Group of Early Bronze Age Axes from Lydd. In Eddison, J. and Green, (eds.) *Romney Marsh: Evolution, Occupation, Reclamation*. Chapter 5, 77-82. Oxford: Oxford University Committee for Archaeology Monograph 24

Needham, S. P., Bronk Ramsey, C. Coombs, D. Cartwright, C. and Pettitt, P. (1997). An independent chronology for British Bronze Age metalwork: The results of the Oxford Radiocarbon Accelerator programme. *The Archaeological Journal* Vol. 154, 55-107

Needham, S. P. and Burgess, C. (1980). The Later Bronze Age in the Lower Thames Valley: The metalwork evidence. In Barrett, J. and Bradley, R. *Settlement and Society in the British Later Bronze Age*. British Archaeological Reports, (BAR) 83(i), 437-469

Needham, S. P., Parfitt, K. and Varndell, G. (2006). *The Ringlemere Cup*. Oxford: Oxbow Books

Needham, S.P., Parham, D., and Frieman, C. J. (2013). *Claimed by the Sea: Salcombe, Langdon Bay, and other marine finds of the Bronze Age*. CBA Research Report 173, Council for British Archaeology

Needham, S. P. (2004). 25. Ringlemere, Kent: Late Bronze Age gold and base-metal scatter (2004 T85 and 2004 T146) (Figs. 25.1, 25.2, 25.3) Treasure Annual Report 2004, 39 [internet]
<http://finds.org.uk/documents/treasurereports/2004.pdf>

Northover, P. (1982). The Metallurgy of the Wilburton Hoards. *Oxford Journal of Archaeology* March 1982 1 (1), 69-109

Northover, P. (2010). The Devon Bronze Age shipwreck hoard. [internet]
<http://www.telegraph.co.uk/earth/environment/archaeology/7228108/Bronze-Age-shipwreck-found-off-Devon-coast.html>

O'Brien, W. (1996). *Bronze Age copper mining in England and Ireland*. Aylesbury: Shire

O'Brien, L. (2004). Iron Age and Romano-British Features at Whitstable Community College, Bellevue Road, Whitstable, Kent. Archaeological Solutions Ltd

O'Connell, M. (1986). Petters Sports Field, Egham: Excavation of a Late Bronze Age/Early Iron Age site (Research volume of the Surrey Archaeological Society). Surrey Archaeological Society

Ogilvie, J. D. (1977). *Archaeologia Cantiana* Vol. 93 (xciii), fig. 3, no. 4

Ogilvie, J. D. (1986). Finds from Ash-next-Sandwich. *Kent Archaeological Review* (Spring issue), 66-67. Council for Kentish Archaeology

O'Neill Osborne, A. (1939). The Hayne Wood hoard. *Antiquaries Journal*, Vol. 19, 202-206

Orpwood, P. (2008). Early Coastal Settlement near Birchington. Birchington Heritage Trust Newsletter August 2008, Issue 25, 1-2 [internet]

<http://www.birchingtonheritage.org.uk/newsletter/BHTNews25.pdf>

Osgood, R. and Monks, S. (2010). *Bronze Age Warfare*. The History Press

Pare, C. F. E. (2000). *Metals Make the World Go Round: The Supply and Circulation of Metals in Bronze Age Europe – Proceedings of a Conference Held at the University of Birmingham in June 1997*. Oxford: Oxbow Books

Parfitt, K. (1995). (Unpublished). Report on Bronze Age Palstaves from Ripple, near Deal, Kent: Dover Museum

Parfitt, K. and Corke, B. (2004). News from the trenches: Ringlemere Farm, Woodnesborough, 26-27 Canterbury Archaeological Trust [internet] <http://www.canterburytrust.co.uk/old-site/annreps/pdfs/2005/003.pdf>

Parham, D, Needham, S. P. and Palmer M. (2006). Final proof of ancient UK contact with Sicily? Salcombe and Dover - Bronze age wrecked cargoes in Devon and Kent. *British Archaeology* Issue 91, Nov / Dec 2006 [internet] <http://www.archaeologyuk.org/ba/ba91/feat2.shtml>

Parker-Pearson, M. (1994). *The Earlier Bronze Age*. Chapter 5, 79, in Hunter J. and Ralston, I. (1999). *The Archaeology of Britain*. London: Routledge

Parker-Pearson, M. (2000). 2nd Edition. *Bronze Age Britain*. London: Batsford Ltd.

Parsons Brinckerhoff Ltd. (2009a). Damhead Creek 2 Archaeological Background Report 2009, Appendix K, 5-6 and 14. Report for PB Power for Scottish Power Ltd [internet] <http://www.spenergywholesale.com/userfiles/file/DamheadCreek2-ESVolume2AppendixK-ArchaeologicalBackground.pdf>

Parsons Brinckerhoff Ltd. (2009b). Gazetteer of Archaeological Interests at Damhead Creek 2. Annex J. Report for PB Power for Scottish Power Ltd. 2, (16) [internet]

Payne, G. (1895). Researches and Discoveries in Kent. Minster, Isle of Thanet. *Archaeologia Cantiana*, Vol. 21, L.

Pearce, S. M. (1982). The Bronze Age metalwork of south western Britain. PhD Thesis, University of Southampton

Pearce, S. M. (1984). *Bronze Age metalwork of southern Britain*. Aylesbury: Shire

Penes Canon Greenwell, F.R.S. (1942). Bronze finds from Little Coombe Farm & Allhallows, Hundred of Hoo. *Archaeology*, Vol. xvi, 348

Perkins, D. R. J. (1988a). A Middle Bronze Age hoard from a prehistoric settlement site a St. Mildred's Bay, Westgate-On-Sea. *Archaeologia Cantiana*, Vol. 105, 243-9

Perkins, D. R. J. (1988b). A Middle Bronxe Age Hoard from a pre-historic *settlement site at* St. Mildred's Bay, Westgate-on-Sea. *Archaeologia Cantiana*, Vol. 106, 201-204

Perkins, D. R. J. (1989). A Late Bronze Age hoard from Shuart, Thanet (metal-detector find of socketed axe fragments etc, Carp's Tongue/Ewart Park). *Archaeologia Cantiana*, Vol. 106, 201

Perkins, D. R. J. (1991). A Late Bronze Age hoard found at Monkton Court Farm, Thanet. *Archaeologia Cantiana Vol. 109*, 247-264

Perkins, D. R. J. (1994a). *An assessment/research design: South Dumpton Down, Broadstairs*. Thanet Trust for Archaeology

Perkins, D. R. J., Macpherson-Grant, N. and Healey, E. (1994b). Monkton Court Farm evaluation, 1992. *Archaeologia Cantiana Vol. 114*, 237-316

Perkins, D.R.J. (1999a). A Gateway Island. Unpublished PhD Thesis. Thanet Trust for Archaeology

Perkins, D. R. J. (1999b). Researches and discoveries in Kent. *Archaeologia Cantiana Vol. 109*, 201-204 and 247-264

Portable Antiquities Scheme Annual Report 2001/2 – 2002/3 Case Study: Hollingbourne Late Bronze Age Hoard (figs 9 and 10), 14-15

[internet] http://www.finds.org.uk/documents/Resource_December_2003.pdf

Powell-Cotton, P. H. G. and Crawford, O. (1924). The Birchington Hoard. *Antiquaries Journal Vol. 4*, 220-226

Powell-Cotton, P. H. G. and Penfold, G F. (1939) The Beck find: Pre-historic and Roman Site on the foreshore at Minnis Bay. *Archaeologia Cantiana Vol. 51*, 191-203

Priestley-Bell, G. (2002). Archaeology South East Watching and Excavation Brief 2002. Chislet finds.

[internet]

<http://www.archaeologyse.co.uk/04-Projects/Kent/Highstead-Farm-Canterbury/index.htm>

Randsborg, K. (1995). *Hjortspring: Warfare and Sacrifice in Early Europe*. Aarhus: Aarhus University Press

Read, C.H. (1904). *A Guide to the Antiquities of the Bronze Age*. 39-40. The Department of British and Mediaeval Antiquities. Oxford: Trustees of the British Museum

Renfrew, C. and Bahn, P. (1998). *Archaeology: Theories Methods and Practice*. 2nd Edition. London: Thames & Hudson

Richardson, A. (Spring 2003). Hollingbourne founder's hoard. *Kent Archaeology Newsletter Issue No. 56*, 1-2

Richardson, A. (2003) PAS Unique ID: Kent-7C3863. (Stourmouth hoard) [internet]

<http://finds.org.uk/database/artefacts/record/id/490737>

Richardson, A. (Spring 2004). Crundale Late Bronze Age Hoard. *Kent Archaeological Society Newsletter Issue No. 60*, 15-16

Richardson, A. (2004). Treasure Annual Report 2004-5. Lenham, Kent: Late Bronze Age base-metal scatter (2004 T119) (Fig. 24) Department of Culture, Media and Sport, 38-39 [internet]

<http://finds.org.uk/documents/treasurereports/2004.pdf>

Roberts, B. (2011). The Staple hoard. PAS Unique ID: KENT-EBE952. [internet]

<http://finds.org.uk/database/artefacts/record/id/439492>

Rohl, B. M. (1995). Application of lead isotope analysis to Bronze Age metalwork from England and Wales. PhD Thesis, Oxford University

Rohl, B. M. and Needham, S. P. (1998). The circulation of metal in the British Bronze Age: the application of lead isotope analysis. Occasional paper / British Museum No. 102. London: British Museum Press

Rowlands, M. J. (1976). *Production and Distribution of Metalwork in the Middle Bronze Age in Southern Britain*. British Archaeological Reports (BAR) Vol. 31

Smith, C. R. (1848). Discovery of urns and inhumation at Sittingbourne. *Collectanea Antiqua, vol. i*, 101

Samson, A. V. M. (2006). Offshore finds from the Bronze Age in North-Western Europe: The shipwreck scenario revisited. *Oxford Journal of Archaeology Vol. 25, No. 4*, 371-388

Smith, M. A. (1959). Some Somerset hoards and their place in the Bronze Age of southern Britain. *Proceedings of the Prehistoric Society 25*, 144-87

So, C. L. (1965). Coastal platforms of the Isle of Thanet, Kent. *Translation from Institute of British Geography, 37*, 147-56

So, C. L. (1966). Some coastal changes between Whitstable and Reculver, Kent. *Proceedings of the Geological Association 77*, 475-490

So, C. L. (1971). Early coastal recession around Reculver, Kent. *Archaeologia Cantiana Vol. 86*, 93-98

Stebbing, W. P. D. (1934). An early Iron Age site at Deal. *Archaeologia Cantiana Vol. 46*, 207-209

Symonds, M. (2012). Waterworld: Must Farm's Bronze Age boats. *Current Archaeology Issue 263 February 2012*, 13-19

Taylor, R. J. (1993). *Hoardings of the Bronze Age in Southern Britain: Analysis and Interpretation*. British Archaeological Reports (BAR) Oxford: Archaeopress

Tester, P. J. (1958). The Bexley Heath Bronze Age Hoard. *Archaeologia Cantiana* Vol. 71, 232-233

Thanet Earth excavations at Brooksend Farm. (2007) Canterbury Archaeological Trust [internet]

<http://www.canterburytrust.co.uk/news/projectdiaries/thanet-earth/>

Turner, C. E. L. (1998). A re-interpretation of the Late Bronze Age Metalwork Hoards of Essex and Kent. PhD Thesis, University of Glasgow

Turner, C. E. L. (2010). *A re-interpretation of the Late Bronze Age Metalwork Hoards of Essex and Kent*. British Archaeological Reports (BAR) series 507, 67-90. Oxford: Archaeopress

Un-authored. Bronze Celts. Miscellanea. *Archaeologia Cantiana* Vol. 9, 1874, 300

Un-authored. (2011). Pupil discovers a trove of Bronze Age treasure. Kent and Sussex Courier. [internet]

<http://www.courier.co.uk/Pupil-discovers-trove-Bronze-Age-treasure/story-11996119-detail/story.html>

Waller, J. G. (1874.) Bronze Implements. *The Journal of the Anthropological Institute of Great Britain and Ireland* 3, 230-231

Wessex Archaeology (July 2004). North Edinburgh Channel Dredging Disposal Area archaeological assessment Technical Report. Prepared on behalf of: Port of London Authority. 38-45 [internet] https://www.pla.co.uk/assets/Archaeological_Assessment.pdf

Wickham, H. (1877). Celtic Remains found in the Hundred of Hoo. *Archaeologia Cantiana*, Vol. 11, 122-125

Worsfold, F.H. (1943). A report on the Late Bronze Age site excavated at Minnis Bay, Birchington, Kent, 1938-40. *Proceedings of the Prehistoric Society* Vol. 9, 28-47

Worrell, S. (2003a). 15. Crundale, Kent: Late Bronze Age base-metal hoard and scatter (2003 T374) (Figs. 15.1, 15.2, 15.3, 15.4, 15.5) Treasure Annual Report 2003, Department of Culture, Media and Sport, 26-40 [internet] <http://www.ncmd.co.uk/docs/treasurereport2003.pdf>

Worrell, S. (2003b). 17. Chislet, Kent: Late Bronze Age base-metal hoard (2003 T120) (Fig. 170) Treasure Annual Report 2003, Department of Culture, Media and Sport, 34-35 [internet] <http://www.ncmd.co.uk/docs/treasurereport2003.pdf>

Worrell, S. (2004b). 26. Tilmanstone, Kent: Late Bronze Age base-metal scatter (2004 T 422) (Fig. 26) Treasure Annual Report 2004, 39-40 [internet] <http://finds.org.uk/documents/treasurereports/2004.pdf>

Worrell, S. (2005). 61. Ramsgate, Kent: Late Bronze Age base-metal hoard (2005 T261) Treasure Annual Report 2005-6, Department of Culture, Media and Sport, 38-39 [internet] <http://finds.org.uk/documents/treasurereports/20052006.pdf>

Wright, E. V. (1978). Artefacts from the boat-site at North Ferriby, Humberside, England. *Proceedings of the Prehistoric Society Vol. 44*, 187-202

Yates, D. T. (2001). *Bronze Age agricultural intensification in the Thames Valley and Estuary*. from Brück, J. (2001) *Bronze Age Landscapes: Tradition and Transformation*. Oxford: Oxbow Books

Yates, D. T. (2007). *Land, Power and Prestige: Bronze Age field systems in southern England*. Oxford: Oxbow Books

Yates, D. T. and Bradley, R. (2010). The Siting of Metalwork Hoards in the Bronze Age of South-East England. *The Antiquaries Journal*, 90, 1-32

York, J. (2002). The Life Cycle of Bronze Age Metalwork from the Thames. *Oxford Journal of Archaeology* 21(1), 77-92

Young, J. and Thorpe (?) (1708). Untitled. (Leeds Castle palstaves) Society of Antiquaries of London. Fol. 162, no. 202